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HMX: 13 WEEK TOXICITY STUDY IN RATS BY DIETARY ADMINISTRATION

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Final Report by:

D.J. Everett
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Abstract

Rats were fed diets containing HMX for 13 weeks. Dose levels for males were 0, 50, 150, 450, 1350 or 4000 mg HMX/kg/day. Female rats received 0, 50, 115, 270, 620 or 1500 mg HMX/kg/day.

No deaths or clinical signs occurred attributable to dosing with HMX.

Reduced body weight gains and food consumptions were observed, more so at higher dose levels.

Haematological and clinical chemical observations were made only on top dose and control animals. There were slight but consistent reductions in Hb, PCV and possibly RBC. AP activity was increased and there was evidence of methaemoglobinaemia but other clinical chemical changes were inconsistent.

There were no changes at gross autopsy.

Histopathology revealed enlarged centrilobular cells with pale nuclei and dark cytoplasm in the livers of males dosed at 150 mg HMX/kg/day and above. Females given 270 mg HMX/kg/day and above showed changes in renal tubules. The renal effect was less apparent in males.

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FOREWORD

"I, the undersigned, hereby declare that this work was performed under my supervision, according to the procedures herein described and that this report represents a true and accurate record of the results obtained."

A.B. Wilson, B.V.Sc., M.R.C.V.S.,
D.A.B.T.
Principal Investigator

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QUALITY ASSURANCE AUTHENTICATION

The conduct of this study has been subjected to periodic inspections by the IRI Quality Assurance Unit. The dates of inspection are given below.

IRI Project No. 415669CR/2188	Report No. 2188
Date of Q.A. Inspection	Date of Report to Management
15 December 1980	16 December 1980
12 January 1981	13 January 1981
9 February 1981	10 February 1981
4 March 1981	4 March 1981
16 March 1981	19 March 1981

This report has been audited by the Quality Assurance Personnel according to the appropriate Standard Operating Procedure. The report is considered to describe accurately the methods and procedures used in the study and the original data generated during the study.

Signed: Andrew Waddell
(Quality Assurance Manager)

Date: 14 Jan 1986.

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SUMMARY

Five groups of 20♂ and 20♀ rats of the Fischer 344 strain were dosed at concentrations of Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) in the diet calculated to give dose levels of 50, 150, 450, 1350 or 4000 mg HMX/kg/day for male rats and 50, 115, 270, 620 or 1500 mg HMX/kg/day for female rats. One group of 20♂ and 20♀ rats received untreated diet and acted as contemporary controls. Study duration was 13 weeks, at the end of this period animals were killed and subjected to full necropsy.

Before dosing commenced and during Week 13 of dosing ophthalmoscopic examination was performed on all animals.

Haematology and clinical chemistry blood samples were taken during Weeks 5 and 12 of dosing. Urine samples were taken from the same animals in the same weeks.

Results may be summarised as follows:

Mortality:	Only 3 premature deaths occurred during the study, all from different treatment groups.
Clinical Signs:	None was observed which could be attributed to dosing with HMX.
Body Weights:	Body weight gains were reduced in male and female animals receiving HMX in dose related fashion.
Food Consumption:	Food consumption trends were variable throughout the study but treated groups consumed less food than untreated groups during dosing.
Opthalmoscopy:	No abnormalities were detected which could be attributed to dosing with HMX.
Achieved Dosage:	This fell within acceptable limits.
Laboratory Investigations:	The following changes occurred: Reductions in Hb and PCV in male and female high dose animals in both Weeks 5 and 12. Reduced RBC counts in males and females in Week 12. Slight increase in methaemoglobin in male and female high dose rats in Week 12. Significant increase in AP levels in top dose males and females in Week 5, and (females only) in Week 12. Significant increase in

Laboratory Investigations (continued):	BUN levels in Weeks 5 and 12 of females receiving 1500 mg HMX/kg/day. Increased albumin and total protein levels in top dose females in Week 12. Increased albumin levels in top dose males in Week 5. Reduced pH and SG with increased volume of urine in top dose female rats in Weeks 5 and 12. Fern-like crystals were seen in Week 12 in urine of top dose males and females.
Terminal Studies:	Two dose related lesions were seen: Toxic liver change, characterised by enlarged centrilobular cells with pale nuclei and dark cytoplasm, in significant numbers of males receiving 450, 1350 or 4000 mg HMX/kg/day. Tubular kidney change characterised by focal atrophy and dilatation in significant numbers of females receiving 270, 650 or 1500 mg HMX/kg/day.
Organ Weights:	The following changes were seen: Significantly reduced absolute and relative adrenal weights in all treated male groups with an increase in female groups. Relative brain weight increased in males and females receiving 4000 or 1500 mg HMX/kg/day. Absolute brain weights increased in top dose females. Absolute heart weights increased in male and female top dose rats. Female treated rats showed a dose related increase in relative kidney weights. Males showed reduction in absolute and relative spleen weights. Relative liver and lung weights increased in treated females. Females showed reductions in absolute spleen and ovary weights.
Conclusion:	Significant toxic liver changes in males receiving 150 or more mg HMX/kg/day and tubular kidney changes in females receiving 270 or more mg HMX/kg/day. HMX administration tends to reduce red blood cell parameters and possibly caused methaemoglobinaemia.

INTRODUCTION

This study was designed to provide information on the toxic effects of the compound octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) and what doses could be used to give an indication of suitable dose levels for subsequent studies. HMX was administered via the diet at concentrations predicted each week to achieve dose levels of 50, 150, 450, 1350 or 4000 mg HMX/kg/day for male rats and dose levels of 50, 115, 270, 620 or 1500 mg HMX/kg/day for female rats continuously for 13 weeks. Dose levels were selected on the basis of results from previous studies.

The experiment was undertaken at the Elphinstone Research Centre of Inveresk Research International Limited within the Modular Animal Maintenance System (MAMS) complex. It was begun on 8 December 1980 and necropsies were completed on 19 March 1981.

All data generated and recorded during this study will be stored in the Scientific Archives of Inveresk Research International Limited.

MATERIALS AND METHODS

Test Substance

3.95 kg of HMX type B was received on 7 October 1980, a further 2 batches each of approximately 5 kg were received on 17 December 1980 and 2 February 1981. The compound was stored at ambient temperature in the dark.

Method

Two hundred and eighty Fischer 344 rats, divided equally by sex, were obtained from Charles River U.S.A. via Charles River (U.K.) Limited, Manston, Kent, England on 5 December 1980. They were ordered in the weight range 40-60 g.

One hundred and twenty males and 120 females were allocated to treament groups and allowed to acclimatise to their new environment for 10 days before treatment began.

Pre-Experiment Acceptance Testing

All animals were examined upon receipt for signs of disease.

Ten animals of each sex were selected at random and subjected to a macroscopic and microbial examination, together with a histopathological evaluation of main organs. Results indicated that, despite mild infestation by pinworm, the animals were acceptable to be used on study.

Housing

Rats were housed in a barrier maintained animal room at a room temperature normally of 21°C ± 2°C and a target relative humidity of ca 50% (both automatically controlled), with ca 14 air changes/hour. At 12 h light/dark cycle was controlled by a time switch, light hours being 0700-1900 h. Room location was at Elphinstone Research Centre within the MAMS complex.

Caging and Cage Sanitation

Rats were housed one animal per cage in suspended polypropylene cages (overall dimensions ca 480 x 150 x 120 mm) with stainless steel wire grid tops and bottoms. Each cage had a polypropylene water bottle (total capacity 300 ml) with rubber washer and melamine cap.

Beneath each cage was a polypropylene tray containing absorbent paper. This paper was changed as required each week.

Diet and Water

During the course of the study, tap water and a laboratory rodent diet (BP Nutrition UK Limited, Expanded Ground Maintenance Diet) were available to the rats *ad libitum*. Typical analyses for both diet and water are presented in Appendices 1 and 2.

Animal Room Sanitation

Each morning, before other work in the room began, floors were mopped with a disinfectant solution (either 1% Tego from T.H. Goldschmidt and Company Limited, or 3% Hycogen from Hy-co Products (Scotland) Limited). Each afternoon, following completion of all other work, floors were swept then washed with a disinfectant solution. Once each week walls, ceiling, benches and racking within the animal room were washed with a disinfectant solution.

Dose Levels, Treatment Groups and Animal Numbers

Dose levels were chosen on the basis of results from a 14 day dietary study conducted at IRI. (DAMD 17-80-C-0053.)

Treatment groups and dose levels were as follows:

Group	Dose Level mg HMX/kg/day (Males)	Animal Numbers (Males)	Dose Level mg HMX/kg/day (Females)	Animal Numbers (Females)
1	0	601-620	0	721-740
2	50	621-640	50	741-760
3	150	641-660	115	761-780
4	450	661-680	270	781-800
5	1350	681-700	620	801-820
6	4000	701-720	1500	821-840

Distribution of Animals into Treatment Groups

On the day of arrival the animals were distributed at random into the treatment groups as follows:

Upon receipt the rats were placed in large holding cages. Male and female rats were divided into 7 body weight ranges of 5 g each.

Twenty sequences of 6 cages were designated. Starting with the lowest weight range and then the highest, followed by the second lowest and so on, males were placed in the first cages of each of the 20 sequences, when these contained one animal each the second cages in the sequences were used and so on until 120 cages each contained one male rat.

This procedure was repeated using new cages and female rats. Each rat was ascribed to a treatment group by the use of another set of computer generated random number sequences. Thus any intergroup environmental differences were minimised.

Animal Identification

Each rat was given a unique earmark which identified it within the study and corresponded to that animal's study number.

Route and Duration of Treatment

The test compound was administered orally via the diet for at least 91 consecutive days.

Diet Preparation

Fresh diets were prepared once each week. The concentration of test compound was adjusted each week to give as constant a mg/kg/day level as possible by prediction of mid-week body weight and weekly food consumption for the week in question.

Diets were prepared by direct admixture of the required amount of HMX to diet and blending for 20 min in a Winkworth change drum tumble mixer.

Dietary Sampling

Materials and methods are presented in Appendix 11.

A 100 g sample of diet from each group/sex was taken and retained immediately after diet preparation at the beginning of each study week. In addition, 4 samples of 100 g were taken from each group/sex at the beginning of Weeks 1, 2, 3, 4, 7, 10 and 13. The latter samples were analysed for HMX levels.

Observations

Clinical Signs

All animals were checked in early morning and late afternoon on each day for dead or moribund animals. The onset and duration of all signs of ill health or reaction to treatment were recorded after daily examination of the

animals. Each animal was given a detailed physical examination for clinical signs or external lesions once a week.

Deaths

Animals dying during study were given a detailed macroscopic examination and tissues listed under 'Post Mortem Studies' were preserved.

Body Weight

The weight of each animal was recorded at weekly intervals commencing one week before the start of treatment up until the end of treatment. In addition, animals were also weighed on Day 4 of the first 4 weeks.

Food Consumption

The quantity of food consumed by each animal was recorded once each week commencing one week before the start of treatment and up to the first day of autopsy. The amount of food scattered by each animal was also recorded.

Water Consumption

Water consumption was assessed visually for any intergroup differences.

Ophthalmic Examination

All animals were assessed before dosing commenced and during Week 13 of dosing. Animals' pupils were dilated with a midriatic (1% tropicamide) and ophthalmoscopy using an indirect ophthalmoscope was undertaken.

Laboratory Investigations

Blood samples were taken via orbital sinus under light ether anaesthesia from 10 males and 10 females from top and control groups during Weeks 5 and 12 of treatment.

Haematology

The following parameters were measured on whole blood taken into tubes containing EDTA:

Red cell count (RBC)
White cell count (WBC)
Packed cell volume (PCV)

Haemoglobin concentration (Hb)
Methaemoglobin concentration
Differential white cell count
Reticulocyte count

Clotting time was assessed using the Hepato Quick test on samples obtained by tail snipping.

Clinical Chemistry

The following parameters were measured on plasma samples obtained from whole blood taken into tubes containing heparin.

Aspartate aminotransferase (GOT, AST)
Alanine aminotransferase (GPT, ALT)
Alkaline phosphatase (AP)
Lactate dehydrogenase (LDH)
Blood urea nitrogen (BUN)
Glucose
Albumin
Sodium
Potassium
Protein

Urinalysis

Collections of individual urine samples were made over a 4 h period of food and water deprivation during Weeks 5 and 12 of dosing, on the same animals from which blood was taken.

The following measurements were made:

Glucose
Blood
Volume
Protein
Ketones
Bile pigments
Colour
pH
Specific gravity
Microscopic examination of the spun deposit.

Pharmacokinetic Sampling

Blood samples were obtained at post mortem by the removal of at least 3 ml whole blood via the caudal vena cava into heparinised tubes. Samples were taken from 5 male and 5

female animals selected at random from each group. These samples were centrifuged and the plasma deep frozen and stored at IRI.

Terminal Studies

All animals which died or were sacrificed were necropsied. The gross dissection and necropsy was performed under the supervision of a pathologist. The necropsy is defined as external examination including body orifices, weighing of the following tissues:

Brain
Heart
Kidney
Ovaries
Liver
Lungs
Testes
Adrenals
Spleen

and examination and fixation of the following tissues:

Brain
Spinal cord
Peripheral nerve (sciatic)
Eyes
Pituitary
Thyroid
Parathyroid
Salivary glands (submaxillary)
Heart
Lungs
Spleen
Liver
Pancreas
Adrenals
Lymph nodes (mesenteric
cervical
submaxillary
bronchial)
Kidneys
Bladder
Testes (plus epididymides)
Prostate
Ovaries (minus fallopian tubes)
Uterus
Fallopian tubes
Stomach

Small intestine (duodenum
jejunum
ileum)
Large intestine (caecum
colon
rectum)
Skeletal mucle (thigh)
Skin (abdominal)
Mammary gland
Any gross lesions e.g. tissue masses, suspected tumours (including surrounding normal tissue)
Sternum
Adipose tissue (perirenal)
Nasal tubinate
Trachea
Thymus (where pos ible)

Samples of the above tissues were taken from all animals and placed in 10% neutral buffered formalin (except eyes which were preserved in Davidson's fluid).

The lungs were fixed in their entirety by perfusion with 10% neutral buffered formalin.

The calvarium was removed and the dorsal-nasal bone removed for examination of nasal tubinates before fixation. Liver lobes were sliced and kidneys cut transversley, the cut surfaces were examined before fixation.

Multiple, representative portions of large or variable tissue masses including surrounding unaffected tissue were fixed. Femoral bone marrow smears were prepared from all animals at sacrifice, air dried and fixed in absolute methanol for at least 5 min.

Carcasses of animals were discarded immediately following autopsy and placing in fixative of all tissues listed above.

Processing of Fixed Tissues

The fixation time was no less than 48 h and not more than 12 weeks.

Tissues were trimmed to a maximum thickness of 0.3 cm for processing.

Multiple portions of tumours or masses were submitted if these were large or variable in appearance. Surrounding normal tissue was included.

Parenchymal organs, e.g. liver, were trimmed to allow the largest surface area possible for examination.

Mid-transverse sections through the entire cortex and medulla of each kidney were submitted.

Entire coronal (a transverse section parallel to the long axis of the body) sections of both right and left lungs including main-stem bronchi and bronchial lymph nodes were submitted.

Three cross sections of brain included:

a) frontal cortex and basal ganglia,
b) parietal and cortex and thalamus, and
c) cerebellum and pons

The spinal cord was sectioned in the thoraco-lumbar region.

Hollow organs were trimmed and blocked to allow a cross section slice from mucosa to serosa.

Tissues listed below were examined from the highest dose group and next lowest dose group and controls. Additionally liver and kidneys were identified as target organs in this preliminary analysis and were examined in all animals.

Tissues were cut at 4-6 µm thickness and stained with haematoxylin and eosin (H and E).

Except where otherwise indicated, the following tissues were examined histologically:

Brain (cerebellum
cerebrum
stem)
Spinal cord (thoraco-lumbar)
Peripheral nerve (sciatic)
Eyes
Pituitary
Thyroid
Parathyroid (if possible)
Salivary glands (submaxillary)
Heart
Lungs
Spleen
Liver
Pancreas
Adrenals

Lymph nodes (mesenteric
cerival
submaxillary
bronchial)
Kidneys
Bladder
Testes
Prostate
Ovaries
Uterus
Fallopian tubes (if possible)
Stomach (glandular and non-glandular)
Small intestine (duodenum
jejunum
ileum)
Large intestine (caecum
colon
rectum)
Skeletal muscle (thigh)
Skin (abdominal)
Mammary gland
Any gross lesions
Sternal marrow
Adipose tissue (perirenal)
Aorta
Nasal tubinate
Trachea
Thymus (where feasible)

Statistical Evaluation

Statistical evaluation of quantitative data was performed where it seem appropriate. Males were treated independently of females. The level of probability chosen as significant was $P<0.05$, but in any case the actual level is reported. For evaluation of mean differences a "two tail" distribution was used.

RESULTS

Dosing commenced:	15 December 1980
Duration of dosing:	13 Weeks
Date of termination:	16 March 1981

Mortality

There were only 3 premature decedents in the study as follows:

One male receiving 150 mg HMX/kg/day in Week 9 of dosing.

One control female which died at blood sampling during Week 13.

One female receiving 1500 mg HMX/kg/day in Week 1 of dosing.

Clinical Signs

There was a number of clinical signs seen during the study which were not thought to be dose related. These included areas of alopecia, red or black encrusted eyes and yellow or brown staining of the fur and were present only in a few animals from treated and control groups alike. No clinical signs were observed which could have been attributed to dosing with HMX.

Incidence of Palpable Masses

Only one animal developed palpable masses in the study: A male receiving 150 mg HMX/kg/day.

Body Weights

Group mean body weights are presented numerically in Table 1 and graphically in Figures 1 and 2.

Males

There was a dose related reduction in group mean body weight in rats receiving HMX from Day 4 onwards. Body weights were statistically different from controls ($P>0.05$ for Group 2 and $P>0.001$ for other treated groups) in the first 4 weeks of study. Thereafter significance reduced at lower dose levels until termination when significance levels were $P>0.05$ for Groups 3 and 4, $P<0.01$ for Group 5 and $P<0.001$ for Group 6. There was a variable degree of statistical significance in treated groups during the study although Group 6 had statistically significantly reduced mean body weight ($P>0.001$) at each week from the start of the study.

Body weight gains were 98, 94, 92, 89 and 85% of controls at the end of the study for Groups 2-6 respectively.

Females

A similar situation occurred in females as in males, also with body weights of females receiving 1500 mg HMX/kg/day having a statistically significantly reduced body weight ($P<0.001$) each week from the beginning of the study.

Body weight gains were 101, 73, 87, 89 and 70% of controls for Groups 2-6 respectively.

Food Consumption

Group mean food consumptions are presented in Table 2.

Food consumption was markedly reduced in Week 1 of study in both sexes of all groups receiving HMX, the food consumed by Group 6 male and female rats being 67 and 57% of that consumed by the respective controls in that week. This difference reduced as the study progressed until Week 12, in the case of males, and Week 10, in the case of females, with the treated groups eating the same as or more than the controls.

Total food consumption over the 13 weeks of treatment was, however, reduced in a dose related trend compared to control groups.

Water Consumption

Visual assessment of water consumption revealed no intergroup differences.

Ophthalmic Examination

(i) Observations before dosing; These were limited to occasional pitting, scarring or opacity of the cornea. Such abnormalities are typical of laboratory rats at this developmental stage.

(ii) Results during Week 13 of treatment: No effects that could be attributed to dosing with HMX were observed.

Achieved Dosage

Achieved dosages are presented in Table 3.

The mean achieved dosage over the 13 weeks of treatment for each group receiving HMX fell within 3% of nominal. Palatability effects meant that significant variations from nominal values occurred in the first 3 weeks of the study (up to 30% above nominal).

Analysis of HMX Concentrations in Formulated Diet

Results are presented in Table 4.

Apart from minor discrepancies most found levels in diet correlated well with theoretical values. There were, however, 2 exceptions. Firstly in Group 6♀ diet mixed on 15 December 1980, which was required to contain 12577 ppm HMX and was found to contain 4997 ppm HMX. Analysis of the archive sample revealed a concentration of 4386 ppm HMX. Because all the records concerned are in order this discrepancy was not readily explicable. Analysis of Groups 2 and 3♀ diets sampled on 29 December 1980 showed that there was a distinct possibility of the 2 diets having been interchanged, although, because again records are in order, it is not possible to state where this interchange took place.

Laboratory Investigations

Laboratory investigations were undertaken on blood and urine samples taken from 10 males and 10 females in high and control dose groups during Weeks 5 and 12 of treatment.

Results for haematology are summarised in Tables 5 and 6 while individual values are presented in Appendices 3 and 4.

Results for clinical chemistry are summarised in Tables 7 and 8 while individual values are presented in Appendices 5 and 6.

Results of urinalysis are summarised in Tables 9 and 10 while individual values are presented in Appendices 7 and 8.

Haematology

(i) Results during Week 5 of dosing (Table 5, Appendix 3). Significant reductions in haemoglobin (Hb) levels and packed cell volume (PCV) ($P<0.001$) in males and females receiving 4000 and 1500 mg HMX/kg/day respectively were seen. Other parameters fell within normal ranges except for isolated cases.

(ii) Results during Week 12 of dosing (Table 6, Appendix 4). Significant reductions were seen in Hb, PCV and red blood cell (RBC) levels (P<0.01) in females receiving the high dose level of HMX, with corresponding reductions, though not significant, in the same parameters in males. Slight rises in methaemoglobin in both males and females receiving high dose of HMX were seen, significant (P<0.05) in males only. Female white blood cell (WBC) count was significantly raised (P<0.05) probably reflecting significant increases (P<0.05) in neutrophils.

Other parameters fell within normal ranges except for isolated cases.

Clinical Chemistry

(i) Results during Week 5 of dosing (Table 7, Appendix 5). There were increased alkaline phosphatase levels in males and a marginal increase in females (P<0.01 in males only) receiving 4000 or 1500 mg HMX/kg/day. There was also a reduced ALT level in males receiving 4000 mg HMX/kg/day (P<0.01). A significant increase was also seen in BUN levels of females receiving 1500 mg HMX/kg/day. Albumin levels were also increased in males receiving 4000 mg HMX/kg/day (P<0.001). Except for isolated cases other parameters were considered to fall within normal reference ranges.

(ii) Results during Week 12 of dosing (Table 8, Appendix 6). Significant increases were seen in AP levels in males (P<0.001) and females (P<0.05) receiving the top dose level of HMX and also in albumin levels in females (P<0.001). The male control value for AP was rather lower than normally anticipated for animals of this age and thus the results should be interpreted with caution. Total protein levels of females receiving 1500 mg HMX/kg/day also showed a slight increase (P<0.05) in line with the raised albumin levels. BUN levels were also raised significantly (P<0.001) in females receiving 1500 mg HMX/kg/day. Other parameters were considered to be within normal ranges except for isolated cases.

Urinalysis

(i) Results during Week 5 of dosing (Table 9, Appendix 7). Females rats receiving 1500 mg HMX/kg/day showed a reduced pH and specific gravity (SG) with a corresponding increase in urinary volume. Males did not show this trend. Other parameters were considered to fall within normal ranges.

(ii) Results during Week 12 of dosing (Table 10, Appendix 8). Female rats receiving 1500 mg HMX/kg/day showed a reduced pH and SG with a corresponding increase in volume. In addition to this effect fern-like crystals were noted in urine of males and females receiving 4000 or 1500 mg HMX/kg/day but not in controls.

Terminal Studies

Gross and Histopathological Findings

Findings for individual animals are presented in Appendix 9.

No macroscopic lesions were observed which could be attributed to dosing with HMX. There were a number of lesions found on histopathological examination of the 2 highest dose and control groups but these were consistent with the age and strain of rats.

There were, however 2 lesions found which exhibited a dose related trend. These were found in liver and kidneys which were recognised as target organs and histopathologically examined in all other animals (see below).

Toxic changes in the liver were characterised by enlarged cells, mainly in centrilobular areas, with large, pale nuclei and dark, granular, eosinophilic cytoplasm. In some areas there was dilation of the sinusoids and small foci of necrosis.

This liver effect was most marked in males, all males receiving 450 or 4000 and 90% of males receiving 1350 mg HMX/kg/day exhibiting the condition.

Only one female receiving 270 mg HMX/kg/day showed the effect.

Tubular changes in kidneys were seen mostly in females receiving the higher dose levels of HMX and were characterised by focal atrophy and dilation of the tubules. Males also exhibited this condition but to a considerably lesser extent and one female control rat also showed this change.

	Toxic Liver and Tubular Kidney Changes					
Group	1	2	3	4	5	6
Males						
Dose Level (mg/kg/day)	0	50	150	450	1350	4000
No. Examined	20	20	19	20	20	20
Toxic Liver Change	0	0	2(11)	20(100)	18(90)	20(100)
Tubular Kidney Change	3(15)	0	0	0	2(10)	1(5)
Females						
Dose Level (mg/kg/day)	0	50	115	270	620	1500
No. Examined	20	20	20	20	20	19
Toxic Liver Change	0	0	0	1(5)	0	0
Tubular Kidney Change	1(5)	0	1(5)	4(20)	13(65)	10(50)

(Figures in brackets are % figures)

Organ Weights

Group mean absolute and relative organ weights are presented in Tables 11 and 12 while individual absolute values are presented in Appendix 10.

Males

Body weights of males were reduced in a dose related trend being statistically significant in males receiving 1350 ($P<0.05$) or 4000 mg HMX/kg/day ($P<0.001$) at termination. Consequently a number of organs showed changes in absolute weights not seen relative to body weight. Absolute adrenal weights in all treated groups were significantly reduced ($P<0.001$) while relative adrenal weights showed a reduction but at variable and dose independent significance levels.

There was a dose related increase in relative brain weight, significant in animals receiving 1350 ($P<0.01$) or 4000 ($P<0.001$) mg HMX/kg/day; thus increase was not shown by absolute values.

Absolute heart and kidney weights were also reduced significantly at the 2 highest dose levels but these changes were not seen in relative weights.

There was a dose related reduction in absolute spleen weight, significant in groups receiving 150, 450, 1350 or 4000 mg HMX/kg/day ($P<0.001$). This trend was also seen in relative spleen weights, the weights being significantly different from controls in animals receiving 50 ($P<0.05$), 150, 450 ($P<0.01$), 1350 or 4000 ($P<0.001$) mg HMX/kg/day.

Testes showed a dose related reduction, significant in all treated groups ($P<0.001$), compared to control animals. This trend was not seen relative to body weight.

Females

Body weights were significantly reduced in females receiving 1500 mg HMX/kg/day ($P<0.001$) and so once more changes were seen in absolute weights which were not reflected relative to body weight. Relative adrenal weights in all treated groups were significantly different from controls but at variable levels of significance, this trend was also seen in absolute weights but significance was very variable.

Absolute brain weights were significantly increased in females receiving 115, 270, 620 ($P<0.01$) or 1500 ($P<0.05$) mg HMX/kg/day. Relative brain weights also showed a dose related increase in rats receiving 270 ($P<0.01$), 620 or 1500 ($P<0.001$) mg HMX/kg/day. Absolute heart weights showed a reduction, significant in rats receiving 620 ($P<0.05$) or 1500 ($P<0.001$) mg HMX/kg/day; this was not seen in relative weights. Absolute kidney weights were significantly increased in female rats receiving 115 and reduced in females receiving 1500 mg HMX/kg/day both ($P<0.05$) while relative kidney weights showed a dose related increase in females receiving 115 ($P<0.05$), 270 ($P<0.01$), 620 or 1500 ($P<0.001$) mg HMX/kg/day. Relative liver weights were increased in females receiving 115 ($P<0.05$), 620 or 1500 mg HMX/kg/day ($P<0.01$) this was not seen in absolute weights.

Lungs showed a significant increase in weight in rats receiving 1500 mg HMX/kg/day ($P<0.05$) relative to body weight but not in absolute terms.

Females receiving 1500 mg HMX/kg/day showed reduction in absolute spleen ($P<0.05$) and ovary ($P<0.001$) weights not seen when expressed relative to body weight.

No other dose related effects were seen in any other organs.

DISCUSSION AND CONCLUSIONS

There was a treatment related reduction in growth rate in male and female rats receiving HMX but the significance reduced after the first 4 weeks of the study. The high statistical significances at the beginning of the study were probably due to unpalatability of the high concentrations of HMX in the diet. This theory is backed up by the food consumption figures which were very low at the start of treatment but improved throughout the study. Total food consumed was reduced in a dose related fashion mainly because of the low intake in the first 4 weeks of treatment.

Haematological examination revealed evidence of reductions in Hb, PCV and possibly RBC. The consistency of the observations suggests the effects were real and probably attributable to HMX. The alterations were not, however, very great and are unlikely to be of much biological significance per se. The increase in methaemoglobin at Week 12 could be attributable to HMX since its nitrate content could lead to methaemoglobin formation in broadly the same manner as sodium nitrate. The changes in leucocyte counts were neither large nor consistent and since rapid changes in these parameters can occur for a wide variety of reasons the evidence that they were the result of treatment of rats with HMX is rather tenuous.

Clinical chemical observations showed an increase in alkaline phosphatase activity. This could have been associated with the liver changes identified histopathologically although the liver changes in females were much less apparent than in males while generally speaking AP activity showed less evidence of a difference between the sexes.

The increase in BUN in female rats was very slight but could be consistent with the presence of renal damage. There was little evidence of either change in male rats. Increases in total protein and albumin occurred sufficiently consistently to suggest a relationship to dosing with HMX. While it is possible to hypothesise a relationship with renal and hepatic changes, there are insufficient data to speculate constructively on the nature of that link.

The increases in urine volume, lower pH and lower SG found on urinalysis of the females might be anticipated when the histopathological changes are taken into consideration. Neither effect occurred in male rats suggesting a difference between the sexes in response to dosing with HMX.

When significant body weight changes occur it is extremely difficult to interpret organ weight changes (either absolute or relative). The majority of changes reflected to some degree the body weight trends, and thus the significance of the minor changes seen in spleen, adrenal, testes and ovary weights, is questionable. However, female brain weights were increased and while a change in proportionate body weight is not normally expected (brain weight tends to be related to age rather than body weight) the rise can be interpreted either as an effect of the compound or an effect of a lower than normal control group brain weight. Regrettably there are insufficient background data in this laboratory to support or refute the latter contention.

Histopathological evaluation indicated hepatic changes in male rats and renal changes in female rats. These seemed to correlate with AP activity increases (though both males and females displayed this) and the urine changes in female rats (increased volume, lower pH and lower SG). There was no evidence of toxic liver change in male rats at 50 mg/kg/day or of renal effects in the female rats at 115 mg/kg/day or of renal effects in the female rats at 115 mg/kg/day or less. The different target organs in the 2 sexes could be due to a difference in metabolism of HMX between them.

In conclusion, dosing of HMX to male and female F344 rats for 90 days via the diet results in a slight reduction in red cell parameters and possible methaemoglobinaemia. The most significant changes were toxic liver damage in male rats at doses of 150 mg HMX/kg/day and above and renal tubular damage in female rats at 270 mg HMX/kg/day and above. Other effects were of doubtful significance or most likely to be secondary to the hepatic and renal damage.

TABLE 1

HMX: 13 Week Toxicity Study in Rats
Body Weights: Group Mean Values (g)

Treatment Period (weeks)	Dose Group/Dose Level (mg/kg/day)											
	1♂	2♂	3♂	4♂	5♂	6♂	1♀	2♀	3♀	4♀	5♀	6♀
	0	50	150	450	1350	4000	0	50	115	270	620	1500
0	110^{20}	109^{20}	108^{20}	111^{20}	111^{20}	110^{20}	96^{20}	97^{20}	98^{20}	100^{20}	97^{20}	97^{20}
1 day 4	128	123	119	117	112	102	105	99	92	90	85	82
1	141	134*	130***	130***	124***	114***	112	106**	102***	102***	95***	89^{19}***
2 day 4	157	148	143	143	137	127	122	115	110	109	104	98
2	167	158*	152***	152***	146***	137***	125	120*	115***	113***	109***	103***
3 day 4	179	166	161	161	154	146	129	125	120	118	115	109
3	186	171***	164***	164***	156***	149***	131	126*	122***	121***	115***	111***
4 day 4	195	178	170	172	164	155	135	128	12[illegible]	122	117	111
4	202	182***	176***	178***	170***	161***	138	132*	127***	124***	120***	116***
5	214	201*	194***	193***	185***	176***	143	138	134**	131***	127***	118***
6	227	217	210**	208**	200***	193***	150	145	141**	137***	133***	125***
7	240	231	223**	221**	214***	207***	153	150	147*	142***	139***	127***
8	252	243	234**	233**	227***	221***	157	153	151	145**	142***	132***
9	262	254	242^{19}**	243**	237***	232***	160	158	156	152*	148***	137***
10	271	262	251**	251**	247***	213***	165	162	160	154**	154**	143***
11	276	267	258**	256**	253***	249***	165	165	163	157*	156**	144***
12	278	279	269	268	264*	254***	165	170	169	161	160	145***
13	283	279	271*	270*	265**	257***	166^{19}	168	166	161	159	146***
Total Weight Gain (g) Weeks 0-13	173	170	163	159	154	147	70	71	~~51~~ 68	61	62	49
% of Controls	-	98	94	92	89	85	-	101	~~73~~ 97	87	89	70

* Significantly different from control, P<0.05
** Significantly different from control, P<0.01
*** Significantly different from control, P<0.001

Numbers in superscript denote survivors at end of week in question

TABLE 2

HMX: 13 Week Toxicity Study in Rats
Food Consumption: Group Mean Values (g/Rat/Week)

Treatment Period (weeks)	Dose Group/Dose Level (mg/kg/day)											
	1♂	2♂	3♂	4♂	5♂	6♂	1♀	2♀	3♀	4♀	5♀	6♀
	0	50	150	450	1350	4000	0	50	115	270	620	1500
1	118^{20}	110^{20}	104^{20}	100^{20}	93^{20}	79^{20}	98^{20}	87^{20}	75^{20}	69^{20}	62^{20}	56^{19}
2	127	121	121	118	115	111	100	92	90	84	84	87
3	131	122	117	117	108	112	102	95	90	91	88	84
4	127	119	113	109	111	107	91	85	85	79	75	73
5	128	121	118	118	115	113	93	94	91	89	89	80
6	125	119	115	117	112	116	91	92	87	83	82	80
7	125	127	118	119	116	122	91	88	89	82	85	76
8	132	122	118	119	119	121	90	89	90	84	85	80
9	131	129	122^{19}	124	124	128	94	96	96	91	93	80
10	131	132	127	127	128	131	91	93	94	91	92	83
11	138	134	129	130	130	136	94	99	101	97	95	84
12	132	135	130	134	133	131	85	97	98	91	88	83
13	127	129	125	125	136	130	89^{19}	93	96	93	92	84
Total Eaten (g) Weeks 1-13	1672	1620	1557	1557	1540	1537	1209	1200	1182	1124	1110	1030
% of Controls	-	97	93	93	92	92	-	99	98	93	92	85

Numbers in superscript denote survivors at end of week in question

TABLE 3

HMX: 13 Week Toxicity Study in Rats
Achieved Dosage: Group Mean Values (mg/kg/day)

Treatment Period (weeks)	Dose Group/Dose Level (mg/kg/day)										
		2♂	3♂	4♂	5♂	6♂		2♀	3♀	4♀	5♀	6♀
		50	150	450	1350	4000		50	115	270	620	1500
1		50	157	463	1304	3360		51	93	226	472	1082
2		53	171	518	1570	4756		50	128	326	768	1963
3		51	147	456	1310	4084		52	115	281	636	1526
4		48	141	408	1292	3775		45	108	239	538	1273
5		50	151	481	1398	4093		54	120	295	707	1670
6		49	148	449	1356	4097		49	112	253	575	1444
7		53	154	454	1399	4291		48	114	258	625	1433
8		50	153	450	1403	4138		50	119	276	638	1534
9		53	158	474	1446	4261		54	123	292	682	1494
10		52	159	475	1445	4241		50	118	284	644	1555
11		52	158	478	1432	4322		53	124	294	658	1592
12		50	152	462	1386	3960		49	116	240	586	1644
13		48	147	425	1389	3939		49	113	289	631	1445
Mean Achieved Dosage Weeks 1-13		51.0	153.5	461.0	1394.6	4101.3		50.3	115.6	273 3	627.7	1511.9
% of Nominal		102	102	102	103	103		101	101	101	101	101

TABLE 4

HMX: 13 Week Toxicity Study in Rats
Analysis of HMX in Dietary Formulations

Date	Group	♂ Concentration (ppm) Nominal	♂ Concentration (ppm) Found	♂ Deviation from Nominal (%)	♀ Concentration (ppm) Nominal	♀ Concentration (ppm) Found	♀ Deviation from Nominal (%)
15 December 1980 Week 1	2	420	409	2.6	415	438	5.5
	3	1250	1274	1.9	864	877	1.5
	4	3930	3936	0.2	2305	2309	0.2
	5	11520	11293	2.0	5151	5019	2.6
	6	33600	32925	2.4	12577	4997	*
22 December 1980 Week 2	2	450	426	5.3	431	408	5.3
	3	1400	1419	1.4	1080	1149	[illegible].4
	4	4345	4357	0.3	2916	2795	4.2
	5	12921	13166	1.9	6526	6721	3.0
	6	37538	36915	1.7	15833	16580	4.7
29 December 1980 Week 3	2	480	482	0.4	467	964	*
	3	1389	1494	7.6	1062	540	*
	4	4288	4655	8.6	2527	2776	9.9
	5	12764	12959	1.5	5654	5929	4.9
	6	36500	34104	6.6	13065	13817	5.8
5 January 1981 Week 4	2	506	549	8.5	474	533	12.4
	3	1482	1449	2.2	1114	1156	3.8
	4	4500	4332	0.7	2614	2487	4.8
	5	13351	13775	3.3	5850	6020	2.9
	6	38000	36757	3.3	13893	13607	2.1
26 January 1981 Week 7	2	659	607	7.9	561	598	6.6
	3	1982	1811	8.6	1294	1272	1.7
	4	5732	5308	7.4	3076	3056	2.7
	5	17441	16966	2.7	7027	7011	0.2
	6	49325	46616	5.5	16565	15033	9.2
16 February 1981 Week 10	2	715	698	2.4	606	590	2.6
	3	2158	2115	2.0	1377	1345	2.3
	4	6448	6268	2.7	3348	3297	1.5
	5	19105	16582	13.2	7372	7295	1.0
	6	53864	52468	2.6	18289	17463	4.5
9 March 1981 Week 13	2	729	716	1.8	618	661	7.0
	3	2214	2157	2.6	1377	1350	2.0
	4	6385	6437	0.8	3499	3553	1.5
	5	18942	18744	1.0	7678	7617	0.8
	6	54105	55405	2.4	17520	17730	1.2

* = See results section

TABLE 5

HMX: 13 Week Toxicity Study in Rats
Haematology: During Week 5
Group Mean Values: Males

Dose mg/kg/day	Tests Units	Hb g/100 ml	RBC x 10^{12}/l	PCV %	MCH pg	MCV fl	MCHC g/dl	Reti %	WBC x 10^9/l	Neut x 10^9/l	Lymp x 10^9/l	Mono x 10^9/l	Eos x 10^9/l	Hepa sec	Met %
Con	Number	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Mean	16.4	7.3	47	23	65	35	3.6	7.1	0.8	6.3	0.0	0.1	31.7	0.8
	S.D.	0.4	0.3	1	1	3	1	1.2	0.9	0.3	0.8	0.0	0.1	3.0	0.4
4000	Number	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Mean	15.6	7.3	45	22	62	35	3.5	7.2	1.2	6.0	0.0	0.0	32.8	1.0
	S.D.	0.4	0.4	1	1	3	1	1.4	0.8	0.6	1.0	0.0	0.0	3.6	0.6
	Sig	***		***	*	*									

* Significantly different from control, P<0.05
*** Significantly different from control, P<0.001

TABLE 5 (continued)

Females

Dose mg/kg/day	Tests Units	Hb g/100 ml	RBC x 10^{12}/l	PCV %	MCH pg	MCV fl	MCHC g/dl	Reti %	WBC x 10^9/l	Neut x 10^9/l	Lymp x 10^9/l	Mono x 10^9/l	Eos x 10^9/l	Hepa sec	Met %
Con	Number	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Mean	16.5	7.3	48	23	66	34	2.0	6.7	0.7	6.0	0.0	0..	29.8	1.0
	S.D.	0.3	0.4	1	1	3	1	1.4	0.7	0.3	0.9	0.0	0.1	2.2	0.4
1500	Number	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Mean	15.6	7.1	45	22	64	34	2.3	6.3	0.9	5.4	0.0	0.0	30.1	1.2
	S.D.	0.6	0.3	2	1	2	1	0.9	0.5	0.4	0.3	0.0	0.0	4.0	0.9
	Sig	***		***							*				

* Significantly different from control, P<0.05

** Significantly different from control, P<0.001

TABLE 6

HMX: 13 Week Toxicity Study in Rats
Haematology: During Week 12
Group Mean Values: Males

Dose mg/kg/day	Tests Units	Hb g/100 ml	RBC x 10^{12}/l	PCV %	MCH pg	MCV fl	MCHC g/dl	Reti %	WBC x 10^{9}/l	Neut x 10^{9}/l	Lymp x 10^{9}/l	Mono x 10^{9}/l	Eos x 10^{9}/l	Hepa sec	Met %
Con	Number	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Mean	15.6	7.6	47	21	62	34	4.1	9.5	1.4	8.0	0.1	0.2	32.4	1.5
	S.D.	0.8	0.5	2	1	3	1	2.1	2.3	0.4	2.2	0.1	0.3	2.9	1.0
4000	Number	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Mean	15.2	7.3	45	21	62	34	3.8	9.3	1.0	8.2	0.1	0.0	32.8	2.3
	S.D.	0.4	0.4	1	1	4	1	1.8	1.4	0.7	1.0	0.1	0.0	3.2	0.8
	Sig														*

* Significantly different from control, $P<0.05$

TABLE 6 (continued)

Females

Dose mg/kg/day	Tests Units	Hb g/100 ml	RBC x 10^{12}/l	PCV %	MCH pg	MCV fl	MCHC g/dl	Reti %	WBC x 10^9/l	Neut x 10^9/l	Lymp x 10^9/l	Mono x 10^9/l	Eos x 10^9/l	Hepa sec	Met %
Con	Number	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Mean	15.9	7.3	46	22	64	34	2.9	6.4	0.6	5.7	0.0	0.0	28.7	1.5
	S.D.	0.8	0.3	2	1	1	1	1.7	1.6	0.3	1.5	0.0	0.1	2.6	0.7
1500	Number	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Mean	14.8	6.7	44	22	65	34	3.4	8.1	1.0	7.0	0.0	0.1	30.7	2.4
	S.D.	0.4	0.3	1	1	2	1	1.6	1.8	0.4	1.7	0.0	0.0	2.9	1.6
	Sig	**	***	**		*			*	*					

* Significantly different from control, P<0.05

** Significantly different from control, P<0.01

*** Significantly different from control, P<0.001

TABLE 7

HMX: 13 Week Toxicity Study in Rats
Clinical Chemistry: During Week 5
Group Mean Values: Males

Dose mg/kg/day	Tests Units	BUN mmol/l	Glu mmol/l	AST IU/l	ALT IU/l	AP IU/l	LDH IU/l	Na mmol/l	K mmol/l	TP g/l	Alb g/l
Con	Number	10	10	10	10	10	10	10	10	10	10
	Mean	6.4	8.14	83	72	712	357	146	4.2	62	37
	S.D.	0.8	0.78	5	7	85	85	2	0.4	2	1
4000	Number	10	10	10	10	10	10	10	10	10	10
	Mean	6.5	7.72	78	63	840	417	147	4.1	63	39
	S.D.	1.0	0.71	7	6	64	164	3	0.3	2	1
	Sig				**	**					***

** Significantly different from control, P<0.01

TABLE 7 (continued)

Females

Dose mg/kg/day	Tests Units	BUN mmol/l	Glu mmol/l	AST IU/l	ALT IU/l	AP IU/l	LDH IU/l	Na mmol/l	K mmol/l	TP g/l	Alb g/l
Con	Number	10	10	10	10	10	10	10	10	10	10
	Mean	6.3	7.97	77	56	635	261	145	4.3	59	34
	S.D.	0.8	0.58	8	7	52	46	2	0.3	2	2
1500	Number	10	10	10	10	10	10	10	10	10	10
	Mean	7.2	7.98	82	59	676	254	146	4.3	62	36
	S.D.	1.0	0.61	5	5	73	60	2	0.3	2	1
	Sig	*								*	*

* Significantly different from control, P<0.05

TABLE 8

HMX: 13 Week Toxicity Study in Rats
Clinical Chemistry: During Week 12
Group Mean Values: Males

Dose mg/kg/day	Tests Units	BUN mmol/l	Glu mmol/l	AST IU/l	ALT IU/l	AP IU/l	LDH IU/l	Na mmol/l	K mmol/l	TP g/l	Alb g/l
Con	Number	10	10	10	10	10	10	10	10	10	10
	Mean	6.4	8.32	122	65	213	278	145	4.3	70	41
	S.D.	0.4	1.36	27	19	18	65	3	0.3	2	1
4000	Number	10	10	10	10	10	10	10	10	10	10
	Mean	6.7	7.73	104	48	415	286	147	4.0	69	42
	S.D.	0.9	0.52	21	23	102	119	4	0.3	2	1
	Sig					***			*		*

* Significantly different from control, P<0.05
*** Significantly different from control, P<0.001

TABLE 8 (continued)

Females

Dose mg/kg/day	Tests Units	BUN mmol/l	Glu mmol/l	AST IU/l	ALT IU/l	AP IU/l	LDH IU/l	Na mmol/l	K mmol/l	TP g/l	Alb g/l
Con	Number	10	10	10	10	10	10	10	10	10	10
	Mean	6.5	8.25	90	62	467	470	144	4.6	61	37
	S.D.	0.8	1.19	23	34	80	126	1	0.4	2	1
1500	Number	10	10	10	10	10	10	10	10	10	10
	Mean	7.7	7.86	84	57	553	417	146	4.8	64	40
	S.D.	0.5	0.96	20	11	61	174	2	0.6	1	1
	Sig	***				*		**		***	***

* Significantly different from control, P<0.05

** Significantly different from control, P<0.01

*** Significantly different from control, P<0.001

TABLE 9

HMX: 13 Week Toxicity Study in Rats
Urinalysis: During Week 5
Group Mean Values

Dose (mg/kg/day)		pH	SG	Vol (ml)
Control ♂	Mean	8.8	1.054	0.8
	S.D.	0.3	0.024	0.3
4000 ♂	Mean	8.6	1.060	0.7
	S.D.	0.6	0.015	0.3
Control ♀	Mean	8.7[9]	1.061[9]	0.5[9]
	S.D.	0.4	0.016	0.0
1500 ♀	Mean	7.3	1.038	1.5
	S.D.	1.4	0.023	0.9

All mean values derived from 10 individual values unless otherwise indicated by superscript

TABLE 10

HMX: 13 Week Toxicity Study in Rats
Urinalysis: During Week 12
Group Mean Values

Dose (mg/kg/day)		pH	SG	Vol (ml)
Control ♂	Mean	8.7	1.049	1.0
	S.D.	0.7	0.016	0.5
4000 ♂	Mean	8.1	1.049	1.0
	S.D.	0.7	0.015	0.4
Control ♀	Mean	8.1[9]	1.051[8]	0.6[8]
	S.D.	1.1	0.018	0.2
1500 ♀	Mean	6.6	1.019	2.7
	S.D.	0.5	0.004	1.1

All mean values derived from 10 individual values unless otherwise indicated by superscript

TABLE 11

HMX: 13 Week Toxicity Study in Rats
Absolute Organ Weights (g)
Group Mean Values: Males

Dose mg/kg/day/ Sex		Body Weight	Adrenals	Brain	Heart	Kidneys	Liver	Lungs	Spleen	Testes
0♂	Mean	281.2	0.0224[37]	1.863	0.892	0.965[40]	10.653	1.323	0.638	2.018[40]
	S.D.	22.5	0.0033	0.040	0.066	0.067	1.511	0.123	0.059	0.139
50♂	Mean	281.5	0.0191***[40]	1.871	0.885	1.001[40]	11.074[19]	1.259	0.607	1.943**[40]
	S.D.	16.7	0.0032	0.061	0.060	0.071	1.205	0.115	0.033	0.094
150♂	Mean	272.9[19]	0.0190***[38]	1.874[19]	0.856[19]	0.936[38]	10.690[19]	1.258[19]	0.579**[19]	1.916***[38]
	S.D.	17.3	0.0028	0.044	0.072	0.072	1.402	0.116	0.044	0.107
450♂	Mean	270.9	0.0199***[39]	1.865	0.860	0.935[40]	10.323	1.327	0.572***	1.904***[39]
	S.D.	22.0	0.0036	0.059	0.077	0.085	1.137	0.132	0.053	0.102
1350♂	Mean	266.4*	0.0187***[40]	1.879	0.844*	0.910***[40]	10.082	1.287	0.554***	1.878***[40]
	S.D.	22.3	0.0031	0.059	0.065	0.077	1.177	0.131	0.057	0.152
4000♂	Mean	257.1***	0.0178***[39]	1.875	0.817***	0.883***[40]	9.969	1.271	0.536***	1.891***[40]
	S.D.	13.1	0.0026	0.042	0.055	0.050	1.001	0.175	0.047	0.086

* Significantly different from control, P<0.05
** Significantly different from control, P<0.01
*** Significantly different from control, P<0.001

Means calculated from 20 individual values unless otherwise indicated by superscript

TABLE 11 (continued)

Females

Dose mg/kg/day/ Sex		Body Weight	Adrenals	Brain	Heart	Kidneys	Liver	Lungs	Spleen	Ovaries
0♀	Mean	165.8[19]	0.0217[36]	1.704[19]	0.592[19]	0.625[38]	5.541[19]	0.946[19]	0.411[19]	0.0273[38]
	S.D.	11.2	0.0034	0.052	0.042	0.045	0.811	0.143	0.039	0.0054
50♀	Mean	166.7	0.0250[39] **	1.739	0.604	0.645[40]	5.717	0.911	0.418	0.0286[40]
	S.D.	8.5	0.0044	0.103	0.043	0.043	0.521	0.065	0.040	0.0061
115♀	Mean	166.0	0.0264[40] ***	1.771 **	0.590	0.650[40] *	5.901	0.923	0.415[19]	0.0298[40]
	S.D.	8.6	0.0033	0.038	0.034	0.045	0.668	0.087	0.029	0.0067
270♀	Mean	160.8	0.0242[39] *	1.771[19] **	0.573	0.633[40]	5.646	0.969	0.411	0.0272[40]
	S.D.	13.0	0.0064	0.043	0.050	0.059	0.796	0.130	0.050	0.0067
620♀	Mean	159.0	0.0231[38]	1.760 **	0.558 *	0.639[40]	5.813	0.964	0.413	0.0279[40]
	S.D.	10.6	0.0060	0.055	0.046	0.053	0.748	0.118	0.041	0.0078
1500♀	Mean	146.1[19] ***	0.0217[36]	1.754[19] *	0.523[19] ***	0.601[38] *	5.330[19]	0.925[19]	0.375[19] *	0.0215[38] ***
	S.D.	13.2	0.0051	0.058	0.055	0.064	0.827	0.141	0.053	0.0062

* Significantly different from control, $P<0.05$

** Significantly different from control, $P<0.01$

*** Significantly different from control, $P<0.001$

Means calculated from 20 individual values unless otherwise indicated by superscript

TABLE 12

HMX: 13 Week Toxicity Study in Rats
Relative Organ Weights (% of Body Weight)
Group Mean Values: Males

Dose mg/kg/day/ Sex		Body Weight	Adrenals	Brain	Heart	Kidneys	Liver	Lungs	Spleen	Testes
0♂	Mean	281.2	0.00804[37]	0.666	0.318	0.344[40]	3.783	0.470	0.227	0.720[40]
	S.D.	22.5	0.00133	0.052	0.021	0.017	0.388	0.035	0.015	0.049
50♂	Mean	281.5	0.00677**[40]	0.666	0.316	0.356**[40]	3.936[19]	0.447	0.215*	0.692**[40]
	S.D.	16.7	0.00112	0.037	0.020	0.016	0.334	0.039	0.011	0.044
150♂	Mean	272.9[19]	0.00696***[38]	0.689[19]	0.315[19]	0.342[38]	3.710[19]	0.463[19]	0.213**[19]	0.704[38]
	S.D.	17.3	0.00096	0.038	0.020	0.017	0.363	0.039	0.012	0.039
450♂	Mean	270.9	0.00741*[39]	0.693	0.318	0.345[40]	3.809	0.490	0.211**	0.707[39]
	S.D.	22.0	0.00145	0.052	0.020	0.021	0.241	0.039	0.014	0.045
1350♂	Mean	266.4*	0.00704***[40]	0.710**	0.318	0.342[40]	3.784	0.484	0.209***	0.707[40]
	S.D.	22.3	0.00131	0.055	0.020	0.020	0.294	0.049	0.025	0.054
4000♂	Mean	257.1***	0.00697[39]	0.730***	0.318	0.344[40]	3.884	0.494	0.209***	0.737[40]
	S.D.	13.1	0.00116	0.032	0.017	0.016	0.411	0.064	0.010	0.034

* Significantly different from control, $P<0.05$
** Significantly different from control, $P<0.01$
*** Significantly different from control, $P<0.001$

Means calculated from 20 individual values unless otherwise indicated by superscript

TABLE 12 (continued)

Females

Dose mg/kg/day/ Sex		Body Weight	Adrenals	Brain	Heart	Kidneys	Liver	Lungs	Spleen	Ovaries
0♀	Mean	165.8[19]	0.0132[36]	1.032[19]	0.357[19]	0.378[38]	3.336[19]	0.5[illegible][19]	0.248[19]	0.0164[38]
	S.D.	11.2	0.0021	0.064	0.019	0.018	0.367	0.071	0.023	0.0034
50♀	Mean	166.7	0.0150**[39]	1.054	0.364	0.388[40]	3.441	0.547	0.251	0.0171[40]
	S.D.	8.5	0.0026	0.052	0.035	0.028	0.372	0.033	0.018	0.0034
115♀	Mean	166.0	0.0158***[40]	1.068	0.357	0.392*[40]	3.553*	0.557	0.248[19]	0.0180[40]
	S.D.	8.6	0.0018	0.053	0.018	0.020	0.331	0.050	0.017	0.0039
270♀	Mean	160.8	0.0149*[39]	1.108**[19]	0.358	0.394**[40]	3.508	0.605	0.255	0.0168[40]
	S.D.	13.0	0.0035	0.094	0.018	0.020	0.275	0.083	0.023	0.0039
620♀	Mean	159.0	0.0146*[36]	1.110***	0.351	0.402***[40]	3.650**	0.608	0.258	0.0175[40]
	S.D.	10.6	0.0037	0.067	0.022	0.030	0.327	0.067	0.017	0.0045
1500♀	Mean	146.1***[19]	0.0148*[36]	1.207***[19]	0.358[19]	0.411***[38]	3.636**[19]	0.628*[19]	0.256[19]	0.0147[38]
	S.D.	13.2	0.0032	0.086	0.025	0.028	0.348	0.097	0.020	0.0039

* Significantly different from control, P<0.05

** Significantly different from control, P<0.01

*** Significantly different from control, P<0.001

Means calculated from 20 individual values unless otherwise indicated by superscript

FIGURE 1

HMX: 13 Week Toxicity Study in Rats
Group Mean Body Weights (Males)

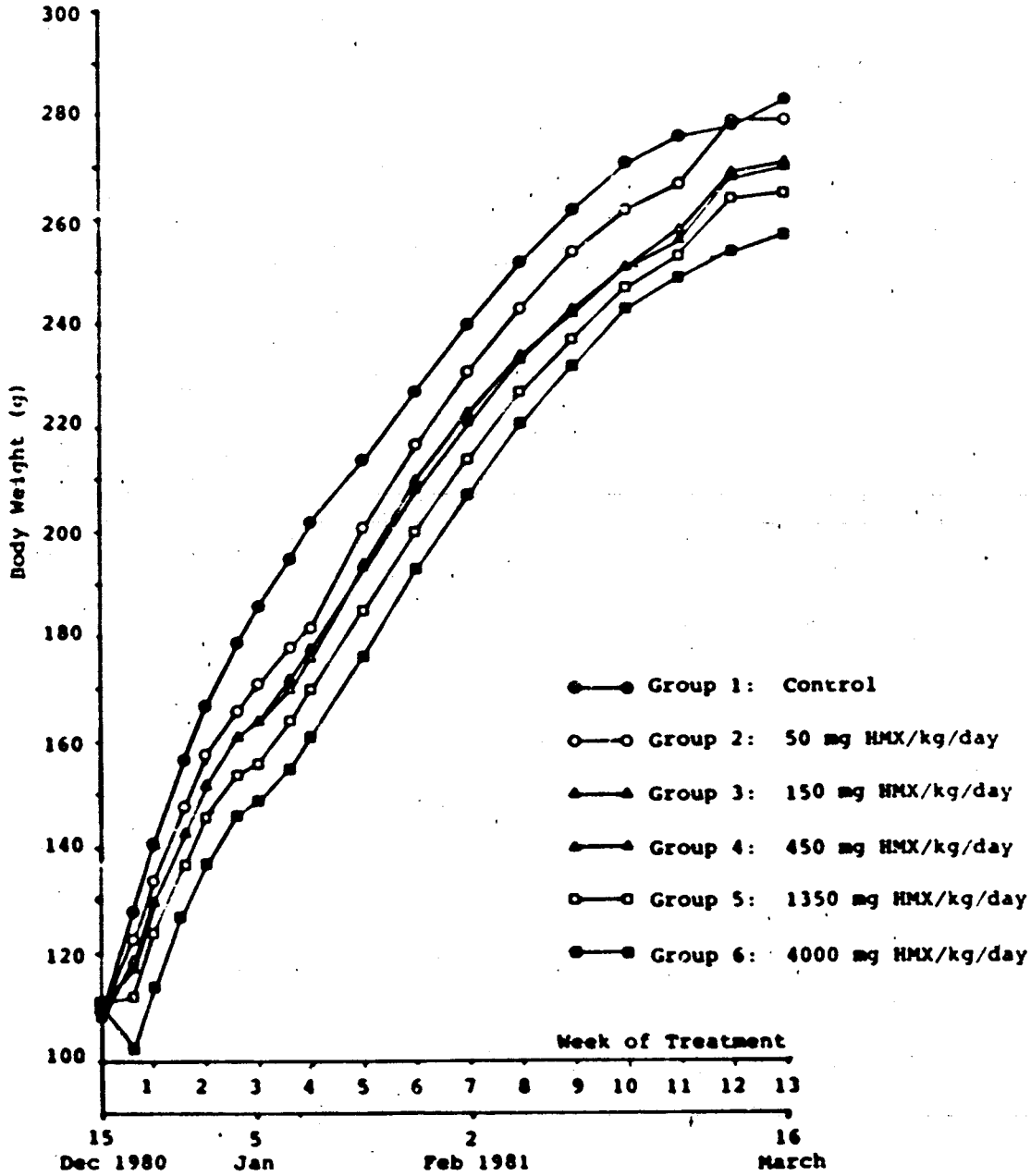
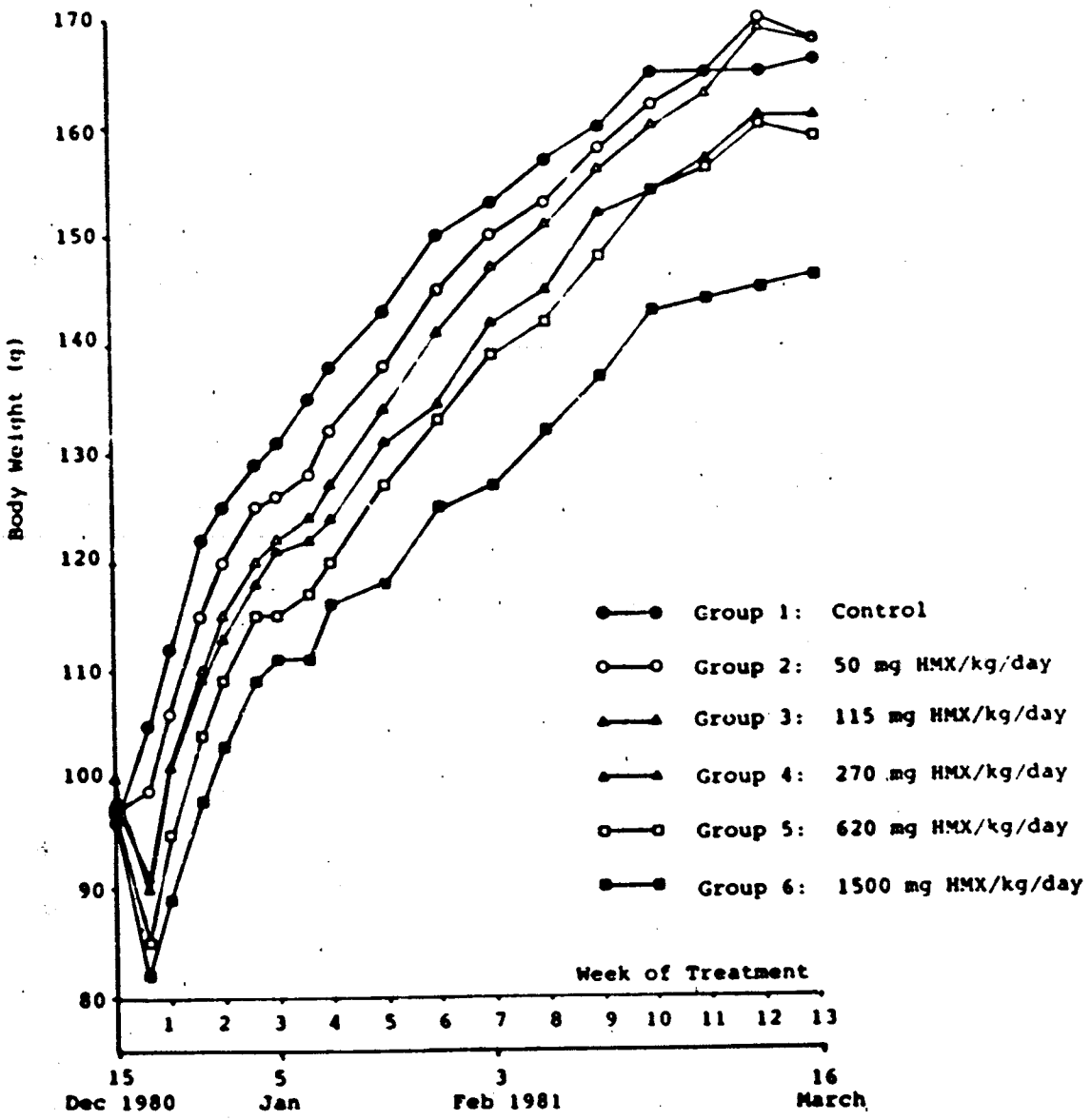


FIGURE 2

HMX: 13 Week Toxicity Study in Rats
Group Mean Body Weights (Females)



APPENDIX 1

Diet Analysis

B.P. NUTRITION (U.K.) LTD.
SPECIAL QUALITY CONTROL OF LABORATORY ANIMAL DIETS

RECEIVED 31 DEC 1980

CERTIFICATE OF ANALYSIS

PRODUCT: RAT & MOUSE NO. 1 (MODIFIED) EXPANDED FINE GROUND

BATCH NO: 1021 PREMIX BATCH NO: P120

DATE OF MANUFACTURE: 27TH NOVEMBER 1980

Nutrient	Found Analysis		Contaminant	Found Analysis		Limit of Detection	
Moisture	8.7	%	Fluorine	5.3	mg/kg	10.0	mg/kg
Crude Fat	3.4*	%	Nitrate as $NaNO_3$	<1.0	mg/kg	1.0	mg/kg
Crude Protein	15.4	%	Nitrite as $NaNO_2$	1.4	mg/kg	1.0	mg/kg
Crude Fibre	2.9	%	Lead	<1.0	mg/kg	1.0	mg/kg
Ash	4.6	%	Arsenic	0.11	mg/kg	0.2	mg/kg
Calcium	0.88	%	Cadmium	0.25	mg/kg	0.2	mg/kg
Phosphorus	0.61	%	Mercury	<0.01	mg/kg	0.01	mg/kg
Sodium	0.19	%	Selenium	0.13	mg/kg	0.02	mg/kg
Chlorine	0.51	%					
Potassium	0.92	%					
Magnesium	0.16	%	Total Aflatoxins	NONE DETECTED	ug/kg	1 each of B1,B2,G1,G2	ug/kg
Iron	173	mg/kg					
Copper	12	mg/kg					
Manganese	52	mg/kg					
Zinc	36	mg/kg	Total P.C.B.	NONE DETECTED	mg/kg	0.001	mg/kg
			Total D.D.T.	0.005	mg/kg	0.001	mg/kg
			Dieldrin	0.001	mg/kg	0.001	mg/kg
			Lindane	0.004	mg/kg	0.001	mg/kg
			Heptachlor	NONE DETECTED	mg/kg	0.001	mg/kg
			Malathion	NONE DETECTED	mg/kg	0.02	mg/kg
Vitamin A	4500	iu/kg	Total Viable Organisms	$<1.0 \times 10^3$	per gm	1000/g	
Vitamin E	70	mg/kg					
Vitamin C		mg/kg	Mesophilic Spores	2.5×10^2	per gm	100/g	
*request 3.5			Salmonellae Species	NONE DETECTED	per gm	Absent in 20 gm	
			Presumptive E. Coli	NONE DETECTED	per gm	Absent in 10 gm	
			E. Coli Type 1	NONE DETECTED	per gm	Absent in 10 gm	
			Fungal Units	NONE DETECTED	per gm	Absent in 10 gm	
			Antibiotic Activity				

Signed C. Rogerson

Dated 22nd Dec 1980

B.P. Nutrition (U.K.) Limited
Stephield,
Witham,
Essex CM8 3AB

APPENDIX 2

Water Analysis

ICLS

RECEIVED -4 JUN 1991

Analysis of a Sample of Water

Received

Your Ref

Our Ref

From Inverness Research International, Scotland.

Collected

Date

Signed

Appearance

Very faint opal

pH	
Total hardness	
Total alkalinity	
Hydrochloric acid (10 hour)	
Carbonate	
Non-carbonate	
Alkalinity of acid	
Total chlorides	
Total sulphates	
Total dissolved solids	
Total suspended solids	
Total solids	
Total hardness	

Odour		NIL
Colour (Pt/Co)		3
Turbidity (formazin) NTU		
Nitrate nitrogen		
Nitrite nitrogen	LT	
Ammonia nitrogen	LT	
Albuminoid nitrogen	LT	
Permanganate value		
Residual chlorine	LT	
Boron		
Manganese	LT	
Fluoride	LT	

Iron	
Aluminium	
Sulphide	

Signed

ICLS

Mineral Analysis of a Sample of Water (after filtration if necessary)

Collected

Date

Signed

(milligrammes per litre and milligram-equivalents per litre)

Cations	mg/l	me/l	Anions	mg/l	me/l		mg/l	me/l
Ca			CO_3			Calcium Carbonate		
Mg			SO_4			Calcium Sulphate		
Na			Cl			Magnesium Sulphate		
K			NO_3			Magnesium Chloride		
						Sodium Chloride		
						Sodium Nitrate		
						Potassium Nitrate		
						Silica		
Total			Total			Total		

Comment

This sample is very faint opal in appearance and is free from colour. The reaction is neutral and the water is soft in character with a low content of dissolved solids. The water is free from metals apart from minute traces of zinc, iron and copper and is of a satisfactory standard of organic quality.

These results indicate from the aspect of the chemical analysis, a wholesome water suitable for drinking and domestic purposes.

Signed

APPENDIX 2 (continued)

ICLS

E/B/163

Organochlorine Pesticides

alpha - B.H.C.	NDLT 5 ng/l
gamma - B.H.C.	NDLT 5 ng/l
Heptachlor	NDLT 10 ng/l
Aldrin	NDLT 10 ng/l
Dieldrin	NDLT 20 ng/l
p.p.-D.D.T.	NDLT 10 ng/l

Polynuclear Aromatic Hydrocarbons

Fluoranthene	NDLT 5 ng/l
Benzo (ghi) perylene	NDLT 1 ng/l
Benzo (k) fluoranthene	NDLT 1 ng/l
2,3 o - phenylenepyrene	NDLT 1 ng/l
Benzo (b) fluoranthene	NDLT 1 ng/l
Benzo (a) pyrene	NDLT 1 ng/l
Total PAH	NDLT 10 ng/l

Polychlorinated biphenyls

NDLT 200 ng/l expressed as AROCHLOR 1248

NDLT = Not detected, less than

Signed:

P.S. WATERHOUSE,
for: I.C.L.S. LABORATORIES LIMITED

APPENDIX 3

HMX: 13 Week Toxicity Study in Rats

Haematology: During Week 5

Individual Values: Males

Dose mg/kg /day	Tests Units	Grp	S	Anm	HB g/100 ml	RBC $x10^{12}/l$	PCV %	MCH pg	MCV fl	MCHC g/dl	Reti %	WBC $x10^9/l$	Neut $x10^9/l$	Lymp $x10^9/l$	Mono $x10^9/l$	Eos $x10^9/l$	Hepa sec	Met %
Con		1	M	601	17.0	7.8	47	22	60	36	4.9	6.4	0.8	5.6	0.0	0.1	36.2	1.6
				603	15.7	7.2	46	22	64	34	2.9	8.1	0.8	7.0	0.1	0.2	33.9	0.9
				605	16.6	7.1	48	23	68	35	3.0	5.9	0.4	5.5	0.0	0.0	26.7	0.2
				609	15.8	7.3	47	22	64	34	6.0	8.2	1.1	6.9	0.0	0.2	34.2	0.2
				612	16.2	6.8	47	24	69	34	2.2	7.4	0.7	6.7	0.0	0.0	33.7	0.8
				615	16.1	7.1	47	23	66	34	3.2	6.8	1.0	5.8	0.0	0.1	31.5	0.9
				617	16.8	7.5	47	22	63	36	2.2	8.2	1.4	6.8	0.0	0.0	31.2	0.9
				618	16.3	7.6	46	21	61	35	3.4	8.0	0.6	7.4	0.0	0.0	30.5	0.9
				619	16.4	7.1	48	23	68	34	4.0	6.3	0.4	5.9	0.0	0.0	31.8	0.9
				620	16.7	7.2	48	23	67	35	3.9	6.1	1.0	5.1	0.0	0.0	27.7	0.7
	Mean				16.4	7.3	47	23	65	35	3.6	7.1	0.8	6.3	0.0	0.1	31.7	0.8
	S.D.				0.4	0.3	1	1	3	1	1.2	0.9	0.3	0.8	0.0	0.1	3.0	0.4
4000		6	M	702	15.0	6.8	44	22	65	34	3.4	6.9	1.0	5.9	0.0	0.0	35.2	0.9
				703	15.3	6.6	43	23	65	36	7.0	7.8	1.1	6.6	0.1	0.1	31.2	1.5
				705	15.1	7.8	46	19	59	33	3.0	8.6	0.9	7.7	0.0	0.1	30.2	0.0
				707	15.4	7.0	45	22	64	34	3.2	7.7	1.3	6.3	0.1	0.0	27.2	0.9
				710	15.6	7.1	44	22	62	35	4.4	7.4	1.9	5.6	0.0	0.0	31.7	1.0
				714	15.5	7.4	43	21	58	36	2.2	7.3	1.2	6.1	0.0	0.0	28.9	0.2
				716	16.4	7.7	47	21	61	35	3.9	6.6	2.3	4.3	0.0	0.0	35.7	1.0
				718	15.9	7.7	45	21	58	35	2.6	6.5	0.7	5.9	0.0	0.0	37.7	1.0
				719	15.7	7.3	45	22	62	35	2.2	7.4	0.5	6.9	0.0	0.0	33.1	1.8
				720	16.0	7.2	46	22	64	35	3.0	5.6	0.7	4.8	0.1	0.0	37.2	1.6
	Mean				15.6	7.3	45	22	62	35	3.5	7.2	1.2	6.0	0.0	0.0	32.8	1.0
	S.D.				0.4	0.4	1	1	3	1	1.4	0.8	0.6	1.0	0.0	0.0	3.6	0.6

APPENDIX 3 (continued)

Females

Dose mg/kg /day	Tests Units Grp	S	Anm	Hb g/100 ml	RBC $x10^{12}/l$	PCV %	MCH pg	MCV fl	MCHC g/dl	Reti %	WBC $x10^9/l$	Neut $x10^9/l$	Lymp $x10^9/l$	Mono $x10^9/l$	Eos $x10^9/l$	Hepa sec	Met %
Con	1	F	721	16.6	7.5	50	22	67	33	3.9	6.3	0.6	5.6	0.0	0.1	31.2	0.8
			722	16.7	7.5	49	22	65	34	4.6	6.9	1.0	5.9	0.0	0.0	30.9	0.6
			727	16.2	6.8	47	24	69	34	2.2	5.3	0.3	4.9	0.0	0.1	32.7	0.9
			729	15.8	7.5	47	21	63	34	1.4	7.2	0.4	6.8	0.0	0.0	27.8	1.0
			730	16.7	7.2	48	23	67	35	2.4	7.9	0.2	7.7	0.0	0.0	27.7	0.9
			735	16.7	8.0	48	21	60	35	0.2	7.4	0.4	6.8	0.0	0.1	31.7	2.0
			736	16.3	7.3	47	22	64	35	1.0	6.4	1.0	5.2	0.1	0.2	31.2	0.9
			737	16.4	7.1	48	23	68	34	1.0	6.7	0.7	5.9	0.0	0.1	30.7	0.9
			738	16.6	6.9	48	24	70	35	1.0	6.5	0.7	5.7	0.0	0.1	28.2	1.2
			739	16.8	7.1	48	24	68	35	2.4	6.7	1.3	5.4	0.0	0.0	25.9	0.9
	Mean			16.5	7.3	48	23	66	34	2.0	6.7	0.7	6.0	0.0	0.1	29.8	1.0
	S.D.			0.3	0.4	1	1	3	1	1.4	0.7	0.3	0.9	0.0	0.1	2.2	0.4
1500	6	F	824	15.3	7.3	47	21	64	33	2.4	6.1	0.8	5.2	0.1	0.0	26.7	0.0
			826	15.6	7.4	45	21	61	35	2.1	6.3	0.8	5.4	0.1	0.1	33.2	1.0
			827	14.7	6.6	41	22	62	36	1.0	6.5	0.7	5.8	0.0	0.0	37.2	3.0
			828	15.6	7.3	45	21	62	35	4.0	5.6	0.9	4.6	0.0	0.1	31.7	1.1
			831	14.8	6.8	44	22	65	34	1.9	7.5	1.4	6.1	0.0	0.0	24.2	0.2
			832	16.3	7.0	47	23	67	35	1.9	6.0	0.7	5.3	0.0	0.0	27.9	1.9
			834	15.9	7.1	46	22	65	35	2.2	6.4	1.0	5.4	0.0	0.0	32.7	0.9
			836	15.2	7.0	45	22	64	34	3.4	6.7	1.3	5.3	0.1	0.0	32.7	0.7
			837	15.7	7.3	46	22	63	34	1.5	6.4	1.3	5.0	0.0	0.1	26.2	1.0
			839	16.5	7.2	47	23	65	35	3.0	5.9	0.3	5.5	0.0	0.1	28.7	1.8
	Mean			15.6	7.1	45	22	64	34	2.3	6.3	0.9	5.4	0.0	0.0	30.1	1.2
	S.D.			0.6	0.3	2	1	2	1	0.9	0.5	0.3	0.4	0.0	0.0	4.0	0.9

APPENDIX 4

HMX: 13 Week Toxicity Study in Rats
Haematology: During Week 12
Individual Values: Males

Dose mg/kg /day	Tests Units Grp S Anm	Hb g/100 ml	RBC $x10^{12}/l$	PCV %	MCH pg	MCV fl	MCHC g/dl	Reti %	WBC $x10^{9}/l$	Neut $x10^{9}/l$	Lymp $x10^{9}/l$	Mono $x10^{9}/l$	Eos $x10^{9}/l$	Hepa sec	Met %
Con	1 M 601	14.6	7.0	43	21	61	34	8.0	8.7	1.0	7.3	0.3	0.1	34.2	3.5
	603	15.6	7.8	47	20	60	33	3.0	11.6	1.6	9.9	0.0	0.1	35.2	1.0
	605	16.5	8.0	48	21	60	34	5.0	10.7	2.1	8.6	0.0	0.0	33.3	1.0
	609	15.3	7.9	47	19	59	33	6.2	8.3	1.6	6.6	0.0	0.9	35.2	2.0
	612	16.6	8.3	46	20	55	36	3.6	11.3	1.2	9.8	0.0	0.2	32.7	1.1
	615	15.3	7.2	47	21	65	33	1.2	7.9	1.9	6.0	0.0	0.0	32.7	1.0
	617	16.4	7.6	49	22	64	33	5.0	13.0	1.2	11.7	0.0	0.1	25.8	1.2
	618	16.1	7.6	49	21	64	33	1.5	10.5	1.3	9.1	0.0	0.1	29.2	0.9
	619	14.8	7.2	45	21	63	33	4.0	7.4	1.0	6.2	0.2	0.0	32.2	0.5
	620	14.9	7.0	44	21	63	34	3.5	5.7	0.9	4.8	0.0	0.0	33.7	2.8
	Mean	15.6	7.6	47	21	62	34	4.1	9.5	1.4	8.0	0.1	0.2	32.4	1.5
	S.D.	0.8	0.5	2	1	3	1	2.1	2.3	0.4	2.2	0.1	0.3	2.9	1.0
4000	6 M 702	15.6	7.7	47	20	61	33	4.9	9.9	0.9	8.8	0.2	0.0	28.7	3.7
	703	14.4	7.3	42	20	58	34	4.0	11.5	2.2	9.3	0.0	0.0	26.2	2.2
	705	15.0	6.7	45	22	67	33	1.2	10.6	1.7	8.9	0.0	0.0	34.7	2.4
	707	15.2	7.2	44	21	61	35	5.0	9.9	1.9	8.0	0.0	0.0	36.7	2.5
	710	15.0	6.9	47	22	68	32	5.0	7.6	0.8	6.8	0.0	0.0	34.3	2.3
	714	15.1	7.3	45	21	62	34	2.5	9.6	1.0	8.4	0.1	0.1	35.2	3.4
	716	15.1	8.0	45	19	56	34	4.4	9.7	0.5	9.2	0.0	0.0	31.2	1.0
	718	15.8	7.5	45	21	60	35	4.8	9.4	0.8	8.5	0.1	0.0	33.7	1.3
	719	15.2	7.2	46	21	64	33	6.0	7.9	0.2	7.6	0.1	0.0	34.3	2.1
	720	15.5	7.0	45	22	64	34	0.6	6.9	0.5	6.3	0.1	0.1	32.7	2.5
	Mean	15.2	7.3	45	21	62	34	3.8	9.3	1.0	8.2	0.1	0.0	32.8	2.3
	S.D.	0.4	0.4	1	1	4	1	1.8	1.4	0.7	1.0	0.1	0.0	3.2	0.8

APPENDIX 4 (continued)

Females

Dose mg/kg /day	Tests Units Grp	S	Anm	Hb g/100 ml	RBC $x10^{12}/l$	PCV %	MCH pg	MCV fl	MCHC g/dl	Reti %	WBC $x10^9/l$	Neut $x10^9/l$	Lymp $x10^9/l$	Mono $x10^9/l$	Eos $x10^9/l$	Hepa sec	Met %
Con	1	F	721	15.4	7.1	45	22	63	34	5.2	6.1	0.4	5.6	0.0	0.1	25.7	1.9
			722	17.1	7.5	49	23	65	35	2.0	6.6	1.1	5.5	0.0	0.1	30.7	1.0
			727	15.4	6.9	45	22	65	34	4.9	4.2	0.1	4.0	0.0	0.0	29.7	1.1
			729	16.5	7.6	48	22	63	34	2.4	6.0	0.8	5.1	0.0	0.1	25.7	0.2
			730	15.8	7.3	45	22	62	35	4.0	5.9	0.8	5.0	0.1	0.0	30.7	1.8
			735	15.8	7.5	47	21	63	34	4.9	9.6	0.7	8.9	0.0	0.0	30.2	2.2
			736	16.6	7.6	48	22	63	35	0.8	7.5	0.8	6.7	0.0	0.1	29.8	1.3
			737	14.1	6.6	42	21	64	34	1.6	4.9	0.2	4.7	0.0	0.0	24.3	1.2
			738	16.0	7.6	47	21	62	34	1.4	7.8	0.6	7.1	0.1	0.0	31.7	2.9
			739	16.3	7.2	47	23	65	35	1.6	5.1	0.6	4.4	0.0	0.1	28.2	1.6
	Mean			15.9	7.3	46	22	64	34	2.9	6.4	0.6	5.7	0.0	0.0	28.7	1.5
	S.D.			0.8	0.3	2	1	1	1	1.7	1.6	0.3	1.5	0.0	0.1	2.6	0.7
1500	6	F	824	14.8	6.9	45	21	65	33	3.0	5.6	0.3	5.3	0.0	0.0	27.7	2.1
			826	14.6	6.7	43	22	64	34	2.2	10.3	1.4	8.8	0.0	0.1	33.2	1.0
			827	14.7	6.6	44	22	67	33	4.9	10.6	0.6	10.0	0.0	0.0	31.7	1.0
			828	15.0	6.3	44	24	70	34	3.0	6.3	0.8	5.4	0.0	0.1	29.7	1.4
			831	15.3	6.8	44	23	65	35	5.0	7.8	1.0	6.7	0.0	0.1	32.7	2.2
			832	15.1	7.1	44	21	62	34	4.4	8.0	1.3	6.6	0.0	0.1	24.2	5.9
			834	15.1	6.8	44	22	65	34	1.0	9.4	0.8	8.5	0.0	0.1	30.7	1.6
			836	14.0	6.4	42	22	66	33	4.0	7.7	1.3	6.2	0.1	0.1	32.7	4.4
			837	14.9	6.9	45	22	65	33	1.2	5.9	0.9	4.8	0.1	0.1	33.7	1.9
			839	14.1	6.4	41	22	64	34	5.2	9.1	1.5	7.5	0.1	0.1	30.2	2.6
	Mean			14.8	6.7	44	22	65	34	3.4	8.1	1.0	7.0	0.0	0.1	30.7	2.4
	S.D.			0.4	0.3	1	1	2	1	1.6	1.8	0.4	1.7	0.0	0.0	2.9	1.6

APPENDIX 5

HMX: 13 Week Toxicity Study in Rats

Clinical Chemistry: During Week 5

Individual Values: Males

Dose mg/kg /day	Tests Units Grp	S	Anm	BUN mmol/l	Glu mmol/l	AST IU/l	ALT IU/l	AP IU/l	LDH IU/l	Na mmol/l	K mmol/l	TP g/l	Alb g/l
Con	1	M	601	5.9	7.91	88	65	867	403	146	4.1	66	38
			603	6.3	9.27	77	58	740	408	143	3.7	64	38
			605	6.9	9.69	87	81	767	298	143	3.9	61	37
			609	5.6	7.18	88	72	713	343	147	4.0	60	36
			612	8.1	7.78	83	69	629	373	148	4.5	60	37
			615	6.1	7.57	79	69	716	313	143	4.2	64	39
			617	6.4	8.23	84	73	629	507	148	3.8	59	37
			618	6.1	8.02	83	79	569	428	148	4.2	62	37
			619	5.4	7.59	75	73	740	209	145	4.5	62	38
			620	6.8	8.20	86	80	750	288	147	4.8	65	37
	Mean			6.4	8.14	83	72	712	357	146	4.2	62	37
	S.D.			0.8	0.78	5	7	85	85	2	0.4	2	1
4000	6	M	702	5.8	8.29	73	63	817	403	149	4.1	60	38
			703	7.0	7.83	90	69	807	742	143	4.6	60	39
			705	5.2	6.65	84	58	790	483	148	4.0	62	39
			707	5.9	8.37	79	58	817	383	148	3.7	65	40
			710	6.4	8.57	83	62	897	239	143	4.1	66	40
			714	6.9	7.72	70	55	793	333	148	3.8	62	39
			716	7.5	7.84	77	72	884	373	145	4.3	65	39
			718	6.7	7.72	68	56	790	263	146	3.7	65	40
			719	5.4	6.39	77	63	817	303	144	4.4	64	39
			720+	8.6	7.82	79	70	988	647	151	4.2	65	39
	Mean			6.5	7.72	78	63	840	417	147	4.1	63	39
	S.D.			1.0	0.71	7	6	64	164	3	0.3	2	1

+ ANM 720,Repeat Values AST and ALT

APPENDIX 5 (continued)

Females

Dose mg/kg /day	Tests Units Grp	S	Anm	BUN mmol/l	Glu mmol/l	AST IU/l	ALT IU/l	AP IU/l	LDH IU/l	Na mmol/l	K mmol/l	TP g/l	Alb g/l
Con	1	F	721	5.4	8.15	73	51	603	244	146	4.2	60	36
			722	5.3	8.62	91	54	696	293	148	4.7	61	35
			727	5.6	7.73	91	69	750	268	144	4.2	63	37
			729	5.5	8.21	69	50	623	283	144	3.8	60	36
			730	6.3	7.54	66	48	626	278	146	4.3	58	33
			735	7.1	8.26	77	58	603	353	144	4.0	58	33
			736	7.2	7.29	80	62	572	244	149	4.0	57	32
			737	6.9	7.60	76	52	599	194	142	4.7	57	33
			738	7.3	7.29	72	55	649	204	144	4.3	61	35
			739	6.6	9.00	75	63	626	249	143	4.6	58	33
	Mean			6.3	7.97	77	56	635	261	145	4.3	59	34
	S.D.			0.8	0.58	8	7	52	46	2	0.3	2	2
1500	6	F	824	5.7	8.54	90	58	619	373	146	3.8	64	37
			826	6.7	7.81	79	56	666	209	144	4.2	61	36
			827	7.5	8.38	84	56	680	239	148	4.0	60	35
			828	6.6	8.85	77	50	713	278	149	4.3	58	35
			831+	6.6	7.99	84	65	680	239	148	3.9	63	35
			832	9.4	6.87	87	59	787	303	144	4.4	65	37
			834	7.9	8.04	86	62	572	298	146	4.7	61	36
			836	7.3	8.07	83	69	783	244	148	4.4	60	35
			837	7.0	7.09	76	55	582	179	144	4.7	62	36
			839	7.3	8.16	76	56	680	179	144	4.3	61	35
	Mean			7.2	7.98	82	59	676	254	146	4.3	62	36
	S.D.			1.0	0.61	5	5	73	60	2	0.3	2	1

+ ANM 831,Repeat Value TP

APPENDIX 6

HMX: 13 Week Toxicity Study in Rats

Clinical Chemistry: During Week 12

Individual Values: Males

Dose mg/kg /day	Tests Units	Grp	S	Anm	BUN mmol/l	Glu mmol/l	AST IU/l	ALT IU/l	AP IU/l	LDH IU/l	Na mmol/l	K mmol/l	TP g/l	Alb g/l
Con		1	M	601+	5.9	8.07	124	79	214	278	142	4.2	72	41
				603+	7.2	7.77	133	70	194	423	152	4.5	72	40
				605+	6.4	7.82	80	64	214	244	139	4.2	71	41
				609	6.6	7.74	128	59	217	328	145	3.9	72	42
				612	6.9	9.55	119	32	211	283	147	3.9	68	40
				615	6.6	7.17	133	73	194	229	145	4.5	69	40
				617+	6.3	11.73	96	63	190	258	146	4.9	67	40
				618	5.7	7.78	101	50	217	179	144	4.1	70	41
				619	6.5	7.53	124	55	231	263	147	4.5	70	41
				620+	6.2	8.00	179	105	251	298	147	4.5	69	41
	Mean				6.4	8.32	122	65	213	278	145	4.3	70	41
	S.D.				0.4	1.36	27	19	18	65	3	0.3	2	1
4000		6	M	702+	7.5	7.64	142	50	224	278	157	4.6	74	43
				703+	7.7	7.70	66	105	341	249	143	3.7	71	43
				705	6.6	9.05	110	50	324	368	145	3.7	69	42
				707	5.0	7.27	105	36	371	587	142	4.2	66	41
				710	6.1	7.80	96	27	432	249	147	4.0	69	41
				714	6.6	7.18	92	32	432	226	147	4.0	68	42
				716	7.8	7.80	96	46	458	293	148	4.0	69	42
				718	5.9	7.75	96	32	479	209	147	3.9	68	41
				719	6.6	7.70	101	36	525	234	145	4.0	67	40
				720	7.6	7.45	133	69	566	164	148	4.1	67	42
	Mean				6.7	7.73	104	48	415	286	147	4.0	69	42
	S.D.				0.9	0.52	21	23	102	119	4	0.3	2	1

\+ ANM 605,620,703,Repeat Values AST
ANM 601,603,617,Repeat Values ALT
ANM 603,702,Repeat Values AP.ANM 603,Repeat Value
LDH.ANM 601,603,702,Repeat Values Na and K

APPENDIX 6 (continued)

Females

Dose mg/kg /day	Tests Units Grp	S	Anm	BUN mmol/l	Glu mmol/l	AST IU/l	ALT IU/l	AP IU/l	LDH IU/l	Na mmol/l	K mmol/l	TP g/l	Alb g/l
Con	1	F	721+	6.6	8.48	68	147	489	433	142	5.2	64	35
			722	5.9	7.12	105	32	331	363	146	4.4	61	37
			727+	5.1	6.46	70	92	381	537	143	4.7	62	37
			729	5.7	7.87	138	55	422	423	144	4.2	60	36
			730	6.7	10.59	78	46	589	751	143	4.9	58	36
			735+	6.9	7.66	105	61	525	433	144	4.7	61	38
			736	7.5	8.48	105	59	566	423	144	4.8	60	37
			737	6.1	8.71	64	36	452	358	145	4.2	60	38
			738	7.0	7.65	92	59	472	607	145	5.0	64	38
			739	7.4	9.48	78	36	442	368	143	4.3	61	38
	Mean			6.5	8.25	90	62	467	470	144	4.6	61	37
	S.D.			0.8	1.19	23	34	80	126	1	0.4	2	1
1500	6	F	824	7.9	8.84	78	55	542	463	148	4.3	64	40
			826	6.9	8.36	64	46	475	323	150	4.7	62	39
			827	7.5	5.69	78	55	489	318	146	4.3	65	40
			828	8.1	6.95	82	59	562	383	146	4.2	65	41
			831	7.3	8.59	78	69	586	378	144	4.3	66	40
			832	8.1	7.94	82	59	626	278	145	5.0	65	40
			834+	8.2	7.89	59	59	495	378	145	4.5	64	39
			836+	7.8	7.48	115	59	633	413	145	5.7	64	39
			837+	8.2	8.72	82	50	499	891	146	6.0	63	39
			839	7.3	8.16	124	78	619	348	149	5.0	63	38
	Mean			7.7	7.86	84	59	553	417	146	4.8	64	40
	S.D.			0.5	0.96	20	9	61	174	2	0.6	1	1

\+ ANM 721,727,Repeat Values AST
ANM 721,727,735,834,Repeat Values ALT
ANM 836,837,Repeat Values LDH

APPENDIX 7

HMX: 13 Week Toxicity Study in Rats
Urinalysis: During Week 5
Individual Values: Males

Dose mg/kg/day	I.D. /Sex	pH	SG	Vol ml	Protein	Glucose	Ketones	Bilirubin	Urobilinogen	Blood pigments	Colour	MICROSCOPY						
												E	CR	W	R	O	C	A
Control	601♂	9.0	1.025	1.5	1	0	0	0	0	0	PY	0	1	0	0	1	0	0
	603	8.5	1.050	1.0	1	0	0	0	0	0	GY	0	1	0	0	2	0	0
	605	9.0	1.050	1.0	1	0	0	0	0	0	GY	0	1	0	0	2	0	0
	609	9.0	1.050	0.5	1	0	0	0	0	0	GY	0	1	0	0	1	0	0
	612	8.5	1.080	0.5	1	1(0)	0	0	0	1(0)	Y	0	0	0	0	2	0	0
	615	9.0	1.036	1.0	1	0	0	0	0	0	PY	0	1	0	0	1	0	0
	617	8.5	1.080	0.5	1	0	0	0	0	1(0)	Y	0	1	0	0	3	0	0
	618	8.5	1.076	0.5	1	0	0	0	0	0	Y	0	1	0	0	2	0	0
	619	8.5	1.016	1.0	1	0	0	0	0	0	PY	0	1	0	0	2	0	0
	620	9.0	1.080	0.5	1	0	0	0	0	0	Y	0	1	0	0	1	1	0
	Mean	8.8	1.054	0.8														
	S.D.	0.3	0.024	0.3														
4000	702♂	8.0	1.052	0.5	1	0	0	0	0	1(0)	GY	0	1	0	0	1	0	0
	703	9.0	1.045	0.5	1	0	0	0	0	0	GY	0	0	0	0	1	0	0
	705	7.5	1.074	0.5	1	0	0	0	0	0	GY	0	1	0	0	1	0	0
	707	9.0	1.042	1.0	1	0	0	0	0	0	PY	0	1	0	0	0	0	0
	710	9.0	1.052	0.5	1	0	0	0	0	0	GY	0	1	0	0	1	0	0
	714	8.5	1.042	1.0	1	0	0	0	0	0	Y	0	1	0	0	2	1	0
	716	9.0	1.074	0.5	1	0	0	0	0	0	GY	0	1	0	0	2	0	0
	718	9.0	1.072	0.5	1	0	0	0	0	0	Y	0	1	0	0	1	0	1(C)
	719	9.0	1.070	1.0	1	0	0	0	0	0	GY	0	3	0	0	2	0	0
	720	8.0	1.076	1.0	1	0	0	0	0	1(0)	DY	0	2	0	0	1	0	0
	Mean	8.6	1.060	0.7														
	S.D.	0.6	0.015	0.3														

Note: All values shown in brackets were obtained from repeat samples

APPENDIX 7 (continued)

Females

Dose mg/kg/day	I.D. /Sex	pH	SG	Vol ml	Protein	Glucose	Ketones	Bilirubin	Urobilinogen	Blood pigments	Colour	MICROSCOPY						
												E	CR	W	R	O	C	A
Control	7219	9.0	1.052	0.5	1	0	0	0	0	0	Y	0	1	0	0	0	0	0
	722	8.5	1.043	0.5	1	0	0	0	0	0	PY	0	1	0	0	0	0	0
	727	8.5	1.050	0.5	1	0	0	0	0	0	PY	0	1	0	0	1	0	0
	729	9.0	1.044	0.5	1	0	0	0	0	0	PY	0	1	0	0	1	0	0
	730	9.0	1.051	0.5	1	0	0	0	0	0	GY	0	1	0	0	1	0	0
	*735																	
	736	9.0	1.070	0.5	1	0	0	0	0	0	Y	0	1	0	0	3	1	0
	737	9.0	1.082	0.5	1	0	0	0	0	1(0)	DY	0	1	0	0	0	2	0
	738	8.5	1.084	0.5	1	0	0	0	0	1(0)	Y	0	1	2	0	1	1	0
	739	8.0	1.074	0.5	1	0	0	0	0	0	Y	0	1	0	0	1	0	0
	Mean	8.7	1.061	0.5														
	S.D.	0.4	0.016	0.0														
1500	8249	6.0	1.027	1.0	1	0	0	0	0	2(0)	PY	0	1	0	0	0	0	0
	826	7.0	1.023	3.0	1	0	0	0	0	0	PY	0	1	0	0	0	0	0
	827	8.0	1.030	1.5	1	0	0	0	0	2(0)	PY	0	2	0	1(0)	1	0	0
	828	5.5	1.029	1.0	1	0	0	0	0	0	PY	0	1	0	0	0	0	0
	831	6.0	1.025	1.0	1	0	0	0	0	0	PY	0	2	0	0	1	0	0
	832	8.0	1.024	3.0	0	0	0	0	0	0	PY	0	1	0	0	2	0	0
	834	9.0	1.086	0.5	1	0	0	0	0	1(0)	DY	0	1	0	0	2	1	0
	836	6.0	1.027	2.0	1	0	0	0	0	0	PY	0	1	0	0	1	0	0
	837	8.5	1.032	1.0	1	0	0	0	0	1(0)	PY	0	1	0	0	2	0	0
	839	9.0	1.074	0.5	1	0	0	0	0	0	Y	0	1	0	0	1	0	0
	Mean	7.3	1.038	1.5														
	S.D.	1.4	0.023	0.9														

* = No urine sample produced on 3 successive occasions

Note: All values shown in brackets were obtained from repeat samples

APPENDIX 8

HMX: 13 Week Toxicity Study in Rats

Urinalysis: During Week 12

Individual Values: Males

Dose mg/kg/day	I.D. /Sex	pH	SG	Vol ml	Protein	Glucose	Ketones	Bilirubin	Urobilinogen	Blood pigments	Colour	MICROSCOPY						
												E	CR	W	R	O	C	A
Control	601♂	9.0	1.052	0.5	1	0	1 (0)	0	0	3 (2)	PY	1	0	0	0	3	0	0
	603	9.0	1.045	0.5	1	0	0	0	0	1	PY	0	0	0	0	2	0	0
	605	9.0	1.022	2.0	1	0	0	0	0	1	PY	0	0	1	1	2	0	0
	609	8.0	1.068	1.0	1	0	0	0	0	1 (0)	GY	0	1	0	0	3	1	0
	612	7.0	1.070	0.5	1	0	0	0	0	0	GY	0	0	0	0	3	0	0
	615	9.0	1.050	1.0	1	0	0	0	0	0	GY	0	1	1	0	2	0	0
	617	9.0	1.066	0.5	1	0	0	0	0	0	PY	0	0	0	0	2	0	0
	618	9.0	1.026	1.5	1	0	0	0	0	0	PY	0	0	0	0	2	0	0
	619	9.0	1.041	1.0	1	0	0	0	0	1	PY	0	0	0	0	2	1	0
	620	9.0	1.052	1.0	1	0	0	0	0	1	PY	0	0	0	0	2	0	0
	Mean	8.7	1.049	1.0														
	S.D.	0.7	0.016	0.5														
4000	702♂	8.0	1.043	2.0	1	0	0	0	0	0	GY	0	2	0	0	1	0	0
	703	8.0	1.038	1.0	1	0	0	0	0	1	PY	0	1	0	0	3	0	0
	705	8.0	1.052	0.5	1	0	1 (0)	0	0	0	PY	0	1	0	0	2	0	0
	707	8.0	1.030	1.0	1	0	0	0	0	0	PY	0	1	0	0	2	0	0
	710	8.0	1.040	1.0	1	0	0	0	0	0	PY	0	2	0	0	1	0	0
	714	9.0	1.064	0.5	1	0	0	0	0	0	PY	0	0	0	0	2	0	0
	716	6.5	1.045	1.0	1	0	0	0	0	0	PY	1	2	0	0	2	0	0
	718	8.0	1.052	1.0	1	0	0	0	0	0	PY	0	2	0	0	2	0	0
	719	8.0	1.074	1.0	1	0	0	0	0	0	PY	0	1	0	0	3	0	0
	720	9.0	1.049	1.0	1	0	0	0	0	0	PY	0	1	0	0	1	0	0
	Mean	8.1	1.049	1.0														
	S.D.	0.7	0.013	0.4														

Note: All values shown in brackets were obtained from repeat samples

APPENDIX 8 (continued)

Females

Dose mg/kg/day	I.D. /Sex	pH	SG	Vol ml	Protein	Glucose	Ketones	Bilirubin	Urobilinogen	Blood pigments	Colour	MICROSCOPY						
												E	CR	W	R	O	C	A
Control	721♀	6.0	1.043	0.5	1	0	0	0	0	0	Y	0	1	0	0	1	0	0
	722	9.0	1.041	0.5	1	0	0	0	0	2	GY	0	2	0	0	1	0	0
	727	8.0	1.0[illegible]	0.5	1	0	0	0	0	0	PY	0	1	0	0	0	0	0
	729	8.0	1.051	0.5	1	0	0	0	0	1	PY	0	1	0	0	2	0	0
	*730	9.0			1	0	0	0	0	0	PY	0	1	0	0	1	0	0
	735	8.0	1.040	1.0	1	0	0	0	0	2	PY	0	2	0	0	1	0	0
	*736																	
	737	9.0	1.074	0.5	1	0	0	0	0	0	GY	0	1	0	0	1	0	0
	738	6.5	(1.084)	(0.5)	1	0	0	0	0	0	GY	0	1	0	0	1	0	0
	739	9.0	1.046	0.5	1	0	0	0	0	0	PY	0	1	0	0	0	0	0
	Mean	8.1	1.051	0.6														
	S.D.	1.1	0.018	0.2														
1500	824♀	6.0	1.017	3.0	1	0	0	0	0	0	PY	0	1	0	0	0	0	0
	826	7.0	1.014	2.0	1	0	0	0	0	1	PY	0	2	0	1	0	0	0
	827	6.0	1.020	2.0	0	0	0	0	0	0	PY	1	1	0	0	1	0	0
	828	7.0	1.016	4.0	1	0	0	0	0	0	PY	0	1	1	0	1	0	0
	831	6.0	1.019	2.5	0	0	0	0	0	0	PY	1	1	1	1	0	0	0
	832	(6.0)	(1.027)	(0.5)	(1)	(0)	(0)	(0)	(0)	(0)	(PY)	(0)	(1)	(0)	(0)	(0)	(0)	(0)
	834	6.5	1.017	3.0	1	0	0	0	0	0	PY	0	1	0	1	0	0	0
	836	7.0	1.015	3.5	1	0	0	0	0	0	PY	1	1	0	1	0	0	0
	837	7.0	1.025	2.0	1	0	0	0	0	1	PY	0	1	0	0	0	0	0
	839	7.0	1.015	4.0	1	0	0	0	0	1	PY	0	1	0	0	1	0	0
	Mean	6.6	1.019	2.7														
	S.D.	0.5	0.004	1.1														

* = Insufficient sample on two occasions

Note: All values shown in brackets were obtained from repeat samples

APPENDIX 9

HMX: 13 Week Toxicity Study in Rats
Clinical Signs, Gross and Histopathology for Individual Animals

Abbreviations Used:

KIE - Killed *in extremis*
FD - Found Dead
TK - Terminal Kill
NAD - No Abnormalities Detected
HE - Haematoxylin and Eosin

N.B. In all instances only those tissues showing abnormality are reported.

Project No: 415669CR Group: 1 Control
Animal No: 601 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Fallopian~~	~~4~~
~~Ovaries~~	~~4~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 602 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
~~Uterus/Ov.Tubes~~	4
~~Vagina~~	4
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	3
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 1 Control
Animal No: 603 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Left testis larger than right.

Sample	Histopathology
Testes	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	1
~~Uterus/F.Tubes~~	4
~~Ovaries~~	4
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 604 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/P.Pulou~~	~~1~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 1 Control
Animal No: 605 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	0
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/P.Subcu~~	~~1~~
~~Ovaries~~	~~1~~
Testes	1
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 1 Control
Animal No: 606 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Small foci tubular atrophy and tubular epithelial regeneration.

Number of Sections examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Prostate~~	1
~~Ovaries~~	1
Testes	1
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 1 Control
Animal No: 607 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Small foci tubular atrophy and tubular epithelial regeneration.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	4
~~Ovaries~~	4
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 1 Control
Animal No: 608 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Small foci tubular atrophy and tubular epithelial regeneration.

Number of Sections Examined	No.
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
[illegible]	4
[illegible]	4
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	1
Brain	1
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 609 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Lungs darker than normal.

Sample	Histopathology
Lungs	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/P.Pulse~~	1
~~Ovaries~~	1
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 1 Control
Animal No: 610 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	0
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
[illegible]	4
[illegible]	4
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1, Control
Animal No: 611 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	1
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Ov.Tubes~~	~~1~~
~~Vagina~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	5
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 612 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
[illegible]	1
[illegible]	1
Testes	2
Prostate	1
Pituitary	0
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	0

Project No: 415669CR Group: 1 Control
Animal No: 613 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Fallopian~~	~~4~~
~~Ovaries~~	~~4~~
Testes	1
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	2
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 614 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	1
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 615 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/P.Tubes~~	~~1~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	1
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group : 1 Control
Animal No: 616 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Ov.Tubes~~	4
~~Ovaries~~	4
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1
	1
	1

Project No: 415669CR Group: 1 Control
Animal No: 617 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	0
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/P.Pulse~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 1 Control
Animal No: 618 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph L.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	0
~~Uterus/Ov/Vulva~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 619 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/U. Cuboc~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 620 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	No.
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
~~Uterus/Ov/Tubes~~	1
~~Ovaries~~	1
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group : 2 50 mg HMX/kg/day
Animal No: 621 Sex: ♂

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	+
			Kidneys	+

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 622 Sex: ♂

Time on Study (Days)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	No.
NAD.		NAD.	Liver	1
			Kidneys	1

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 623 Sex: ♂

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	No.
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 624 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	No.
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 625 Sex: ♂

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HX
NAD.		NAD.	Liver Kidneys	1 2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 626 Sex: ♂

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	No.
NAD.		NAD.	Liver	1
			Kidneys	1

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day

Animal No: 627 Sex: ♂

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	MI
NAD.	Liver	NAD.	Liver	2
			Kidneys	2

Necropsy Findings

Liver - nodule of liver tissue on surface of central lobe and forming adhesion with diaphragm.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 628 Sex: ♂

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.		NAD.	Liver	✓
			Kidneys	✓

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 629 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	✓
			Kidneys	✓

Necropsy Findings
NAD.

Project No: 415659CR Group: 2 50 mg HMX/kg/day
Animal No: 630 Sex: ♂

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	1
			Kidneys	1

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 631 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 632 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 633 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	NE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 634 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Clear cell foci.	Liver	1
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 635 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Clear cell foci.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 636 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
Lesion on bridge of nose from week 12-13.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 637 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 638 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Live:	2
			Kidneys	2

Necropsy Findings

NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 639 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 640 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 641 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings

NAD.

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 642 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings

NAD.

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 643 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Lungs - irregular dark red patches.

Sample	Histopathology	Number of Sections Examined	HE
Lungs	Not examined.	Liver	2
		Kidneys	2

Project No: 415669CR Group : 3 150 mg HMX/kg/day

Animal No: 644 Sex: ♂

Time on Study (weeks)	Death
.14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 645 Sex: ♂

Time on Study (weeks)	Death
9	FD

Number of Sections Examined	HE
Liver	2
Kidneys	2

Clinical History

2 masses V/L abdomen from week 6-9.

Necropsy Findings

Abdomen filled with red fluid.
Two masses attached to abdominal wall -

Mass 1 - 45 x 30 x 30 mm, multilobed with varying consistency from very firm to soft. Colour varies from dark red to white.

Mass 2 - 12 x 10 x 4 mm attached to Mass 1, pale pink in colour.

Thymic lymph node dark red and enlarged.

Brain - very friable.

Sample	Histopathology
Liver	Autolytic.
Kidneys	Autolytic.

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 646 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 647 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 648 Sex: ♂

Time on Study (weeks)	Death
14	TV

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 649 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 150 mg HMX/kg/d y
Animal No: 650 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 651 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 652 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 653 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 654 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 655 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Liver - 10 mm diameter swelling on median lobe.

Sample	Histopathology	Number of Sections Examined	HE
Liver	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 656 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 657 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 658 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 659 Sex: ♂

Time of Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Liver - lobulation prominent.

Sample	Histopathology	Number of Sections Examined	HE
Liver	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 3 150 mg HMX/kg/day
Animal No: 660 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 661 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 662 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	KZ
Black encrusted right eye from week 8-10.	Liver	Slight toxic change.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 663 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 664 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 665 Sex: ♂

Time on Study (weeks)	Death
1.4	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 666 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.	Liver	Toxic change.	Liver	2
			Kidneys	2

Necropsy Findings
Liver - mottled.

Project No: 415669CR Group: 4 450 mg HMX/kg/day

Animal No: 667 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
Left eye red rimmed from week 9-11.

Necropsy Findings
Lungs redder than normal.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Toxic change.	Liver	2
Lungs	Not examined.	Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 668 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 669 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 670 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Lungs darker than normal.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
Lungs	Not examined.	Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 671 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HZ
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 672 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	ML
NAD.	Liver	Slight toxic change.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 673 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 674 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	NE
Liver	Toxic change, two areas of necrosis.	Liver	
		Kidneys	

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 675 Sex: ♂

Time on study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.	Liver	Toxic change.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 676 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 677 Sex: ♂

Time on Study (Weeks)	Death
14	TK

Clinical History
Eyes red rimmed from week 12-13.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	NE
Liver	Slight toxic change.	Liver	
		Kidneys	

Project No: 415669CR Group: 4 450 mg HMX/kg/day
Animal No: 680 Sex: ♂

Time on Study (weeks)	Death
14	TX

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	NE
Liver	Slight toxic change.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 681 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Ov/Tubes~~	1
~~Ovaries~~	1
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day

Animal No: 682 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular.

Number of Sections Examined	
	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Ov/Vulva~~	~~1~~
~~Vagina~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 683 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change.

Number of Sections Examined	
	HE
Fat	1
Liver	1
Kidney	2
Lung	1
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	0
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day

Animal No: 684 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change - mild.

Number of Sections Examined	HE
Fat	1
Liver	2
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	1
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 685 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change - mild.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Fallopian Tubes~~	~~1~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 686 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	1
~~Ovaries~~	1
Testes	1
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 687 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular - mild.

Number of Sections Examined	HE
Ear	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	0
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Ovaries~~	~~1~~
~~Vagina~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	3
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 688 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
[illegible]	4
[illegible]	4
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 689 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular - mild.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	1
~~[illegible]~~	1
~~[illegible]~~	1
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 690 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Small foci tubular dilation.

Number of Sections Examined	KZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Prostate/Bulbus~~	1
~~Ovaries~~	1
Testes	1
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day

Animal No: 691 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	1
~~Uterus/Ut. Tubes~~	~~4~~
~~Ovaries~~	~~4~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	2
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	0

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 692 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
Scabs on right of nose from week 8-14.

Necropsy Findings
Bald patch on nose.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular - mild.

Number of Sections Examined	KZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Fallopian~~	~~1~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 693 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Left testis smaller than right.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular - mild.
Testes	One testis contains mainly atrophied tubules. Some interstitial necrosis.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Ov.Tubes~~	~~1~~
~~Vagina~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 5 1350 mg HMX/kg/day

Animal No: 694 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular.
Skin	Cystic preputial gland.

Number of Sections Examined	KZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	0
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Ovaries~~	~~1~~
~~Vagina~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2
	1

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 695 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
~~Uterus/Pituitary~~	~~1~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day

Animal No: 696 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	+
~~Ovaries~~	+
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	0

Project No: 415669CR Group: 5 1350 mg HMX/kg/day

Animal No: 697 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular.
Kidneys	Focus tubular atrophy and tubular epithelial regeneration.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 698 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Left bronchial lymph nodes enlarged.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular.
Bronchial Lymph Nodes	Congested.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~+~~
~~Ovaries~~	~~+~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day
Animal No: 699 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
~~Uterus/P.Pubou~~	~~4~~
~~Ovaries~~	~~3~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 5 1350 mg HMX/kg/day

Animal No: 700 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Bronchial lymph nodes slightly enlarged.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular.
Bronchial Lymph Nodes	Many macrophages containing brown staining material.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	0

Project No: 415669CR Group: 6 4000 mg HMX/kg/day
Animal No: 701 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Lungs redder than normal.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular.
Lungs	Slight congestion.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	0
~~Uterus/Pr.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 6 4000 mg HMX/kg/day

Animal No: 702 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
Red stains round right eye, black encrustations round nose from week 13-14.

Necropsy Findings
Red staining round right eye. Black encrustation round nose.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular.
Eyes	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Fallopian Tubes~~	~~4~~
~~Ovaries~~	~~4~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 6 4000 mg HMX/kg/day
Animal No: 703 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular areas.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/P.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 6 4000 mg HMX/kg/day
Animal No: 704 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular.
Kidneys	Focus tubular atrophy and tubular epithelial regeneration.

Number of Sections Examined	HE
Fat	0
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Ovaries~~	+
~~Vagina~~	+
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 6 4000 mg/kg/day
Animal No: 705 Sex: ♂

Time on Study (weeks)	Death
14	TX

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, centrilobular and peri-portal.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	1
~~Uterus/P.Pubes~~	~~1~~
~~Prostate~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day

Animal No: 706 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	0
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 6 4000 mg HMX/kg
Animal No: 707 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, centrilobular and peri-portal.

Number of Sections Examined	
	KE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Fallopian~~	~~4~~
~~Ovaries~~	~~3~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	5
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day
Animal No: 708 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
Lesion on bridge of nose from week 12-13.

Necropsy Findings
Bald patch on bridge of nose.

Sample	Histopathology
Liver	Areas toxic change.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 4000 mg HMX/kg/day

Animal No: 709 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, centrilobular and periportal.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	0
Parathyroids	0
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
~~Uterus/F.Tubes~~	+
~~Ovaries~~	+
Testes	1
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 6 400 mg HMX/kg/day

Animal No: 710 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
Black encrustations round nose from week 12-13. Red stains round right eye in week 13.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change, mainly centrilobular.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day

Animal No: 711 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular but some periportal.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day

Animal No: 712 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, centrilobular and periportal.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day

Animal No: 713 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Areas toxic change.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	0
~~Uterus/F.Tubes~~	~~4~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day

Animal No: 714 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, centrilobular and periportal.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	0
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
~~Uterus/P.Tubes~~	~~4~~
~~Ovaries~~	~~4~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day
Animal No: 715 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, centrilobular and periportal.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 6 4000 mg HMX/kg/day
Animal No: 716 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular but some peri-portal.

Number of Sections Examined	MF
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day
Animal No: 717 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular, but some peripc:tal.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~1~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day
Animal No: 718 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, centrilobular and periportal.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/P.Tubes~~	~~1~~
~~Ovaries~~	~~2~~
Testes	2
Prostate	0
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 4000 mg HMX/kg/day

Animal No: 719 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular, with foci periportal.

Number of Sections Examined	HE
Fat	0
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/F.Tubes~~	~~4~~
~~Ovaries~~	~~4~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 6 4000 mg HMX/kg/day

Animal No: 720 Sex: ♂

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Toxic change, mainly centrilobular but some foci periportal.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
~~Uterus/Fallopian Tubes~~	~~1~~
~~Ovaries~~	~~1~~
Testes	2
Prostate	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 721 Sex: ♀

Time on Study (weeks)	Death
13	FD

Clinical History
Died at blood sampling.

Necropsy Findings
Red staining round right eye.
Lungs dark red.
Trachea - frothy exudate.
Uterus dilated.

Sample	Histopathology
Lungs	Congested.
Trachea	NAD.
Uterus	NAD.

Number of Sections Examined	HE
Fat	0
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	0
Stomach	0
Duodenum	0
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder.	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord.	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 722 Sex: ♀

Time On Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	0
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 723 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
Encrustations round eyes from week 10-11.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fit	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	0
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group : 1 Control
Animal No: 724 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Right ovary larger than left.

Sample	Histopathology
Ovary	Only one present. NAL.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	1
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 725 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 726 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
Encrustations round right eye from week 9-11.

Necropsy Findings
NAD.

Sample	Histopathology
Liver	Two foci periportal lymphocyte infiltration.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	0
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	0
Brain	1
Spinal Cord	0
Bone/Sternum	1
Nasal Cavity	
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 727 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Lungs darker red than normal.

Sample	Histopathology
Lungs	NAD.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	0
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 728 Sex: ♀

Time on Study (weeks)	Death
14	TX

Clinical History
NAD.

Necropsy Findings
Lungs redder than normal.

Sample	Histopathology
Lungs	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 1 Control
Animal No: 729 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 730 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
Right eye half closed and red rimmed in week 13.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	
	MZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group : 1 Control
Animal No: 731 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	
	MZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 732 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 733 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Focus tubular atrophy and tubular epithelial regeneration.
Thyroid	Cystic follicle.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group : 1 Control
Animal No: 734 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 1 Control
Animal No: 735 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	2
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 736 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Lungs - grey patches on all lobes.
Left ovary surrounded by bubble of clear fluid.

Sample	Histopathology
Lungs	NAD.
Ovaries	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group : 1 Control
Animal No: 737 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Left ovary larger than right.

Sample	Histopathology
Ovaries	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	2
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 1 Control
Animal No: 738 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
Black encrustations round eyes in week 13.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	
	MC
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 1 Control
Animal No: 739 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	2
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	1
Bone/Sternum	2
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group : 1 Control
Animal No: 740 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	
	MZ
Fat	1
Liver	1
Kidney	2
Lung	1
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	1
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 741 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	KE
	NAD.	Liver	1
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 742 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
Right eye red encrusted from week 10-11.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 743 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 744 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 745 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
Right eye red encrusted in week 11.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 746 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	KL
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 747 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 748 Sex: ♀

Time on Study (weeks)	Death
.14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	5
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 749 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings

NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 750 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
Black encrusted left eye from week 7-13.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 751 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.	Uterus	Not examined.	Liver	1
			Kidneys	2

Necropsy Findings

Uterus appears fluid filled.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 752 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.	Liver	Two well defined areas of large macrophages, polymorphs, lymphocytes and RBCs. Possible thrombus.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 753 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
Flaky skin on hind feet from week 12-13.

Necropsy Findings
Left ovarian bursa dilated with clear fluid.

Sample	Histopathology	Number of Sections Examined	No.
Ovaries	Not examined.	Liver	1
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 754 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
Dark encrusted right eye from week 9-12.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 755 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	No.
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group : 2 50 mg HMX/kg/day
Animal No: 756 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
	NAD.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 757 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 758 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 759 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 2 50 mg HMX/kg/day
Animal No: 760 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 761 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 762 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	H&E
NAD.		NAD.	Liver	1
			Kidneys	1

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 763 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	-
			Kidneys	-

Necropsy Findings

NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 764 Sex: ♀

Time on Study (weeks)	Death
4	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 765 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 766 Sex: ♀

Time on Study (weeks)	Death
.14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group : 3 115 mg HMX/kg/day
Animal No: 767 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Number of Sections Examined	HE
Liver	✓
Kidneys	✓

Clinical History	Sample	Histopathology
NAD.		NAD.

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 768 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 769 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	ME
NAD.		NAD.	Liver Kidneys	

Necropsy Findings
NAD.

Project No: 41[illegible]669CR Group: 3 115 mg HMX/kg/day

Animal No: 770 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	1
			Kidneys	1

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 771 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.		NAD.	Liver	
			Kidneys	

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 772 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Right ovary surrounded by bubble of clear fluid.

Sample	Histopathology	Number of Sections Examined	HE
Ovaries	Not examined.	Liver	1
		Kidneys	2

Project No: 415669CR Group : 3 115 mg HMX/kg/day
Animal No: 773 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	
			Kidneys	

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 774 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.		NAD.	Liver	
			Kidneys	

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 775 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 1:5 mg HMX/kg/day
Animal No: 776 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HZ
NAD.		NAD.	Liver Kidneys	

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 777 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	1
			Kidneys	1

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 778 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Right ovarian bursa dilated with clear fluid.

Sample	Histopathology	Number of Sections Examined	No.
Ovaries	Not examined.	Liver	1
		Kidneys	1

Project No: 415669CR Group : 3 115 mg HMX/kg/day
Animal No: 779 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 3 115 mg HMX/kg/day
Animal No: 780 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	HE
Kidneys	Foci tubular atrophy and tubular epithelial regeneration. Some tubules dilated and contain eosinophilic material.	Liver Kidneys	1 2

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 781 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.	Kidneys	Focal tubular atrophy and tubular epithelial regeneration. Some tubules dilated and contain eosinophilic material.	Liver Kidneys	1 2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 782 Sex: ♀

Time on Study (weeks)	Death
1.4	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 783 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	No.
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 784 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 785 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.	Ovaries	Not examined.	Liver	
			Kidneys	

Necropsy Findings
Left ovary smaller than right.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 786 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.		NAD.	Liver	1
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 787 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.	Kidneys	Small foci tubular atrophy and tubular epithelial regeneration. Some tubules dilated and contain eosinophilic material.	Liver Kidneys	

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 788 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.		NAD.	Liver	
			Kidneys	

Necropsy Findings
NAD.

Project No: 415669CR Group : 4 270 mg HMX/kg/day
Animal No: 789 Sex: ♀

Time on Study (wk-kh)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HZ
NAD.		NAD.	Liver Kidneys	

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 790 Sex: ♀

Time on Study (weeks)	Death
.14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology	Number of Sections Examined	NE
Kidneys	Small foci tubular atrophy and tubular epithelial regeneration.	Liver Kidneys	1 2

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 791 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	MR
NAD.		NAD.	Liver Kidneys	

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 792 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	1
			Kidneys	1

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 793 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	NE
NAD.		NAD.	Liver	✓
			Kidneys	✓

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 794 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 795 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver Kidneys	

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 796 Sex: ♀

Time on Study (weeks)	Death
.14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.	Lungs	Not examined.	Liver	2
			Kidneys	2

Necropsy Findings

Lungs redder than usual.

Project No: 415669CR Group: 4 270 mg HMX/kg/day

Animal No: 797 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.	Liver	NAD.	Liver	2
	Kidneys	Small foci tubular atrophy and tubular epithelial regeneration.	Kidneys	2

Necropsy Findings

Liver. 7 x 5 mm diameter normal coloured spherical protrusion on median lobe.

Project No: 415669CR Group : 4 270 mg HMX/kg/day

Animal No: 798 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined	HE
NAD.		NAD.	Liver	2
			Kidneys	2

Necropsy Findings
NAD.

Project No: 415669CR Group : 4 270 mg HMX/kg/day
Animal No: 799 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History	Sample	Histopathology	Number of Sections Examined
NAD.		NAD.	Liver 2 Kidneys 2

Necropsy Findings
NAD.

Project No: 415669CR Group: 4 270 mg HMX/kg/day
Animal No: 800 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Liver slightly mottled.

Sample	Histopathology	Number of Sections Examined	HE
Liver	Slight dilation of sinusoids in centrilobular areas.	Liver	2
		Kidneys	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 801 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Area dilated tubules in cortex.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	0
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	0
Cecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	0
Uterus/F.Tubes	1
Ovaries	1
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	2
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 802 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Ovarian bursae - slight cystic dilation.

Sample	Histopathology
Kidneys	Foci dilated tubules in cortex.
Ovary	Cyst in corpus luteum.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	7
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

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Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 803 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
Scabs on right of nose from week 9-11.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 804 Sex: ♀

Time On Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	2
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~0~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	1
Brain	1
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 805 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
Growth in right hind foot from week 12-13.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Area tubular atrophy.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group : 5 620 mg HMX/kg/day
Animal No: 806 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Areas tubular atrophy in cortex.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 807 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Duodenum	Small area necrosis.

Number of Sections Examined	HE
Fat	0
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	0
Parathyroids	0
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	0
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 808 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Ileum - Peyer's patches prominent.
Ovaries - right larger than left.

Sample	Histopathology
Kidneys	Foci tubular atrophy and tubular regeneration. Focus tubular dilation.
Ileum	Peyer's patch hyperplastic.
Ovaries	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	0
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX kg/day
Animal No: 809 Sex: ♀

Time (wk) Study	Death
14	TY

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	1
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 810 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Foci tubular atrophy.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 811 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAL.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	0
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	2
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 812 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 813 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
Red encrustations round right eye from week 10-11.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Foci tubular atrophy.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cecum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	2
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	0
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	0
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 814 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day

Animal No: 815 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History	Sample	Histopathology
NAD.	Kidneys	Foci tubular atrophy and tubular epithelial regeneration.

Necropsy Findings
NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	1
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 816 Sex: ♀

Time on Study (Wks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Areas tubular atrophy and tubular epithelial regeneration.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	0
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Epididymis~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	1
Brain	1
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 5 620 mg HMX/kg/day
Animal No: 819 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
Scab to right of vaginal opening in week 7.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Small foci tubular atrophy and tubular epithelial regeneration.

Number of Sections Examined	No.
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
C/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	1
~~Testes~~	
~~Prostate~~	1
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	1
Brain	1
Spinal Cord	1
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	1

Project No: 415669CR Group: 620 mg HMX/kg/day
Animal No: 820 Sex: ♀

Time on Study	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Small focal tubular epithelial regeneration.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	2
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 821 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
Eyes black encrusted from week 9-11.

Necropsy Findings
Eyes - red encrusted.

Sample	Histopathology
Eyes	NAD.

Number of Sections Examined	NE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 822 Sex: ♀

Time On Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 6 1500 mg HMX/kg/day

Animal No: 823 Sex: ♀

Time on Study (Weeks)	Death
1	FD

Clinical History
Yellow stains round nose and mouth, red encrusted patch at top of left hind leg in week 1.

Necropsy Findings
Yellow staining round nose and mouth. Red encrusted patch at top of left hind leg. Subcutaneous tissue reddened. Lungs - irregular dark red patches on [illegible] lobes.

Sample	Histopathology
	Sections autolytic.
Lungs	Congested and autolytic.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	0
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	0
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	0
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	0
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 824 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Foci tubular atrophy and tubular epithelial regeneration.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	1
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	0
Uterus/F. Tubes	1
Ovaries	1
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	
Mammary Gl.	
Eyes	
Brain	
Spinal Cord	
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 825 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History

Encrustations round eyes from week 10-11. Blood in cage, black encrusted nose in week 11.

Necropsy Findings

NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 826 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	2
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day

Animal No: 827 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History

Blood in cage in weeks 11 and 13.
Black encrustations round nose in week 12.

Necropsy Findings

Uterus - both horns dilated with clear fluid.

Sample	Histopathology
Lungs	Area of alveoli packed with large, pale macrophages.
Uterus	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 828 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 829 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Foci tubular dilation and tubular epithelial regeneration.

Number of Sections Examined	HE
Fat	0
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	0
Aorta	1
Cervical L/N	0
Stomach	0
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	0

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 830 Sex: ♀

Time on Study (weeks)	Death
14	TX

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Focus tubular dilation.

Number of Sections Examined	HE
Fat	0
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 831 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Left ovary smaller than right.

Sample	Histopathology
Kidneys	Small foci tubular atrophy and tubular epithelial regeneration.
Ovaries	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	0
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 832 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Lungs darker red than normal.

Sample	Histopathology
Kidneys	Small foci tubular dilation.
Liver	Area congestion.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	0
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR
Animal No: 833

Group: 6 1500 mg HMX/kg/day
Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Focus tubular dilation.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 83 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History

Right eye black encrusted, right of face swollen in week 13.

Necropsy Findings

Tip of tail missing.

Right eye - slight corneal opacity.

Pancreas - 2 mm diameter red mass.

Sample	Histopathology
Mass from Pancreas	Splenic tissue.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	1
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	0
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2
Pancreatic Mass	1

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 835 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
Black encrusted nose and forelegs in week 1. Blood in cage from week 1-2.

Necropsy Findings
NAD.

Sample	Histopathology
Muscle	Area lymphocyte infiltration.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	2
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 836 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
Black encrusted eyes in week 13.

Necropsy Findings
Left ovary - clear fluid filled sac 3 mm diameter.

Sample	Histopathology
Kidneys	Foci tubular atrophy.
Ovary	Cyst.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	0
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	1
Uterus/F.Tubes	3
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	3
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 837 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
Right eye red encrusted in week 13.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Foci tubular dilation and tubular atrophy.

Number of Sections Examined	HZ
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscl	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	0
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Cæcum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Epididymis~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	2
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	0

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 838 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
Lungs darker than normal.
Froth in trachea.

Sample	Histopathology
Kidneys	Foci tubular atrophy.
Lungs	Slight congestion.
Pancreas	Focus acinar atrophy.
Trachea	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	0
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	1

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 839 Sex: ♀

Time on Study (weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
	NAD.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	2
Aorta	1
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~1~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

Project No: 415669CR Group: 6 1500 mg HMX/kg/day
Animal No: 840 Sex: ♀

Time on Study (Weeks)	Death
14	TK

Clinical History
NAD.

Necropsy Findings
NAD.

Sample	Histopathology
Kidneys	Foci tubular atrophy.

Number of Sections Examined	HE
Fat	1
Liver	1
Kidney	2
Lung	2
Heart	1
Spleen	1
Thymus	1
Muscle	1
Salivary Gl.	1
S/M Lymph N.	1
Pancreas	1
Trachea	1
Thyroids	2
Parathyroids	1
Aorta	0
Cervical L/N	1
Stomach	1
Duodenum	1
Jejunum	1
Ileum	1
Caecum	1
Colon	1
Rectum	1
Mes. Lymph N.	1
Adrenals	2
Bronchial L/N	0
Uterus/F.Tubes	1
Ovaries	2
~~Testes~~	~~2~~
~~Prostate~~	~~1~~
Pituitary	1
Bladder	1
Skin	1
Mammary Gl.	1
Eyes	2
Brain	1
Spinal Cord	2
Bone/Sternum	1
Nasal Cavity	1
Sciatic Nerve	2

APPENDIX 10

HMX: 13 Week Toxicity Study in Rats
Absolute Organ Weights (g)
Individual Values: Males

Dose mg/kg/day/Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Testes L	Testes R
0♂	601	288	0.022	0.020	1.83	1.04	0.93	0.95	10.16	1.51	0.78	1.98	1.95
	602	305	0.020	0.017	1.87	0.87	1.00	1.01	11.41	1.40	0.68	2.08	2.04
	603	294	0.026	a	1.92	0.94	0.94	0.97	10.15	1.18	0.62	2.67	2.02
	604	262	0.022	a	1.84	0.90	0.95	0.91	10.32	1.21	0.57	1.82	1.81
	605	255	0.028	0.022	1.84	0.81	0.88	0.91	11.18	1.36	0.65	1.92	2.00
	606	263	0.024	0.027	1.85	0.85	0.91	0.96	12.46	1.31	0.59	2.03	1.92
	607	289	0.021	0.021	1.91	0.92	0.99	1.01	10.74	1.36	0.70	2.08	2.12
	608	285	0.020	0.014	1.77	0.86	0.98	0.98	10.14	1.55	0.60	1.94	1.94
	609	278	0.028	0.026	1.87	0.84	0.99	0.94	10.23	1.23	0.61	2.02	2.03
	610	285	0.024	0.020	1.80	0.88	0.95	0.95	10.23	1.34	0.63	2.03	1.97
	611	299	0.026	0.024	1.89	0.91	1.00	0.97	12.03	1.47	0.70	2.10	2.02
	612	257	0.023	0.020	1.90	0.79	0.87	0.88	9.28	1.14	0.55	2.00	1.96
	613	319	0.022	a	1.85	0.96	1.02	1.01	12.50	1.43	0.70	2.17	2.14
	614	328	0.023	0.024	1.93	0.95	1.11	1.15	14.50	1.39	0.71	2.19	2.10
	615	282	0.026	0.026	1.86	0.87	1.01	0.97	9.76	1.31	0.61	1.96	1.88
	616	275	0.027	0.021	1.84	0.98	0.99	0.93	10.41	1.35	0.60	2.06	2.00
	617	234	0.019	0.020	1.84	0.76	0.82	0.79	8.01	1.11	0.55	1.81	1.85
	618	277	0.022	0.016	1.85	0.89	0.94	0.94	9.81	1.21	0.64	2.05	1.99
	619	290	0.025	0.022	1.91	0.91	1.03	1.04	11.63	1.40	0.64	2.05	2.02
	620	259	0.018	0.024	1.88	0.90	0.99	1.03	8.10	1.20	0.63	2.01	1.98
	Mean	281.2	0.0224		1.863	0.892	0.965		10.653	1.323	0.638	2.018	
	S.D.	22.5	0.0033		0.040	0.066	0.067		1.511	0.123	0.059	0.139	

a = Damaged at autopsy

APPENDIX 10 (continued)

Dose mg/kg/day/Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Testes L	Testes R
50♂	621	295	0.021	0.015	1.85	0.93	1.02	1.01	11.71	1.22	0.60	1.98	1.90
	622	297	0.021	0.019	1.93	0.92	1.09	1.04	11.50	1.21	0.60	1.94	1.94
	623	276	0.019	0.020	1.81	0.86	1.05	1.09	11.68	1.28	0.62	1.91	1.90
	624	264	0.022	0.017	1.86	0.89	0.92	0.97	10.76	1.16	0.58	1.93	1.89
	625	288	0.020	0.018	1.90	0.91	0.97	1.00	a	1.38	0.60	1.95	1.94
	626	267	0.022	0.010	1.73	0.74	0.91	0.91	9.54	1.17	0.60	1.71	1.86
	627	269	0.018	0.017	1.92	0.85	0.96	0.99	10.43	1.30	0.62	1.92	1.96
	628	276	0.027	0.019	1.97	0.85	1.06	1.03	10.52	1.17	0.57	1.92	1.87
	629	266	0.013	0.015	1.76	0.83	1.00	0.92	8.94	1.49	0.60	1.82	1.83
	630	293	0.020	0.015	1.95	0.90	1.05	1.00	10.85	1.31	0.63	2.15	2.02
	631	284	0.021	0.019	1.82	0.91	0.93	0.92	12.65	1.25	0.66	1.94	1.87
	632	263	0.019	0.017	1.88	0.87	0.97	0.87	10.21	1.09	0.53	1.85	1.90
	633	263	0.022	0.017	1.93	0.95	0.92	0.90	10.05	1.18	0.60	2.11	2.17
	634	294	0.022	0.018	1.88	0.90	1.06	1.03	12.08	1.16	0.63	2.02	1.96
	635	278	0.019	0.022	1.84	0.85	1.03	1.01	11.69	1.14	0.62	1.96	2.05
	636	264	0.016	0.018	1.86	0.95	0.90	0.88	8.68	1.13	0.56	1.92	1.87
	637	299	0.024	0.023	1.92	0.93	1.08	1.07	12.62	1.35	0.61	2.08	2.13
	638	314	0.023	0.015	1.85	0.96	1.11	1.12	12.09	1.48	0.68	1.93	1.89
	639	313	0.020	0.019	1.90	0.93	1.12	1.10	12.11	1.36	0.63	1.99	1.97
	640	267	0.021	0.019	1.85	0.76	1.01	1.00	12.30	1.34	0.59	1.90	1.85
	Mean	281.5	0.0191		1.871	0.885	1.001		11.074	1.259	0.607	1.943	
	S.D.	16.7	0.0032		0.061	0.060	0.071		1.205	0.115	0.033	0.094	

a = Omitted from mean due to erroneous data

APPENDIX 10 (continued)

Dose mg/kg/day/Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Testes L	Testes R
150♂	641	287	0.021	0.021	1.95	0.94	0.90	0.94	10.10	1.22	0.64	2.06	2.01
	642	305	0.020	0.019	1.87	0.91	1.00	1.01	14.84	1.27	0.66	2.04	2.04
	643	302	0.014	0.017	1.94	0.93	1.09	1.01	11.74	1.44	0.55	2.02	2.00
	644	269	0.021	0.019	1.86	0.94	0.97	0.92	9.83	1.43	0.58	2.10	2.06
	646	265	0.015	0.016	1.85	0.74	0.94	0.94	11.48	1.25	0.56	1.83	1.84
	647	275	0.018	0.018	1.84	0.85	0.86	0.88	9.81	1.50	0.56	1.97	2.03
	648	292	0.025	0.024	1.91	1.00	1.12	1.10	10.90	1.40	0.64	2.05	1.86
	649	271	0.018	0.017	1.90	0.84	0.91	0.87	9.89	1.15	0.63	1.87	1.81
	650	269	0.020	0.019	1.89	0.83	0.95	0.93	10.23	1.26	0.51	1.97	1.94
	651	276	0.019	0.020	1.88	0.80	0.92	0.89	11.01	1.29	0.57	1.96	1.96
	652	265	0.020	0.020	1.87	0.89	0.95	0.95	11.23	1.11	0.57	1.90	1.89
	653	278	0.023	0.020	1.92	0.82	0.99	1.01	12.22	1.22	0.60	1.92	1.98
	654	258	0.021	0.014	1.83	0.76	0.94	0.89	9.71	1.20	0.55	1.70	1.72
	655	278	0.019	0.017	1.88	0.85	0.94	0.98	10.89	1.30	0.59	1.88	1.98
	656	290	0.025	0.022	1.85	0.95	1.02	0.92	11.95	1.25	0.62	1.85	1.83
	657	256	0.020	0.019	1.91	0.84	0.04	0.87	10.01	1.08	0.58	1.78	1.84
	658	264	0.018	0.013	1.82	0.81	0.88	0.86	8.80	1.13	0.56	1.90	1.82
	659	239	0.016	0.016	1.77	0.73	0.82	0.86	9.46	1.16	0.49	1.71	1.75
	660	247	0.020	0.018	1.87	0.83	0.86	0.85	9.01	1.25	0.55	2.01	1.93
	Mean	272.9	0.0190		1.874	0.856	0.936		10.690	1.258	0.579	1.916	
	S.D.	17.3	0.0028		0.044	0.075	0.072		1.402	0.116	0.044	0.107	

APPENDIX 10 (continued)

Dose mg/kg/day/Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Testes L	Testes R
450♂	661	272	0.012	0.011	1.88	0.85	0.89	0.86	10.07	1.44	0.57	1.83	1.88
	662	275	0.019	0.019	1.92	0.84	0.88	0.90	10.72	1.17	0.56	1.89	1.89
	663	317	0.023	0.021	1.90	1.03	1.12	1.08	12.33	1.50	0.67	2.03	2.08
	664	281	0.020	0.020	1.94	0.92	0.98	1.06	10.95	1.47	0.63	2.03	2.06
	665	286	0.017	0.019	1.90	0.90	0.98	0.87	10.35	1.31	0.63	1.87	1.91
	666	281	0.018	0.019	1.88	0.80	0.94	0.90	10.33	1.37	0.59	1.94	1.94
	667	267	0.021	0.021	1.79	0.82	0.89	0.90	9.29	1.61	0.56	1.68	1.81
	668	268	0.021	0.019	1.84	0.87	0.94	0.93	10.18	1.37	0.58	1.84	1.74
	669	290	0.022	0.025	1.91	0.82	0.99	0.97	10.07	1.29	0.64	1.91	1.89
	670	272	0.025	0.025	1.89	0.92	0.92	0.91	4.66	1.29	0.53	2.01	2.00
	671	222	0.016	0.014	1.81	0.70	0.76	0.76	8.04	1.08	0.46	1.84	1.70
	672	261	0.022	0.020	1.71	0.89	1.00	1.05	9.84	1.27	0.57	1.93	1.87
	673	268	0.018	0.020	1.87	0.90	0.92	0.95	10.68	1.32	0.62	1.96	1.98
	674	290	0.024	a	1.92	0.89	1.02	0.99	12.66	1.44	0.63	2.08	2.03
	675	288	0.022	0.021	1.90	0.89	1.06	1.04	11.29	1.28	0.53	1.97	1.90
	676	261	0.018	0.021	1.93	0.95	0.99	1.02	11.32	1.29	0.54	1.95	1.90
	677	243	0.026	0.027	1.77	0.83	0.80	0.85	9.54	1.32	0.49	1.77	1.77
	678	225	0.022	0.018	1.83	0.69	0.82	0.81	8.17	1.06	0.55	1.83	1.75
	679	281	0.020	0.012	1.84	0.85	0.91	0.89	10.69	1.38	0.54	b	1.98
	680	269	0.021	0.019	1.87	0.84	0.91	0.94	10.28	1.27	0.54	1.96	1.86
	Mean	270.9	0.0199		1.865	0.860	0.935		10.323	1.327	0.572	1.904	
	S.D.	22.0	0.0036		0.059	0.077	0.085		1.137	0.132	0.053	0.102	

a = Damaged at autopsy

b = Omitted from mean - probably erroneous data

APPENDIX 10 (continued)

Dose mg/kg/ day/ Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Testes L	Testes R
1350♂	681	289	0.018	0.016	1.89	0.89	0.85	0.90	10.57	1.39	0.58	1.99	1.93
	682	281	0.019	0.018	1.85	0.88	0.91	0.91	9.72	1.19	0.57	1.91	1.85
	683	260	0.018	0.017	2.03	0.82	0.90	0.88	10.34	1.13	0.45	1.94	1.83
	684	268	0.025	0.019	1.94	0.85	0.95	0.92	9.67	1.53	0.51	1.98	1.94
	685	287	0.019	0.020	1.88	0.87	1.02	1.02	12.46	1.34	0.62	1.95	1.94
	686	280[a]	0.023	0.021	1.84	0.86	0.98	0.96	11.34	1.37	0.56	2.08	1.92
	687	221	0.016	0.016	1.76	0.66	0.75	0.73	7.99	1.35	0.66	1.71	1.64
	688	224	0.022	0.022	1.81	0.83	0.82	0.86	9.17	1.15	0.49	1.75	1.74
	689	297	0.016	0.017	1.95	0.97	1.02	0.98	10.61	1.43	0.64	1.98	1.88
	690	297	0.020	0.020	1.84	0.89	1.00	0.95	10.18	1.34	0.63	2.12	2.00
	691	259	0.018	0.018	1.90	0.76	0.81	0.82	8.47	1.20	0.51	1.85	1.86
	692	258	0.027	0.023	1.90	0.89	0.96	0.92	10.43	1.47	0.52	1.99	1.92
	693	247	0.015	0.011	1.88	0.81	0.88	0.86	8.90	1.16	0.53	1.86	1.20
	694	292	0.020	0.018	1.90	0.88	1.02	0.98	11.57	1.34	0.59	1.76	1.90
	695	243	0.017	0.016	1.82	0.84	0.82	0.87	9.41	1.13	0.51	1.77	1.83
	696	254	0.024	0.020	1.89	0.85	0.89	0.84	9.59	1.15	0.53	1.89	1.75
	697	261	0.017	0.018	1.80	0.80	0.82	0.86	9.02	1.18	0.49	1.89	1.92
	698	264	0.018	0.016	1.90	0.82	0.95	0.93	10.57	1.16	0.54	2.01	1.97
	699	259	0.015	0.017	1.89	0.78	0.94	0.88	9.48	1.26	0.54	1.85	1.76
	700	286	0.021	0.016	1.90	0.92	0.97	1.07	12.14	1.47	0.60	2.02	2.02
	Mean	266.4	0.0187		1.879	0.844	0.910		10.082	1.287	0.554	1.878	
	S.D.	22.3	0.0031		0.059	0.065	0.077		1.177	0.131	0.057	0.152	

a = PM room weight missing - MAM weight used

APPENDIX 10 (continued)

Dose mg/kg/ day/ Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Testes L	Testes R
4000♂	701	253	0.018	0.017	1.86	0.74	0.85	0.80	9.25	1.83	0.55	1.81	1.84
	702	284	0.020	0.019	1.92	0.85	0.90	0.90	9.69	1.25	0.58	2.13	2.08
	703	258	0.017	0.017	1.92	0.84	0.90	0.93	10.52	1.17	0.58	1.85	1.84
	704	271	0.019	0.016	1.88	0.93	0.96	0.96	11.22	1.56	0.59	1.87	1.87
	705	265	0.018	0.015	1.85	0.83	0.93	0.87	10.26	1.29	0.55	2.00	1.94
	706	273	0.016	0.017	1.91	0.81	0.96	0.93	10.44	1.33	0.60	1.94	1.93
	707	260	0.020	0.018	1.86	0.80	0.87	0.82	9.54	1.35	0.52	1.96	1.93
	708	250	0.022	a	1.85	0.84	0.91	0.90	8.89	1.21	0.50	1.94	1.89
	709	266	0.014	0.012	1.82	0.80	0.83	0.88	9.37	1.21	0.55	1.83	1.80
	710	244	0.019	0.016	1.81	0.76	0.85	0.81	9.08	1.06	0.48	1.87	1.83
	711	275	0.019	0.021	1.91	0.92	0.97	0.89	11.07	1.39	0.62	1.97	1.98
	712	235	0.017	0.018	1.79	0.76	0.86	0.82	11.77	1.11	0.50	1.78	1.70
	713	254	0.018	0.011	1.88	0.73	0.87	0.90	11.18	1.32	0.51	1.87	1.81
	714	244	0.024	0.019	1.88	0.79	0.83	0.78	8.11	1.10	0.48	1.95	1.94
	715	248	0.021	0.019	1.91	0.84	0.89	0.91	11.12	1.15	0.50	1.83	1.83
	716	242	0.021	0.021	1.91	0.79	0.85	0.88	9.89	1.28	0.45	1.97	1.91
	717	261	0.015	0.014	1.91	0.82	0.89	0.89	9.75	1.25	0.54	1.84	1.80
	718	240	0.020	0.017	1.81	0.75	0.87	0.89	8.99	1.15	0.49	1.82	1.78
	719	253	0.019	0.018	1.90	0.85	0.85	0.80	8.67	1.16	0.53	2.02	1.90
	720	266	0.018	0.016	1.92	0.88	0.96	0.97	10.57	1.25	0.59	1.94	1.83
	Mean	257.1	0.0178		1.875	0.817	0.883		9.969	1.271	0.536	1.891	
	S.D.	13.1	0.0026		0.042	0.055	0.050		1.001	0.175	0.047	0.086	

a = Damaged at autopsy

APPENDIX 10 (continued)

Females

Dose mg/kg/ day/ Sex	Animal No.	Body Weight	Adrenals		Brain	Heart	Kidneys		Liver	Lungs	Spleen	Ovaries	
			L	R			L	R				L	R
0♀	722	167	a	0.021	1.69	0.59	0.63	0.44	5.02	1.02	0.44	0.022	0.023
	723	167	0.030	0.029	1.73	0.64	0.68	0.68	5.89	0.85	0.41	0.035	0.040
	724	166	0.026	0.025	1.74	0.59	0.62	0.64	5.01	0.86	0.38	0.024	0.040
	725	159	0.022	0.024	1.75	0.55	0.56	0.58	4.69	0.79	0.37	0.024	0.035
	726	146	0.018	0.017	1.61	0.52	0.56	0.54	4.57	0.72	0.36	0.023	0.021
	727	162	0.017	0.020	1.76	0.59	0.68	0.65	5.12	1.18	0.45	0.029	0.027
	728	161	0.025	0.022	1.68	0.60	0.62	0.60	5.00	1.16	0.39	0.027	0.028
	729	183	0.025	0.024	1.76	0.61	0.69	0.71	5.78	0.95	0.49	0.028	0.024
	730	144	0.018	0.018	1.66	0.51	0.59	0.57	4.63	0.72	0.40	0.028	0.029
	731	186	0.016	0.019	1.74	0.66	0.68	0.68	6.85	1.18	0.46	0.028	0.027
	732	159	0.019	0.019	1.70	0.55	0.57	0.57	5.40	0.83	0.38	0.022	0.026
	733	168	0.023	0.024	1.60	0.57	0.63	0.64	6.15	1.09	0.37	0.029	0.026
	734	185	0.018	0.019	1.71	0.62	0.71	0.70	7.29	1.06	0.41	0.027	0.030
	735	160	0.025	2.020	1.71	0.64	0.61	0.60	5.40	0.92	0.36	0.019	0.027
	736	160	a	0.025	1.64	0.58	0.63	0.59	6.95	0.91	0.48	0.030	0.030
	737	169	0.026	0.023	1.74	0.55	0.63	0.60	5.07	0.84	0.41	0.043	0.022
	738	175	0.020	0.020	1.71	0.62	0.61	0.62	6.00	0.99	0.40	0.025	0.027
	739	171	0.020	0.020	1.66	0.60	0.61	0.59	5.64	0.97	0.40	0.023	0.019
	740	163	0.021	0.023	1.79	0.65	0.63	0.62	4.82	0.93	0.44	0.026	0.024
	Mean	165.8	0.0217		1.704	0.592	0.625		5.541	0.946	0.411	0.0273	
	S.D.	11.2	0.0034		0.052	0.042	0.045		0.811	0.143	0.039	0.0054	

a = Damaged at autopsy

APPENDIX 10 (continued)

Dose mg/kg/ day/ Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Ovaries L	Ovaries R
50♀	741	181	0.029	0.027	1.80	0.61	0.73	0.72	6.40	1.02	0.47	0.043	0.041
	742	157	0.025	0.024	1.81	0.59	0.64	0.64	5.29	0.82	0.40	0.037	0.022
	743	171	0.024	0.025	1.78	0.62	0.70	0.69	6.59	0.94	0.43	0.028	0.021
	744	162	0.025	0.023	1.79	0.59	0.71	0.72	6.56	0.90	0.39	0.023	0.031
	745	167	0.025	0.021	1.81	0.58	0.62	0.61	5.10	0.96	0.44	0.024	0.030
	746	167	0.015	0.019	1.77	0.59	0.67	0.67	5.22	0.08	0.42	0.025	0.020
	747	161	0.027	0.031	1.80	0.58	0.66	0.67	6.36	0.93	0.44	0.033	0.036
	748	171	0.029	0.025	1.77	0.64	0.64	0.65	5.02	0.92	0.42	0.028	0.029
	749	171	0.025	0.025	1.70	0.60	0.61	0.60	5.60	0.99	0.39	0.031	0.030
	750	171	0.020	0.021	1.75	0.54	0.58	0.58	5.86	0.77	0.35	0.032	0.026
	751	165	0.026	0.026	1.81	0.60	0.69	0.65	5.58	0.86	0.41	0.033	0.027
	752	156	0.031	0.025	1.60	0.62	0.61	0.60	5.38	0.86	0.40	0.026	0.027
	753	166	0.024	0.021	1.74	0.58	0.68	0.65	6.04	0.88	0.41	0.036	0.032
	754	179	0.029	0.027	1.77	0.68	0.70	0.68	5.69	1.01	0.48	0.023	0.034
	755	166	0.025	0.030	1.67	0.60	0.62	0.62	5.97	0.94	0.40	0.025	0.023
	756	158	0.029	0.022	1.75	0.57	0.64	0.64	6.11	0.88	0.40	0.026	0.029
	757	169	0.026	0.025	1.70	0.55	0.62	0.62	5.31	0.91	0.40	0.020	0.023
	758	169	0.040	a	1.74	0.57	0.58	0.55	4.86	1.00	0.40	0.037	0.026
	759	180	0.026	0.022	1.84	0.65	0.66	0.65	5.45	0.90	0.53	0.037	0.031
	760	146	0.018	0.017	1.68	0.72	0.62	0.61	5.94	0.85	0.38	0.017	0.020
	Mean	166.7	0.0250		1.739	0.604	0.645		5.717	0.911	0.418	0.0286	
	S.D.	8.5	0.0044		0.103	0.043	0.043		0.521	0.065	0.040	0.0061	

a = Damaged at autopsy

APPENDIX 10 (continued)

Dose mg/kg/day/Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Ovaries L	Ovaries R
1159	761	152	0.026	0.025	1.72	0.51	0.57	0.60	4.86	0.78	0.37	0.027	0.031
	762	173	0.022	0.020	1.74	0.59	0.65	0.69	5.02	0.96	0.43	0.030	0.028
	763	166	0.029	0.029	1.78	0.57	0.67	0.65	6.09	0.88	0.45	0.045	0.046
	764	166	0.025	0.025	1.76	0.58	0.64	0.59	5.24	0.98	0.38	0.020	0.016
	765	163	0.024	0.025	1.80	0.57	0.70	0.67	5.53	0.95	0.39	0.029	0.044
	766	153	0.021	0.021	1.81	0.59	0.61	0.62	5.11	0.82	0.42	0.021	0.020
	767	151	0.027	0.020	1.70	0.58	0.61	0.62	4.87	0.86	0.43	0.029	0.029
	768	182	0.033	0.030	1.78	0.66	0.74	0.69	6.25	1.01	0.48	0.034	0.029
	769	162	0.027	0.025	1.71	0.58	0.60	0.56	5.72	0.86	0.38	0.024	0.029
	770	171	0.029	0.023	1.78	0.58	0.67	0.65	6.53	0.97	0.44	0.030	0.028
	771	173	0.025	0.027	1.75	0.64	0.66	0.67	6.65	0.90	0.41	0.020	0.034
	772	170	0.029	0.028	1.82	0.66	0.70	0.74	6.17	0.99	0.43	0.023	0.043
	773	157	0.027	0.028	1.79	0.56	0.64	0.62	5.48	1.07	a	0.025	0.030
	774	163	0.033	0.028	1.75	0.60	0.65	0.67	6.31	0.93	0.40	0.032	0.031
	775	169	0.028	0.026	1.78	0.60	0.68	0.68	6.90	0.77	0.38	0.029	0.028
	776	160	0.025	0.025	1.81	0.57	0.61	0.55	5.45	0.85	0.42	0.029	0.023
	777	168	0.029	0.026	1.72	0.57	0.61	0.61	5.36	1.05	0.45	0.030	0.036
	778	174	0.023	0.024	1.78	0.59	0.69	0.65	6.37	0.88	0.40	0.034	0.030
	779	180	0.032	0.029	1.82	0.58	0.70	0.68	6.60	0.91	0.42	0.031	0.033
	780	167	0.032	0.025	1.81	0.61	0.68	0.69	6.53	1.04	0.40	0.027	0.033
	Mean	166.0	0.0264		1.771	0.590	0.650		5.901	0.923	0.415	0.0298	
	S.D.	8.6	0.0033		0.038	0.034	0.045		0.668	0.087	0.029	0.0067	

a = Omitted from mean due to erroneous data

APPENDIX 10 (continued)

Dose mg/kg/ day/ Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Ovaries L	Ovaries R
270♀	781	162	0.032	0.034	1.79	0.59	0.65	0.67	6.02	0.92	0.41	0.035	0.036
	782	165	0.030	0.027	1.72	0.62	0.68	0.68	5.63	0.93	0.49	0.027	0.029
	783	169	0.029	0.023	1.83	0.61	0.68	0.68	6.22	0.88	0.44	0.026	0.031
	784	164	0.039	0.030	1.75	0.59	0.67	0.66	5.62	1.02	0.38	0.031	0.036
	785	167	0.021	0.021	1.75	0.53	0.58	0.58	4.88	0.95	0.39	0.012	0.030
	786	164	0.028	0.029	1.82	0.59	0.68	0.67	5.74	0.94	0.44	0.034	0.032
	787	158	0.020	0.020	1.76	0.59	0.60	0.56	5.87	1.27	0.40	0.017	0.025
	788	169	0.029	0.023	1.76	0.62	0.69	0.67	5.65	0.94	0.47	0.021	0.034
	789	152	a	0.024	1.73	0.56	0.60	0.63	5.27	0.86	0.40	0.024	0.026
	790	120	0.012	0.009	1.71	0.45	0.46	0.48	3.66	0.82	0.25	0.013	0.011
	791	156	0.024	0.021	1.83	0.53	0.61	0.62	5.30	1.00	0.40	0.021	0.022
	792	159	0.028	0.025	b	0.54	0.63	0.63	5.26	1.28	0.44	0.021	0.028
	793	160	0.020	0.023	1.74	0.57	0.60	0.58	5.59	0.93	0.37	0.028	0.020
	794	142	0.020	0.020	169	0.48	0.58	0.58	4.59	0.81	0.36	0.029	0.030
	795	172	0.029	0.036	1.79	0.66	0.69	0.71	6.63	1.18	0.42	0.029	0.029
	796	179	0.028	0.017	1.82	0.63	0.72	0.77	6.49	0.98	0.42	0.028	0.032
	797	162	0.018	0.016	1.78	0.58	0.65	0.62	6.13	0.92	0.42	0.032	0.027
	798	153	0.023	0.023	1.81	0.57	0.62	0.61	5.55	0.94	0.44	0.027	0.030
	799	161	0.015	0.017	1.75	0.58	0.62	0.60	5.62	0.89	0.43	0.027	0.023
	800	180	0.030	0.027	1.81	0.57	0.67	0.64	7.42	0.92	0.45	0.042	0.034
	Mean	160.8	0.0242		1.771	0.573	0.633		5.646	0.969	0.411	0.0272	
	S.D.	13.0	0.0064		0.043	0.050	0.059		0.796	0.130	0.050	0.0067	

a = Damaged at autopsy

b = Omitted from mean due to erroneuous data

APPENDIX 10 (continued)

Dose mg/kg/ day/ Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Ovaries L	Ovaries R
620♀	801	163	0.011	0.015	1.75	0.55	0.68	0.65	6.25	0.91	0.45	0.032	0.027
	802	172	0.02[a]	0.02[a]	1.77	0.62	0.61	0.61	7.29	1.17	0.45	0.04[a]	0.03[a]
	803	160	0.032	0.030	1.84	0.61	0.67	0.68	6.20	1.00	0.42	0.026	0.040
	804	158	0.027	0.024	1.76	0.55	0.62	0.59	6.20	0.83	0.38	0.028	0.019
	805	153	0.019	0.011	1.69	0.48	0.57	0.54	4.59	0.83	0.39	0.016	0.024
	806	164	0.024	0.022	1.82	0.55	0.60	0.62	6.30	0.90	0.43	0.037	0.035
	807	148	0.033	0.030	1.77	0.55	0.65	0.62	5.55	0.98	0.42	0.033	0.036
	808	160	b	0.022	1.78	0.50	0.67	0.65	5.02	0.89	0.42	0.021	0.036
	809	166	0.019	0.019	1.85	0.55	0.65	0.65	5.33	1.08	0.39	0.028	0.025
	810	148	0.020	0.017	1.67	0.59	0.60	0.56	5.91	0.94	0.39	0.032	0.023
	811	143	0.017	0.020	1.68	0.49	0.60	0.56	5.31	0.77	0.32	0.012	0.020
	812	159	0.026	0.024	1.81	0.56	0.64	0.66	5.72	1.02	0.41	0.020	0.026
	813	147	0.031	0.030	1.79	0.56	0.67	0.73	5.11	1.06	0.41	0.030	0.028
	814	147	0.014	0.014	1.79	0.48	0.54	0.55	4.70	1.05	0.34	0.015	0.019
	815	151	0.022	0.022	1.65	0.55	0.65	0.64	5.59	1.01	0.41	0.030	0.021
	816	173	0.033	0.028	1.73	0.61	0.70	0.69	6.35	1.18	0.47	0.030	0.038
	817	168	0.027	0.026	1.75	0.59	0.66	0.66	6.52	0.96	0.47	0.025	0.027
	818	182	0.029	0.027	1.78	0.63	0.75	0.75	6.88	1.05	0.48	0.032	0.034
	819	149	0.026	0.019	1.73	0.53	0.61	0.60	4.91	0.77	0.39	0.022	0.018
	820	168	b	0.028	1.78	0.61	0.71	0.68	6.52	0.88	0.42	0.032	0.048
	Mean	159.0	0.0231		1.760	0.558	0.639		5.813	0.964	0.413	0.0279	
	S.D.	10.6	0.0060		0.055	0.046	0.053		0.748	0.118	0.041	0.0073	

a = Accidentally recorded to incorrect number of d.p.

b = Damaged at autopsy

APPENDIX 10 (continued)

Dose mg/kg/day/Sex	Animal No.	Body Weight	Adrenals L	Adrenals R	Brain	Heart	Kidneys L	Kidneys R	Liver	Lungs	Spleen	Ovaries L	Ovaries R
1500♀	821	130	0.022	0.022	1.64	0.48	0.56	0.52	5.53	0.71	0.34	0.020	0.019
	822	141	0.016	0.017	1.67	0.47	0.54	0.56	4.69	1.22	0.35	0.019	0.019
	824	162	0.025	0.022	1.82	0.57	0.66	0.69	5.66	0.98	0.42	0.029	0.024
	825	155	0.026	a	1.76	0.57	0.65	0.66	6.36	0.96	0.38	0.024	0.025
	826	144	0.024	a	1.77	0.50	0.65	0.59	5.18	0.88	0.38	0.017	0.023
	827	135	0.023	0.019	1.74	0.55	0.60	0.63	4.61	0.85	0.37	0.011	0.019
	828	144	0.028	0.024	1.78	0.54	0.63	0.62	5.70	0.95	0.38	0.019	0.023
	829	133	0.015	0.018	1.74	0.46	0.53	0.54	4.07	0.93	0.34	0.014	0.014
	830	121	0.016	0.015	1.70	0.43	0.52	0.50	3.82	0.87	0.27	0.021	0.022
	831	152	0.022	0.014	1.70	0.52	0.58	0.59	5.89	0.91	0.37	0.019	0.027
	832	144	0.027	0.026	1.79	0.61	0.62	0.59	5.46	0.97	0.34	0.025	0.029
	833	146	0.026	0.024	1.73	0.47	0.53	0.53	4.81	0.83	0.33	0.018	0.030
	834	170	0.040	0.024	1.90	0.58	0.74	0.69	7.21	1.00	0.48	0.020	0.037
	835	172	0.023	0.021	1.80	0.63	0.69	0.70	6.34	0.97	0.48	0.020	0.022
	836	148	0.025	0.025	1.74	0.53	0.68	0.64	5.28	0.92	0.38	0.041	0.013
	837	132	0.022	0.019	1.74	0.46	0.54	0.52	4.37	0.74	0.31	0.017	0.019
	838	154	0.016	0.014	1.80	0.51	0.55	0.56	5.29	1.28	0.37	0.017	0.018
	839	142	0.021	0.016	1.76	0.50	0.55	0.56	5.44	0.77	0.38	0.016	0.017
	840	151	0.022	0.022	1.74	0.55	0.68	0.65	5.56	0.85	0.45	0.020	0.030
	Mean	146.1	0.0217		1.754	0.523	0.601		5.330	0.925	0.375	0.0215	
	S.D.	13.2	0.0051		0.058	0.055	0.064		0.827	0.141	0.053	0.0062	

a = Damaged at autopsy

APPENDIX 11

HMX: 13 Week Toxicity Study in Rats
Analysis of HMX in Formulated Diets

aterials

,3 Dinitrobenzene (Organic Analytical Standard Grade) BDH hemicals Ltd, Poole, England.

cetonitrile (HPLC Grade) Rathburn Chemicals Ltd, Walkerburn, cotland.

lethod

suitable weight of diet (2.5 g or 5 g) was weighed accurately nto clean glass 8 oz jars. To this was added 1 ml of internal tandard solution (dinitrobenzene in acetonitrile at a suitable oncentration) and 50 ml of acetonitrile as extracting solvent. he jars were shaken mechanically for 1 h then left to settle, referably overnight. A suitable aliquot was transferred to a ample vial and analysed by HPLC.

tandard solutions of HMX were prepared by adding a known mount of HMX (equivalent to that of the group being analysed) o a sample of untreated diet. These were treated with nternal standard solution and extracting solvent as described or the formulated diet samples.

hree quality control samples were included with each batch of est samples and standards. For this purpose a solution of HMX n acetonitrile was prepared by an independent analyst and hese solutions used by the analyst to spike blank diet samples n exactly the same way as the standards.

PLC Conditions

nstrument:	Hewlett Packard 1084B with variable wavelength detector and automatic sampler.
olumn:	100 x 5 mm stainless steel packed with ODS Hypersil (5 μ).
olvent:	Acetonitrile:Water (40:60 v/v).
low:	1.5 ml/min.

APPENDIX 11 (continued)

Oven Temperature:	$40^{o}C$.
Wavelenth:	228 nm.
Attenuation:	$2^{5}-2^{8}$.
Chart Speed:	0.5 cm/min.

APPENDIX 12

Methods and Units used in Laboratory Investigations

Haematology

Parameters	Method	Units
Haemoglobin: (Hb)	Drabkin, D.L. and Austin, J.H. J. Biol. Chem., 98, 719, (1932).	g/dl
Total Red Blood Cell Count: (RBC)	Coulter Counter, Coulter Electronics Ltd.	$\times 10^{12}/l$
Packed Cell Volume: (PCV)	Modified Strumia, M.M. et al, Amer. J. Path., 24, 1016, (1954).	%
Absolute Values:		
Mean Cell Volume: (MCV)		fl
Mean Cell Haemoglobin: (MCH)	Haematological Slide Rule	pg
Mean Cell Haemoglobin Concentration: (MCHC)		g/dl
Reticulocyte Count:	Visual appraisal using new methylene blue vital staining.	%
Total White Blood Cell Count: (WBC)	Coulter Counter, Coulter Electronics Ltd.	$\times 10^{9}/l$
Differential White Cell Count:	Visual appraisal of stained film. (May-Grunwald and Giemsa Stain.)	$\times 10^{9}/l$
Hepato Quick: (Boehringer)	Tryding, N.u.a., Farmakoterapai, 25, 27, (1969).	sec

APPENDIX 12 (continued)

Clinical Chemistry

Parameters	Method	Units
Urea: (BUN)	Karmen, A., J. Clin. Invest., 34, 131, (1955). Adapted for centrifugal analysis.	mmol/l
Glucose:	Barthelmai, W. and Czok, R., Klin. Wochschr., 40, 585, (1962).	mmol/l
Aspartate Transaminase: (GOT) or (AST)	Enzyme Commission of the German Society for Clinical Chemistry. Z. Klin. Chem. Klin. Biochem., 10, 281, (1972). Adapted for centrifugal analysis.	IU/l
Alanine Transaminase: (GPT) or (ALT)	Enzyme Commission of the German Society for Clinical Chemistry. Z. Klin. Chem. Klin. Biochem. 10, 281, (1972). Adapted for centrifugal analysis.	IU/l
Lactate Dehydrogenase: (LDH)	Enzyme Commission of the German Society for Clinical Chemistry. Z. Klin. Chem. Klin. Biochem., 10, Jg., 281-291, (1972). Adapted for centrifugal analysis.	IU/l
Sodium: (Na)	I.L. flame photometer	mmol/l
Potassium: (K)	I.L. flame photometer	mmol/l
Total Protein:	Henry, R.J., Sobel, C. and Berkman, S., Anal. Chem., 29, 1491, (1957). Adapted for centrifugal analysis.	g/l
Albumin:	Rodkey, F.L., Clin. Chem., 11, 478, (1965); Dow, D. and Pinto, P.V.C., Clin. Chem., 15, 1006, (1969).	g/l
Alkaline Phosphatase: (AP)	Enzyme Commission of the German Society for Clinical Chemistry. Z. Klin. Chem. Klin. Biochem., 10, 251, (1972). Adapted for centrifugal analysis.	IU/l

APPENDIX 12 (continued)

Urinalysis

Parameter	Method
pH:	Boehringer BM8 Test Strips
Specific Gravity:	Refractometer
Protein:	Boehringer BM8 Test Strips
Glucose:	Boehringer BM8 Test Strips
Ketones:	Boehringer BM8 Test Strips
Blood:	Boehringer BM8 Test Strips
Bilirubin:	Boehringer BM8 Test Strips
Urobilinogen:	Boehringer Test Strips
Microscopy:	Urine samples centrifuged at 1,000 rpm for 10 min and spun deposit examined for:

epithelial cells (E)
crystals (CR)
white blood cells (W)
erythrocytes (R)
organisms (O)
casts (C)
abnormal constituents (A)

For the sake of clarity only the initials E, CR, W, R, O, C and A are used in the tables of results.

NB Scoring for qualititative urine tests is:

0 = negative
1 = trace amount
2 = small amount
3 = large amount

Colour: Y = yellow
G = green
P = pale
D = dark

PERSONNEL INVOLVED IN PROJECT 415669CR

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