



HAZLETON LABORATORIES AMERICA, INC.

SPONSOR: National Institute for Occupational Safety and Health DATE: July 29, 1977

MATERIAL: 4,4'-Methylene-Bis-(2-Chloroaniline); MOCA

SUBJECT: FINAL REPORT
104-Week Carcinogenicity Study in Male Rats
Project No. 785-300

SUMMARY

The test material, 4,4'-methylene-bis-(2-chloroaniline), was administered in the protein adequate and protein deficient diets of six groups of male albino rats. Three groups of animals were treated at levels of 250, 500, and 1000 ppm (Groups 2, 3, and 4, respectively) in protein adequate basal diets, and three groups of animals were treated at levels of 125, 250, and 500 ppm (Groups 6, 7, and 8, respectively) in protein deficient basal diets. Two additional groups of animals (Groups 1 and 5) served as untreated control groups and received the protein adequate basal diet, and the protein deficient basal diet, respectively.

Criteria evaluated for treatment-related effects included clinical signs, tumor incidence, growth, food consumption, survival, hematological data, and urinary excretion data.

The clinical signs of the treated groups were generally comparable to those of the control groups. Slightly higher incidences of clinical signs were noted in the groups fed the protein adequate diet than in the groups fed the protein deficient diet.



The percentages of animals surviving at 104 weeks with palpable nodules or masses were higher in treated than control groups but variation in survival data makes interpretation of this finding difficult. In the animals which died or were sacrificed in extremis, higher incidences of tissue masses were noted in the groups fed the protein adequate diet than in the groups fed the protein deficient diet.

Moderately to markedly lower survival rates were noted in all of the treated groups when compared to the respective control groups. The percentages of surviving animals treated at the 0 and 250 ppm dose levels were slightly higher in the protein deficient groups, whereas, at the 500 ppm dose level, the protein deficient group had a slightly lower survival rate than the respective protein adequate group.

Consistently lower mean body weight values were noted in the high-dose groups fed the protein adequate and protein deficient diets when compared to the respective control groups. The mean body weight values of the low- and mid-dose groups were comparable to (protein adequate diet) and slightly lower than (protein deficient diet) the respective control values. The mean body weight values of the animals fed the protein deficient diet were slightly to moderately lower than the mean body weight values of the respective control, low-, mid-, and high-dose groups fed the protein adequate diet.



Except for the high-dose groups, which were lower (protein adequate diet) and higher (protein deficient diet) than the respective control values, the mean food consumption values of the low- and mid-dose groups were comparable to controls through 84 weeks. At 104 weeks, the mean food consumption values of the mid-dose groups (protein adequate and protein deficient diets) were comparable to the control values, whereas the low-dose groups were lower (protein adequate diet) and higher (protein deficient diet) than control values.

Evaluations of the hematological data revealed decreased hematocrit and hemoglobin values in the high-dose groups at Weeks 4, 26, and 52. At 78 weeks, the hematocrit values of all of the groups fed the protein adequate diet were noted to be slightly lower than the values of the protein deficient groups. However, all values were within normal laboratory limits. The results of urinalyses were generally unremarkable.

With the exception of granular mottled livers in the Group 4 (1000 ppm) rats, gross pathology findings did not reveal any distinct treatment-related alterations in the viscera of animals treated with MOCA. Higher incidences of wart-like lesions, nodules, or tissue masses were noted in the treated groups than the respective control groups. The highest incidences of skin lesions and subcutaneous tissue masses were observed in the mid-dose groups (150 animals had 33 masses) and in the high-dose groups (100 animals had 28 masses), respectively. The highest incidences of nodules or masses on the internal organs were observed in



the high-dose groups. All of the incidences of wart-like lesions, nodules, and/or tissue masses were observed to be slightly higher in the groups fed the protein adequate diet than in the groups fed the protein deficient diet.

Microscopic evaluations of sections of the tissues examined revealed a dose-related increase in the incidence of chemically-induced neoplasms and pre-neoplastic lesions in both the protein adequate and deficient groups. The lung was the most commonly affected tissue with adenomatous hyperplasia and alveolar/bronchiolar adenomas and carcinomas. The lung carcinomas in rats of Groups 3 and 4 (500 and 1,000 ppm MOCA) often metastasized to distant sites such as the adrenal, pancreas and other abdominal viscera.

Hepatocellular carcinomas were induced in rats at all three dose levels on the protein adequate diet and in rats receiving the highest level of MOCA (500 ppm) in the protein deficient diet. Pulmonary metastasis was observed in several instances at the higher dose levels.

Liver sections from rats which did not have hepatocellular carcinomas were amazingly free of pre-neoplastic alterations, especially in the protein deficient groups.

Other chemically-induced neoplasms included Zymbal gland carcinomas, mammary adenocarcinomas, hemangiosarcomas, and malignant histiocytomas (greater incidence in the treated groups). A wide spectrum of skin tumors was observed in the treated rats, principally in the protein adequate groups.



The incidences of commonly observed spontaneously occurring neoplasms such as pituitary adenomas and pancreatic islet cell adenomas were observed with the greatest frequency in the control and low-dose MOCA groups. This was due to increased longevity in these animals when compared to the highest dose groups, where chemically-induced neoplasia impaired survival.

There were no unequivocal chemically-induced toxicologic changes in the tissues examined, although severe liver damage associated with the toxicity of advanced neoplasia and congestive heart failure associated with the severe lung lesions were often noted.

Comparisons, within each group, of the mean MOCA residue levels for those animals with and without neoplasms revealed statistically significantly lower levels after hydrolysis for those animals without neoplasms in Group 3 and before and after hydrolysis for those animals without neoplasms in Group 8. None of the other comparisons revealed significant differences.



The initial body weights ranged from 90 - 167 grams. The animals were individually housed in elevated wire mesh cages and the appropriate diet and water were available ad libitum.

METHODS

Groups and Dietary Levels

The six hundred and fifty animals were assigned to the following groups based on initial individual body weights, so that a homogeneous distribution of weights was obtained between groups.

<u>Group</u>	<u>No. of Animals</u>	<u>Dietary Level (ppm)</u>
Protein Adequate Diet		
1 (Control)	100	0
2 (Low-dose)	100	250
3 (Mid-dose)	75	500
4 (High-dose)	50	1000
Protein Deficient Diet		
5 (Control)	100	0
6 (Low-dose)	100	125
7 (Mid-dose)	75	250
8 (High-dose)	50	500



Diet Preparation

The effects of the test material were evaluated under two separate nutritional conditions. One in which animals received a basal diet containing adequate protein concentration and the other in which animals received a protein deficient basal diet. The basal diets were prepared weekly as follows:

<u>Ingredient</u>	<u>Protein Adequate</u>	<u>Protein Deficient</u>
Casein	27%	8%
Corn Starch	58%	77%
Vegetable Oil	10%	10%
Salt Mixture*	4%	4%
Vitamins**	1%	1%

* Modified Rogers - Harper Salt Mix (TD74610).

** Special Vitamin Fortification Mix - Hazleton Labs. (TD74611).

The casein, salt and mineral mixture were supplied by Teklad^{T.M.}
Test Diets, Madison, Wisconsin.

The test material was incorporated into the respective basal diet on a weight-per-weight basis and thoroughly mixed in a twin-shell Patterson-Kelley blender to achieve the desired concentration of test material for each dietary level. The appropriate dietary mixture and tap water were



available to the animals ad libitum. Stability testing was conducted on a 500 gram sample of the Week 1 mixture of the 1000 ppm diet at 0, 3, and 7 days after preparation.

Laboratory Safety Procedures for Diet Preparation and Compound Administration of MOCA

All laboratory personnel working in the compound preparation room were required to wear disposable rubber gloves, disposable face masks, safety glasses or goggles, head coverings, and Mars disposable body suits. During the compound-feed mixing process, air supplied headgear were worn. Personal protective equipment and laboratory clothing were not worn outside the compound room. Personnel showered before leaving the compound preparation area. Eating, drinking and smoking were not permitted in the compound or animal room. The laboratory personnel engaged in the examination or handling of the animals were required to wear disposable rubber gloves, disposable face masks, Mars disposable body suits, and head coverings. These personnel showered before leaving the laboratory at the end of the day.

Technician Surveillance

In an effort to monitor exposure to the chemical by the individuals involved in the diet mixing operations, urine specimens were collected twice prior to initiation of the study, and at 3, 6, 9, and 12 months. The initial samples were divided into two aliquots. One aliquot was analyzed for residues of MOCA and served as a baseline for future analyses. The other aliquot was fortified with a known quantity of MOCA, frozen, and served as a



reference for the stability of this compound. In addition, hematology (CBC) and SMA-12 profiles were established for these individuals prior to initiation of the study and repeated at 3, 6, 9, and 12 months.

Observations and Records

All of the animals were observed daily for moribundity and mortality.

Individual body weights, observations of appearance and behavior, and the incidence, size, and location of palpable tissue masses were recorded once every four weeks. Individual food consumption over a seven day period was recorded after 4, 20, 36, 52, 68, 84, and 104 weeks of treatment.

Clinical Laboratory Studies

The following clinical laboratory parameters were determined on ten rats/group: Hematology - hematocrit and hemoglobin at 4, 26, 52, and 78 weeks. Urinalyses - volume and specific gravity once prior to treatment and at 4, 26, 52, 78, and 82 weeks. Urinalysis values were also determined for three control and three high-dose protein adequate diet rats at 77 weeks.

The blood samples for the hematological determinations were obtained from the tail by segmental amputation and collected by the UnopetteTM system. The urine samples were collected by housing the animals in individual metabolism cages for twenty-four hours. References for the clinical methods are presented in Table 8.



Analysis of Urine for MOCA Residues

Upon completion of specific gravity and volume determinations at 0, 4, 26, 52, 78, and 82 weeks, the ten individual urine samples for each group were pooled and submitted to analytical chemistry for analysis for MOCA residues. At Weeks 75 and 76, individual urine samples from all surviving animals were analyzed both prior to and following acid hydrolysis.^a

Sacrifice and Necropsies

After 104 weeks, all surviving animals were sacrificed by exsanguination under sodium pentobarbital anesthesia (Diabutal^{I.M.}; Diamond Laboratories, Inc., Des Moines, Iowa). Necropsies were performed on all of the animals in the study and all gross pathology findings were recorded.

Tissue Preservation

The following tissues from each rat were preserved in 10% neutral buffered formalin: brain, pituitary, thoracic spinal cord, thyroid, adrenal, heart, lungs, spleen, liver, kidneys, stomach, small intestines, large intestines, pancreas, testes with epididymides, prostate, salivary glands, mesenteric lymph node, urinary bladder, sciatic nerve, skeletal muscle, eyes, bone marrow, costochondral junction, and any unusual lesions.

Histopathology

The following tissues from each rat were stained with hematoxylin and eosin and examined microscopically: liver, kidneys, pancreas, spleen,

^a Five metabolites were also analyzed.



adrenal, thyroid, pituitary, urinary bladder, each lobe of the lung (left, right apical, cardiac, diaphragmatic, and azygous) and any abnormal tissue or tissue masses.

RESULTS

Clinical Signs and Incidences of Palpable Nodules

The clinical signs of the animals treated with MOCA were comparable to the clinical signs of the control animals which were fed the same basal diet (protein adequate or protein deficient). Findings, which are commonly observed in laboratory rats of this strain and age and are generally considered to be incidental, included hunched appearance, urine stains, localized sores and/or alopecia, thinness, staining of the fur coat, soft feces, listlessness, chromodacryorrhea, and lacrimation, opacities, and/or paleness of the eyes. The incidences of clinical signs in the animals treated at the 0, 250, and 500 ppm dietary levels were slightly higher in the groups fed the protein adequate diet than in the groups fed the protein deficient diet.

In the protein adequate diet, the incidences of palpable nodules or tissue masses were higher in the treated groups than in the control group. The percentages of animals surviving at 104 weeks with palpable nodules or tissue masses were found to be higher in treated groups than in respective



control groups. All of the animals treated at the 1000 ppm dose level were observed to have palpable nodules or tissue masses.

In the protein deficient diet, the low- and mid-dose groups were observed to have a moderately higher incidence of palpable nodules or tissue masses, whereas, the high-dose group had a slightly higher incidence when compared to the control group. The percentages of animals surviving at 104 weeks with palpable nodules or tissue masses were observed to be higher in the treated groups when compared to the control group.

At the 250 ppm dose level, comparisons of the percentages of animals surviving at 104 weeks with palpable nodules or tissue masses revealed very little difference between the animals fed the protein adequate and protein deficient diets. At the 500 ppm dose level, the percentage was found to be higher in the animals fed the protein adequate diet than in the animals fed the protein deficient diet.

In the animals which died or were sacrificed in extremis prior to termination of the study and were fed the protein adequate diet, higher incidences of palpable nodules or tissue masses were observed at necropsy.

Body Weight Gain and Food Consumption

Group mean body weight and food consumption values are presented in Table 1. A graph presenting cumulative mean body weights is presented in Figure 2.



The mean body weight values of the animals treated with MOCA in a protein adequate diet were comparable at the low- and mid-dose levels and consistently lower at the high-dose level when compared to the control animals fed the protein adequate diet. The mean body weight values of the animals treated with MOCA in a protein deficient diet were slightly lower at the low- and mid-dose levels and markedly lower at the high-dose level when compared to the control animals fed the protein deficient diet.

The mean body weights of the groups fed the protein deficient diet were from slightly to moderately lower than the mean body weights of the respective control, low-, mid-, and high-dose groups that were fed the protein adequate diet.

In the protein adequate diet, with the exception of the high-dose group, in which the food consumption values were slightly lower than the respective control values at 20, 36, and 52 weeks, and markedly lower at 84 weeks, the mean food consumption values were comparable in treated and control groups through 84 weeks. At 104 weeks, the mean food consumption value of the low-dose group was markedly lower than the respective control value; whereas, the mean food consumption value of the mid-dose group was comparable to that of the control group.

In the protein deficient diet, the mean food consumption values of the treated groups were comparable to those of the control group through



84 weeks, except for the value of the high-dose group which was slightly higher than control through 84 weeks. At 104 weeks, the mean food consumption value of the mid-dose group was comparable to the value of the control group; whereas, the value of the low-dose group was slightly higher, and the value of the high-dose group was markedly lower, than the control.

The values of the mid- and high-dose groups fed the protein adequate diet were consistently lower at 36, 52, 68, and 84 weeks than the values of the respective groups fed the protein deficient diet. At 104 weeks, the mean food consumption values of the protein adequate groups were from slightly to markedly lower than the values of the protein deficient groups.

Survival

The number of animals surviving at the various observation periods is presented in Table 1.^a The number and percentage of animals surviving in each group at the termination of the study are presented below.

	Group							
	1	2	3	4	5	6	7	8
Survival:								
Number	18/100	12/100	8/75	0/50	32/100	21/100	13/75	4/50
Percentage	18.0	12.0	10.6	0.0	32.0	21.0	17.3	8.0

The percentages of surviving animals treated at the 0 and 250 ppm dose levels were slightly higher in the protein deficient groups, whereas,

^a A graph of this data is presented in Figure 1.



at the 500 ppm dose level, the protein deficient group had a slightly lower survival rate than the respective protein adequate group.

Clinical Laboratory Findings

The group mean hematology values are presented in Table 2 and individual urinalyses values are presented in Table 3.

The hematocrit and hemoglobin values in the high level protein adequate and protein deficient groups were slightly lower than the respective control values, but were within normal limits at 4, 26, and 52 weeks. At 78 weeks, the hematocrit values of all of the groups fed the protein adequate diet were observed to be slightly lower than the values of the protein deficient groups, but were within normal laboratory limits.

Evaluations of the urinalyses data did not reveal any alterations attributable to treatment with MOCA.

Analysis of Urine for MOCA Residues

The data from the analyses of the human urine samples, the rat urine samples prior to and after acid hydrolysis¹, and the rat urine samples for the residues of MOCA and five major metabolites are presented in Table 4.

A standard curve, a standard injection of MOCA, and data from one control animal, from one high-dose protein adequate (Group 4) animal, and from one high-dose protein deficient (Group 8) animal are presented in Figures 3 through 12. A correlation of the MOCA residue data and the histopathology data is presented following the histopathology section of this report.

¹ Analyses performed according to: Lynch, Aldrian L., et al. Methylene-bis-Ortho-Chloroaniline (MOCA): Evaluation of Hazards and Exposure Control. E. I. duPont de Nemours and Company, Inc., Chambers Works, Deepwater, New Jersey.



Gross Pathology

The gross pathology findings are summarized in Tables 5A (animals found dead or sacrificed in extremis) and 5B (animals sacrificed at termination).

With the exception of granular mottled livers in the Group 4 (1000 ppm) rats, evaluations of the gross pathology findings did not reveal any distinct treatment-related alterations in the viscera of animals treated with MOCA. Incidental lesions included enlargement of lymph nodes; softening or firming of the texture, irregularity in shape, thickening, discoloration, and/or enlargement of the various organs; distention of urinary bladder with colored fluid; and the presence of colored fluid in the thoracic and/or abdominal cavities. A high incidence of localized sores was observed in Groups 1 - 4.

A high incidence of hair balls (trichobezoars) were observed in all of the animals. The percentage of animals with trichobezoars was comparable in Groups 1, 2, 3, 5, 6, 7, and 8; however, the percentage was markedly lower in Group 4 (1000 ppm). The cause of death in many non-tumor bearing animals may be attributed to the hair balls, which caused impaction in the stomach and/or intestines.

A summary of the incidences of nodules and/or tissue masses observed grossly at necropsy is presented in Tables 6A (animals found dead or sacrificed in extremis) and 6B (animals sacrificed at termination). The incidences of wart-like lesions, nodules, or tissue masses on the skin; subcutaneous tissue masses; masses involving the bone and/or muscle; and masses or nodules on the internal organs were markedly higher in the animals treated



with MOCA than in the respective control groups. The highest incidences of skin lesions and subcutaneous tissue masses were observed in the mid-dose groups (150 animals had 33 masses) and in the high-dose groups (100 animals had 28 masses), respectively. The highest incidences of nodules or masses on the internal organs were observed in the high-dose groups. All of the incidences of wart-like lesions, nodules, and/or tissue masses were observed to be slightly higher in the groups fed the protein adequate diet than in the groups fed the protein deficient diet.

Histopathology

Neoplasms and proliferative lesions observed in this study are presented individually, for each animal, in Table 7. The incidences of the various lesions are presented by group in Figure 14.

Microscopic evaluations of the tissues indicated in the protocol (liver, kidney, pancreas, spleen, adrenal, thyroid, pituitary, urinary bladder, each lung lobe, and abnormal tissues) revealed a dose-related increase in the incidence of chemically-induced neoplasms and pre-neoplastic lesions in both the protein adequate and deficient groups. The lung was the most commonly affected tissue with adenomatous hyperplasia and alveolar/bronchiolar adenomas and carcinomas. The lung carcinomas in rats of Groups 3 and 4 (500 and 1,000 ppm MOCA) often metastasized to distant sites such as the adrenal, pancreas and other abdominal viscera.



Hepatocellular carcinomas were induced in rats at all three dose levels on the protein adequate diet and in rats receiving the highest level of MOCA (500 ppm) in the protein deficient diet. Pulmonary metastasis was observed in several instances at the higher dose levels.

Liver sections from rats which did not have hepatocellular carcinomas were amazingly free of pre-neoplastic alterations, especially in the protein deficient groups.

Other chemically-induced neoplasms included Zymbal gland carcinomas, mammary adenocarcinomas, hemangiosarcomas, and malignant histiocytomas (greater incidence in the treated groups). A wide spectrum of skin tumors was observed in the treated rats, principally in the protein adequate groups.

The incidences of commonly observed spontaneously occurring neoplasms such as pituitary adenomas and pancreatic islet cell adenomas were observed with the greatest frequency in the control and low-dose MOCA groups. This was due to a greater longevity in these animals when compared to the highest dose groups, where chemically-induced neoplasia impaired survival.

The most common cause of death in both the protein adequate and deficient groups was the presence of hair balls (trichobezoars) in the stomach, usually associated with severe fatty metamorphosis and necrosis in the liver. There were no unequivocal chemically-induced toxicologic changes in the tissues examined, although severe liver damage associated with the toxicity of advanced neoplasia and congestive heart failure associated with the severe lung lesions were often noted.



Correlation Between MOCA Residues in Urine and Incidences of Neoplasia

In order to determine whether or not the level of MOCA residue in the urine was significantly different in rats with chemically-induced tumors than in rats in the same group without tumors, computations of the levels of MOCA residues both prior to and following acid hydrolysis were performed for those animals with and without neoplasms (included as neoplasms were adenomas and carcinomas involving the lung, liver, Zymbal gland, and mammary gland and also squamous and basosquamous carcinomas, malignant lymphomas, and hemangiosarcomas). The means for those animals with and without neoplasms within each group were compared statistically by the F-test (analysis of variance) and Student's t-test. When variances differed significantly, Student's t-test was appropriately modified (t') and Cochran's approximation was utilized. Reference - G. W. Snedecor and W. G. Cochran, Statistical Methods, (Iowa State University Press, Ames, 1967), pp. 104-119, 215-219. All evaluations were made at the 5% probability level.

Comparisons, within each group, of the mean MOCA residue levels for those animals with and without neoplasms revealed statistically significantly lower levels after hydrolysis for those animals without neoplasms in Group 3 and before and after hydrolysis for those animals without neoplasms in Group 8. None of the other comparisons revealed significant differences.

Submitted by 
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FIGURE 1
CUMULATIVE SURVIVAL DATA
MOCA: 104-WEEK CARCINOGENICITY STUDY IN MALE RATS
785-390

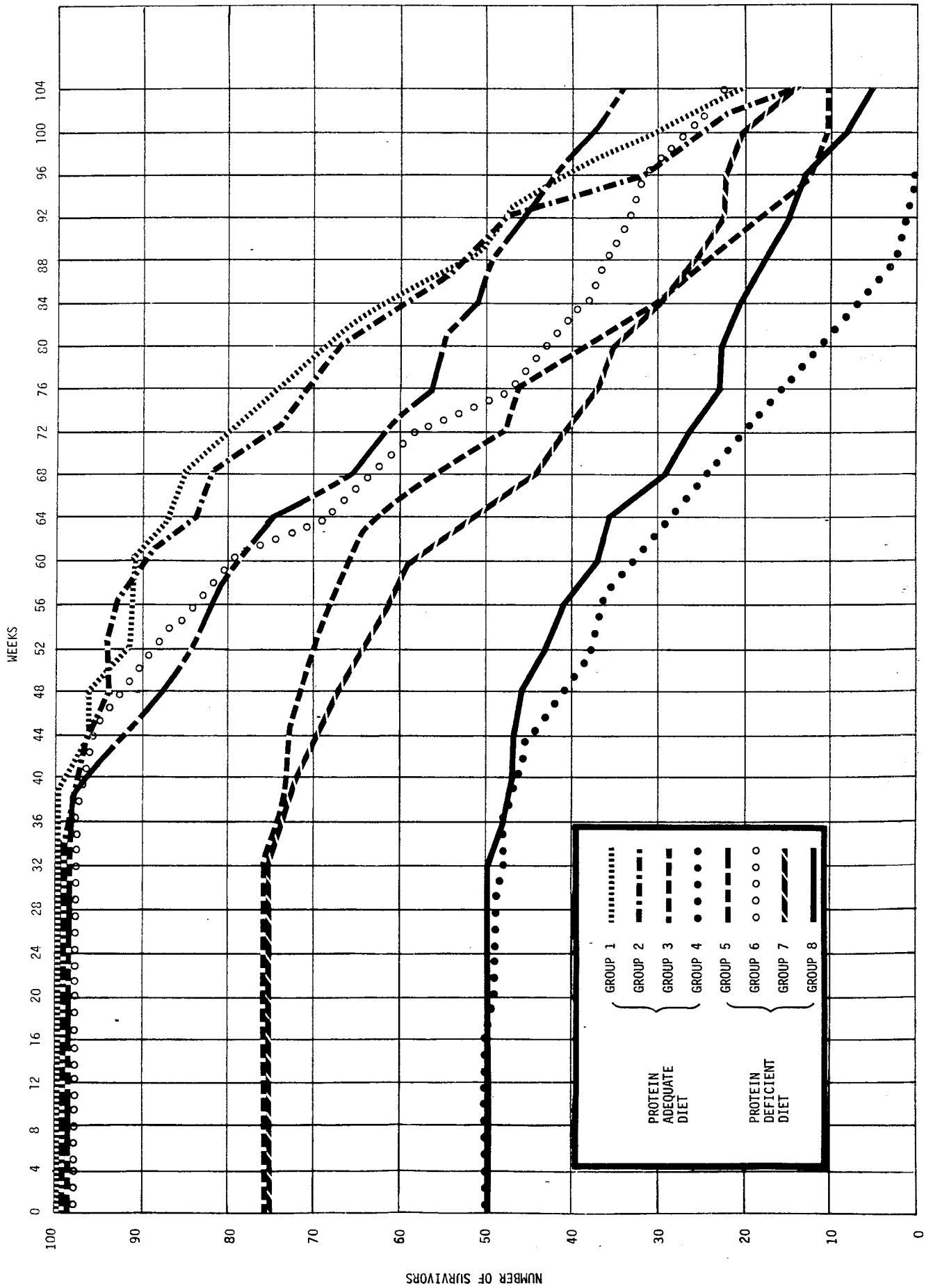


FIGURE 2
CUMULATIVE GROUP MEAN BODY WEIGHTS
MOCA: 104-WEEK CARCINOGENICITY STUDY IN MALE RATS

785-300

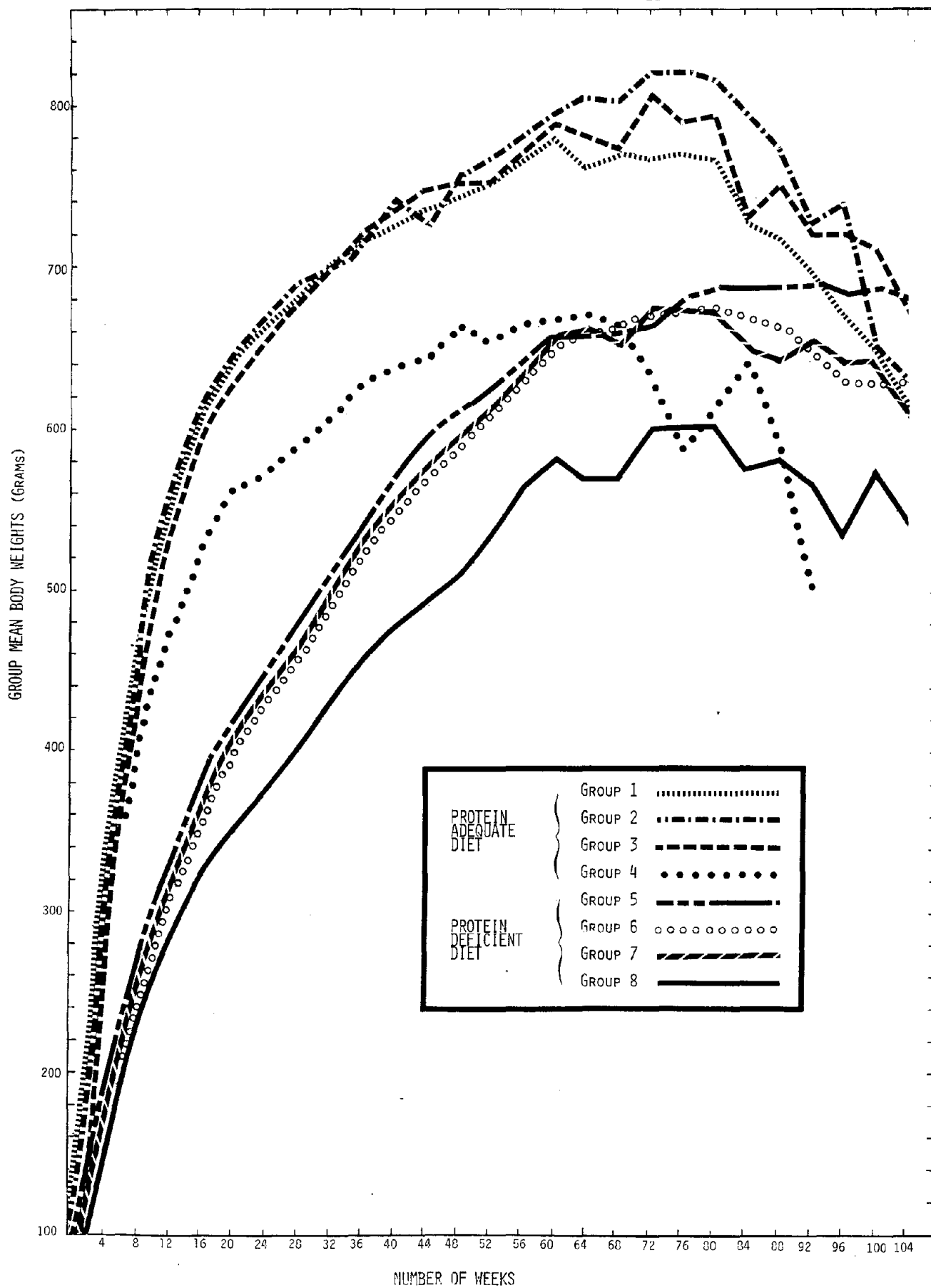


Figure 3 - A Typical Standard Curve



Figure 4 - A Standard Injection of 0.2 ng MOCA

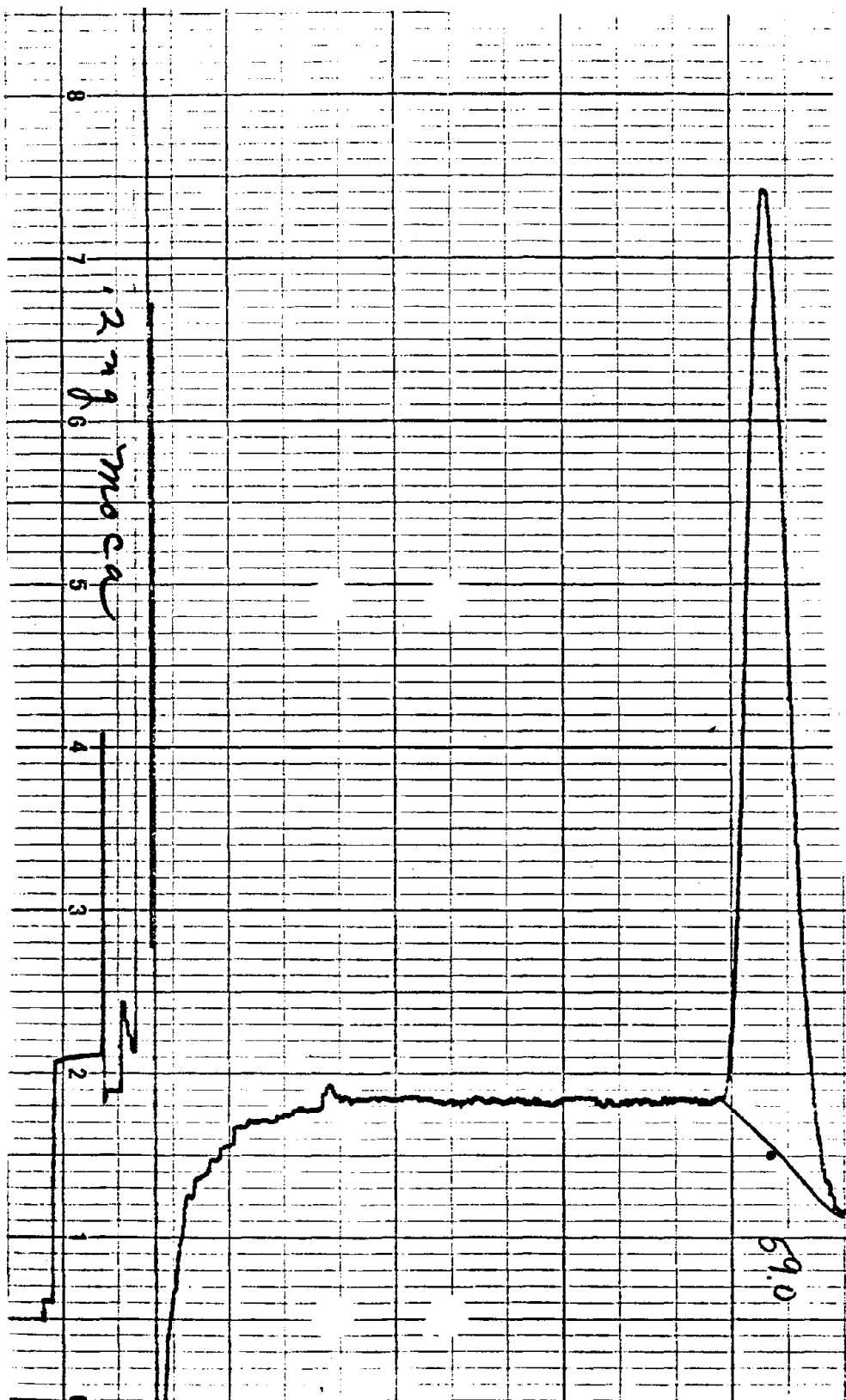


Figure 5 - Control Rat Group 1 Animal No. 20151

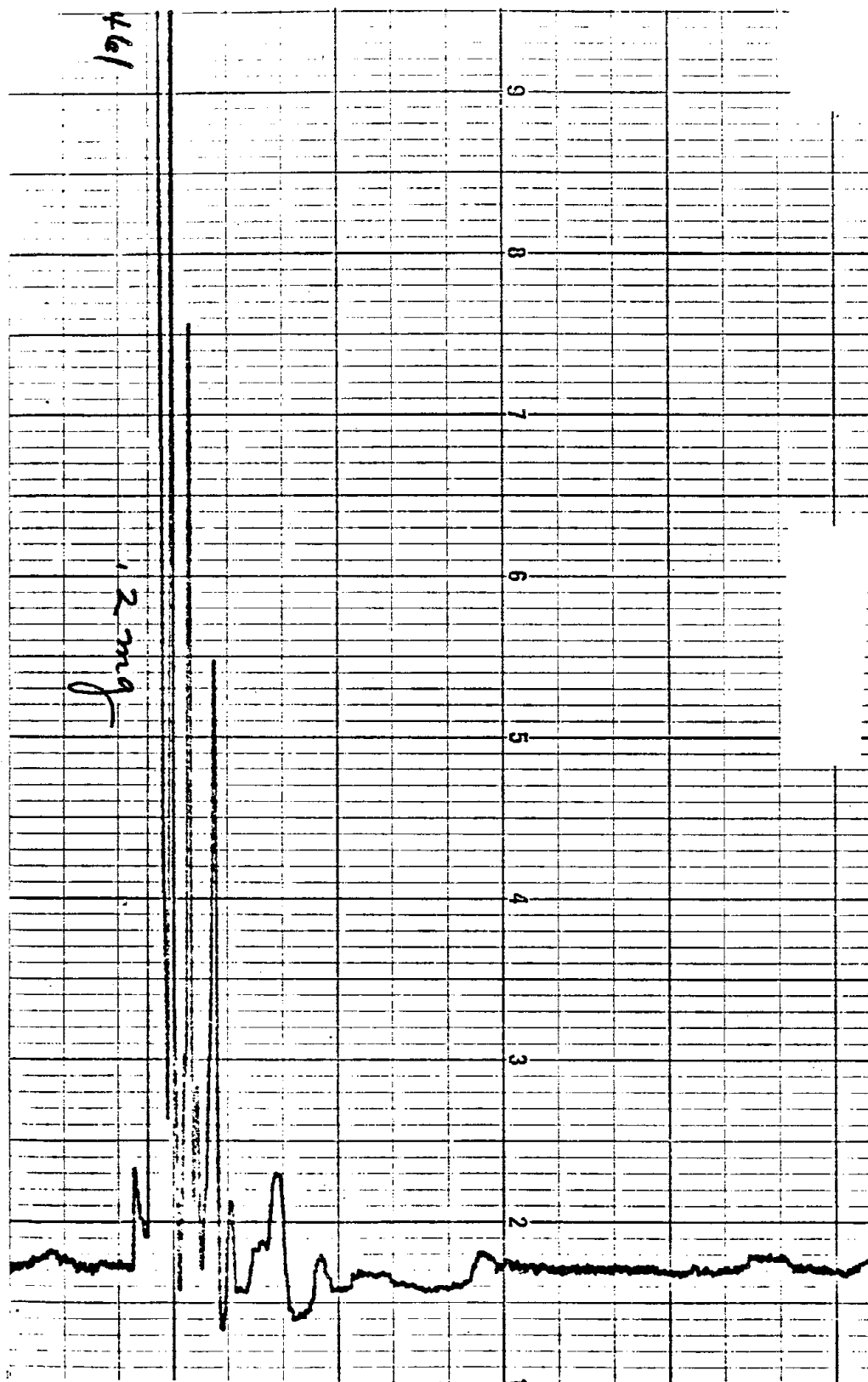


Figure 6 - Control Rat Group 1 Animal No. 20151
Acid Hydrolyzed

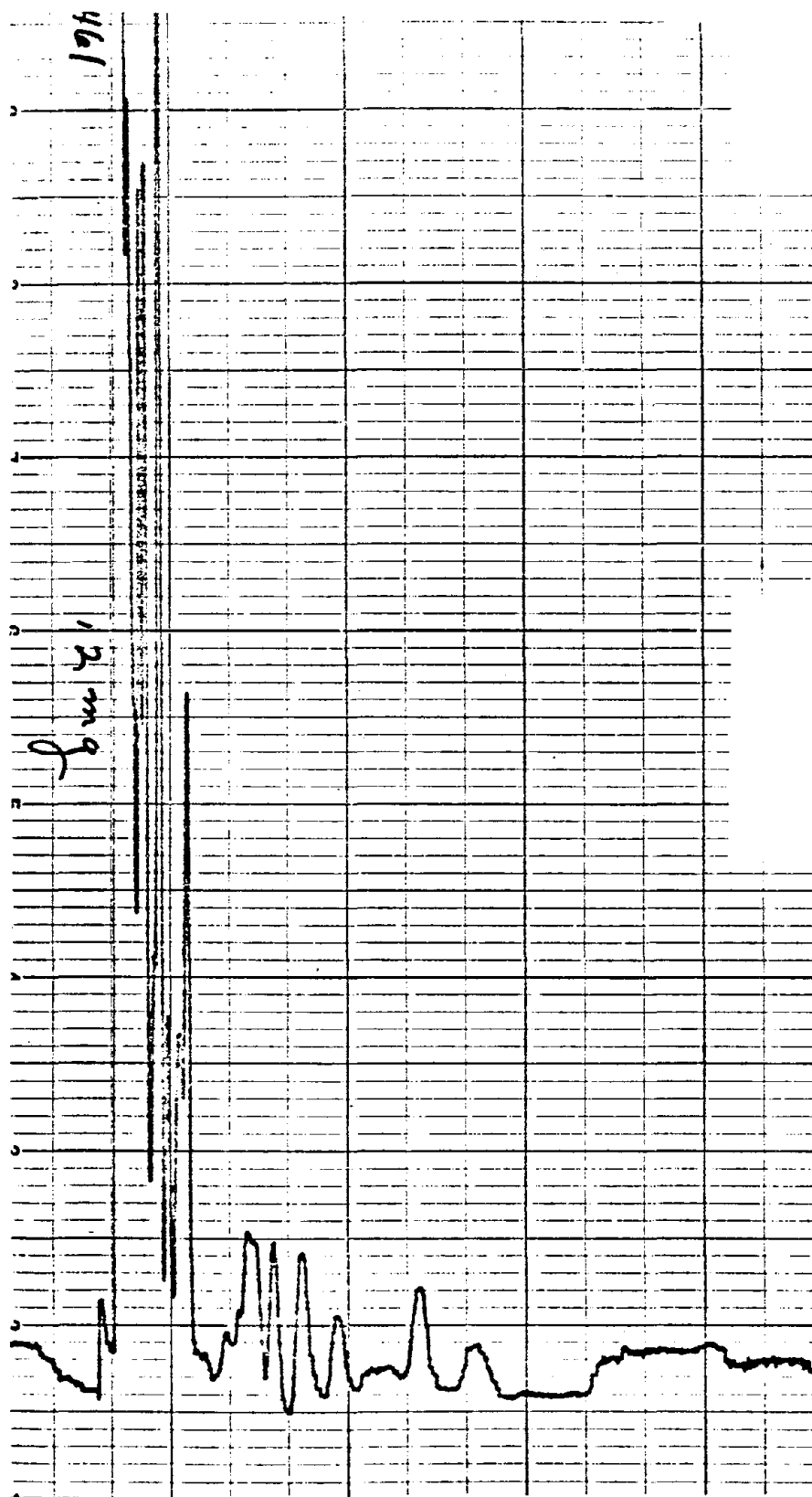


Figure 7 - Control Rat Group 1 Animal No. 20151
Fortified at 0.1 ppm

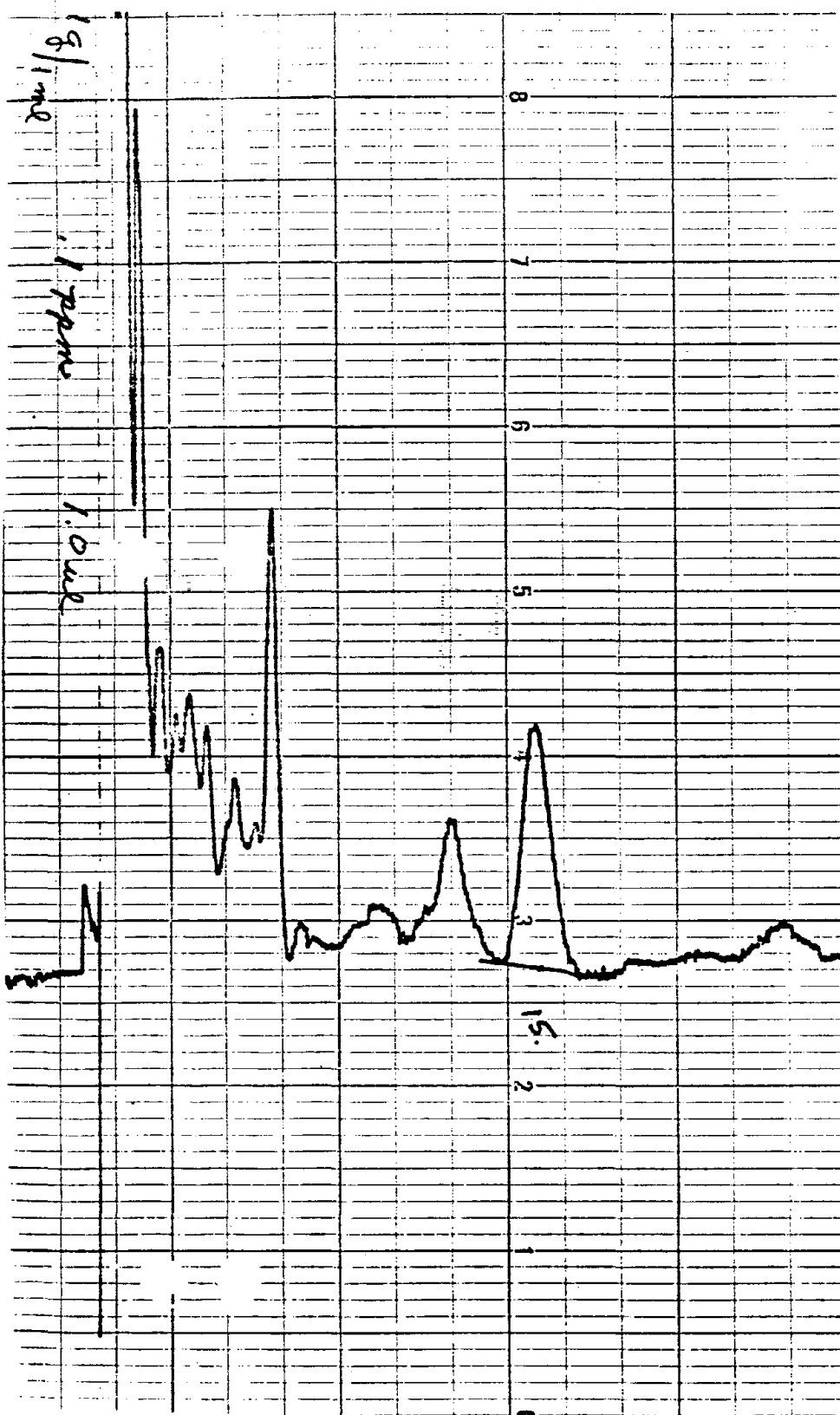


Figure 8 - Control Rat Group 1 Animal No. 20151
Acid Hydrolyzed and Fortified at 0.1 ppm

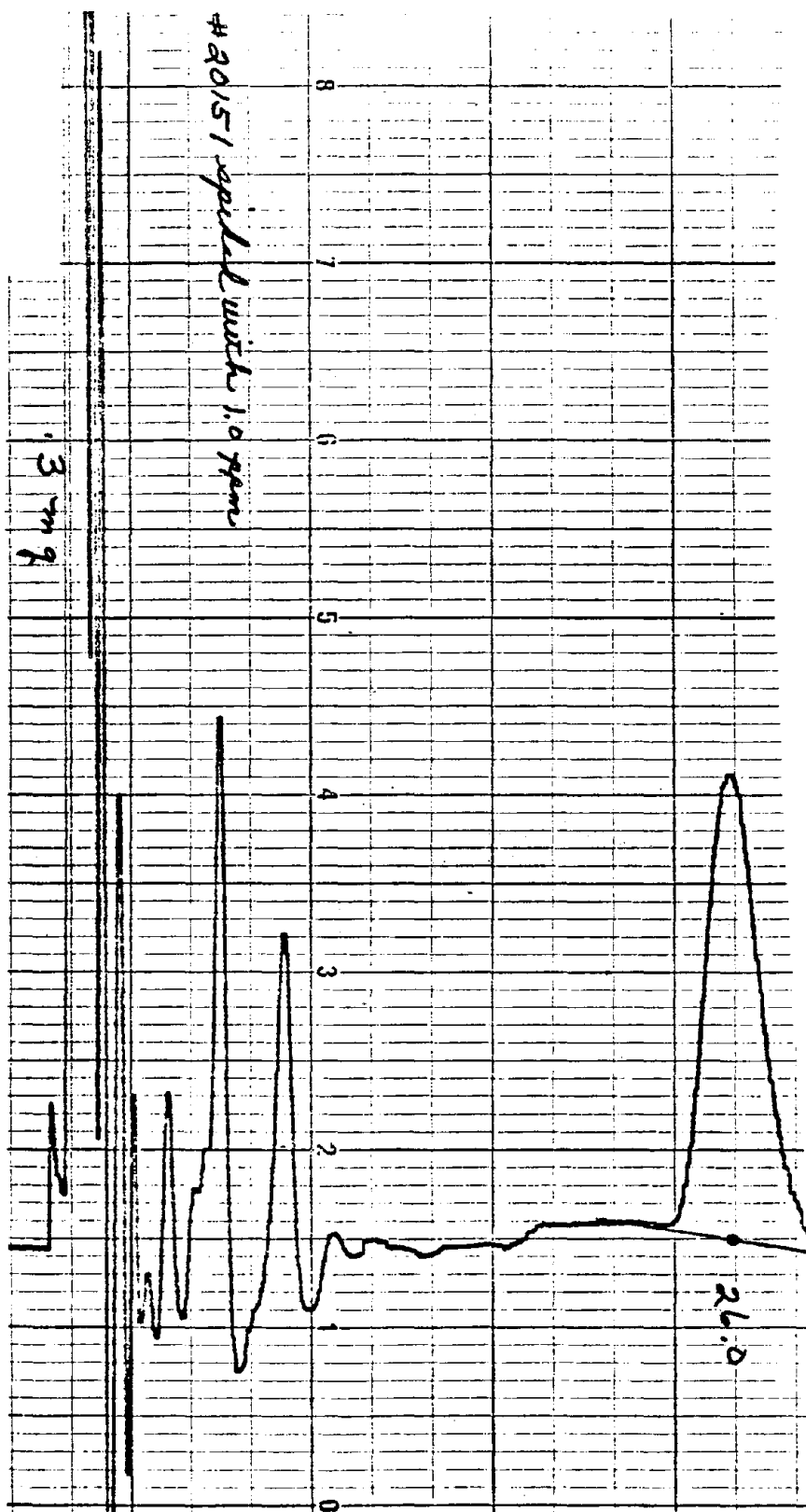


Figure 9 - Group 4 Animal No. 20347

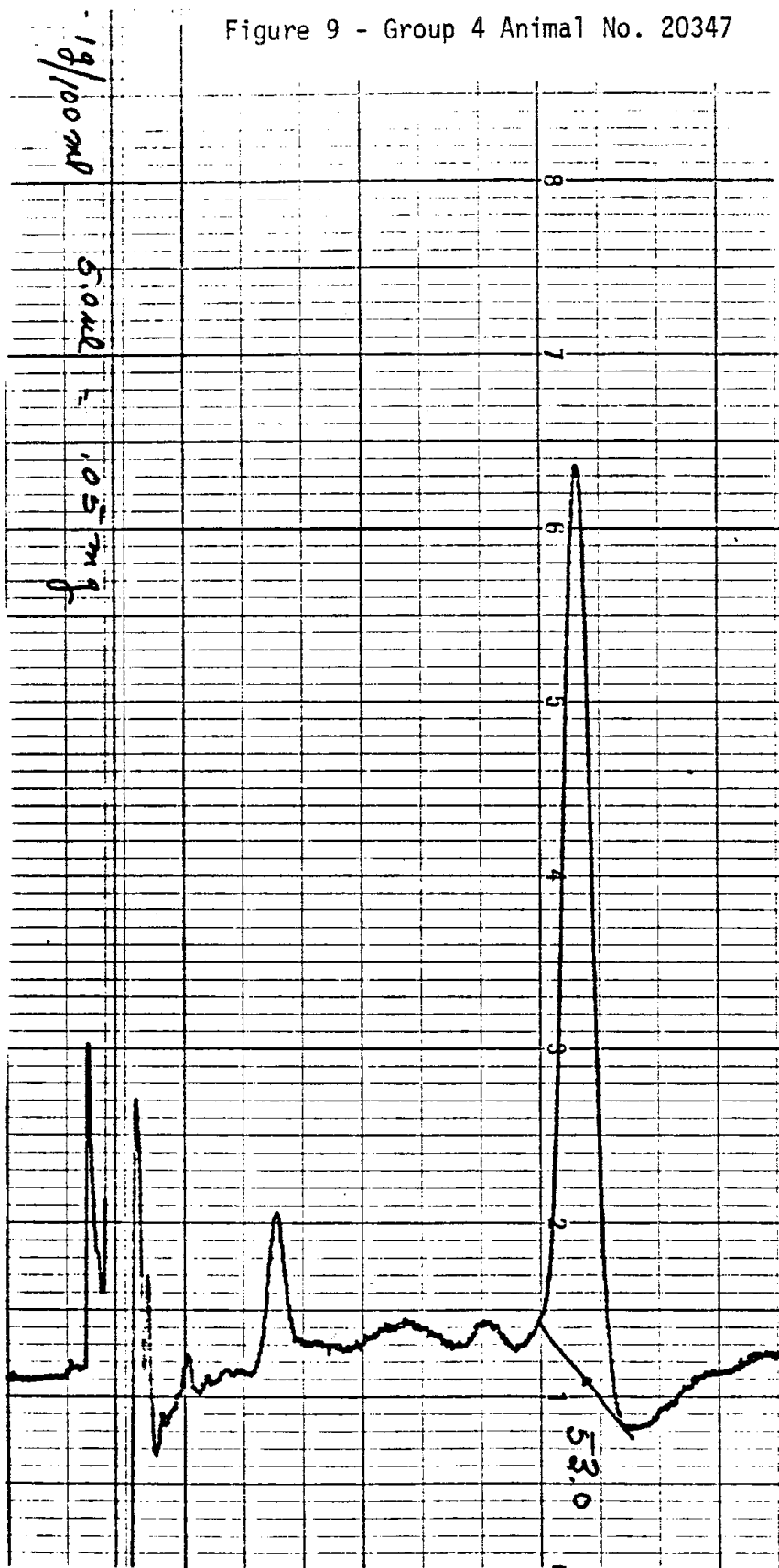


Figure 10 - Group 4 Animal No. 20347
Acid Hydrolyzed

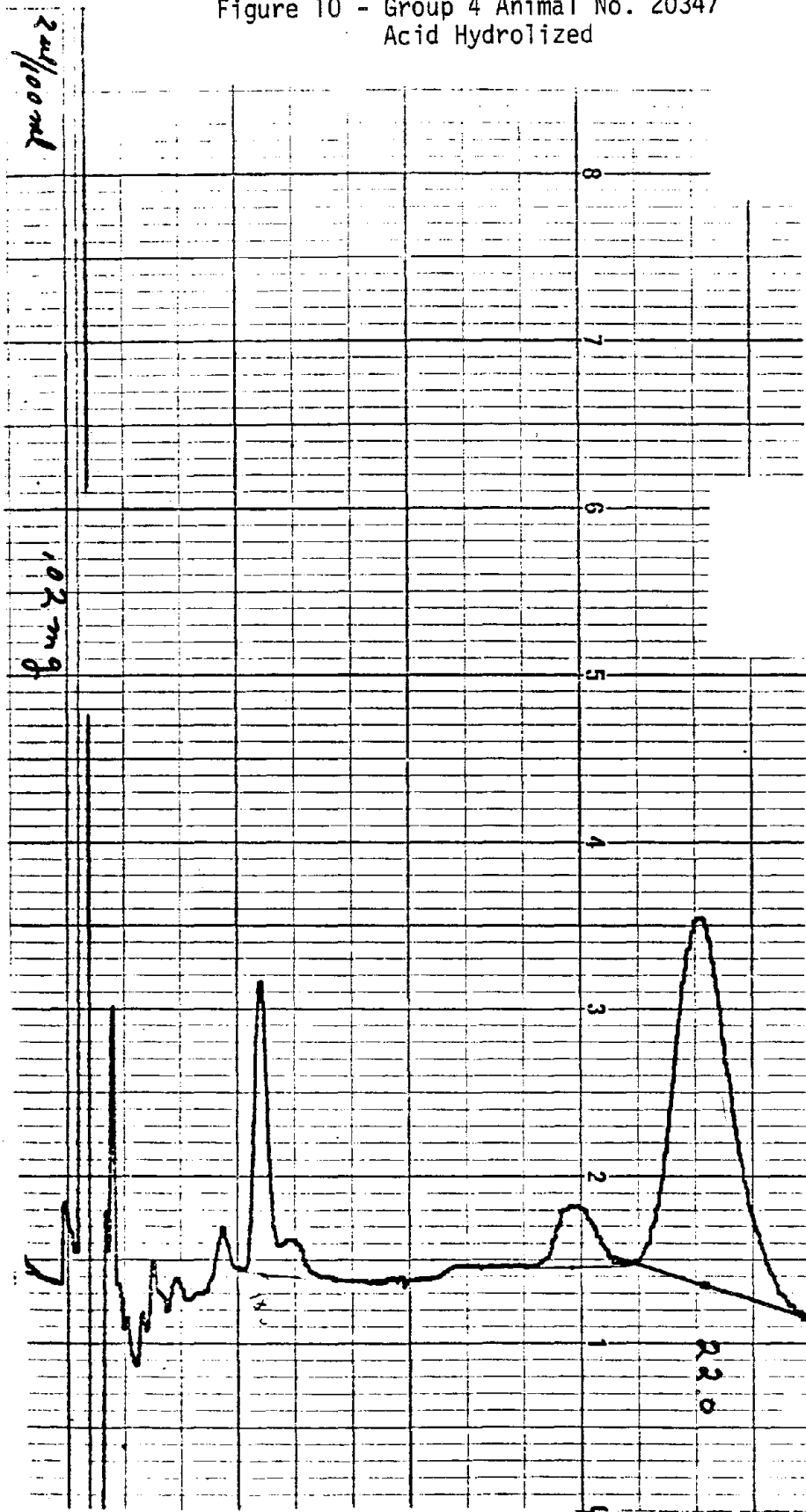


Figure 11 - Group 8 Animal No. 20699

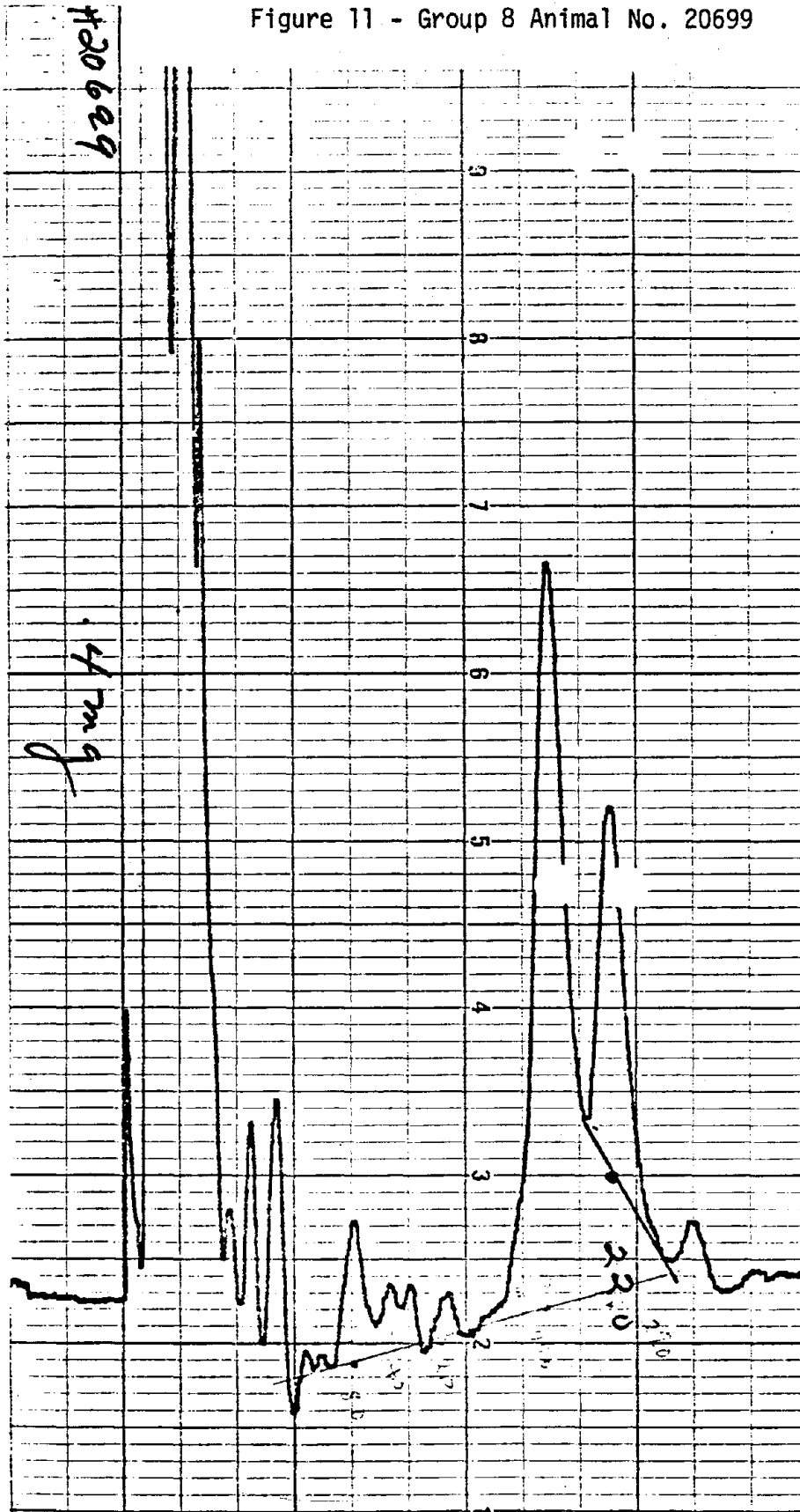


Figure 13
Mean Levels of MOCA Residues in Urine
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group		Prior To Acid Hydrolysis	After Acid Hydrolysis
2 - With Neoplasms ^a	Mean	0.13	0.50
	S.D.	0.10	0.42
	N	29	38
2 - Without Neoplasms	Mean	0.11	0.37
	S.D.	0.09	0.19
	N	27	34
3 - With Neoplasms ^a	Mean	0.17	0.79
	S.D.	0.16	0.47
	N	24	29
3 - Without Neoplasms	Mean	0.13	0.50 ^{S-}
	S.D.	0.06	0.30
	N	7	15
4 - With Neoplasms ^a	Mean	5.42	11.18
	S.D.	2.90	5.36
	N	18	18
4 - Without Neoplasms ^b	Mean	-	-
	S.D.	-	-
	N	-	-
6 - With Neoplasms ^a	Mean	0.10	0.68
	S.D.	0.12	0.64
	N	12	12
6 - Without Neoplasms	Mean	0.09	0.61
	S.D.	0.12	0.56
	N	38	41
7 - With Neoplasms ^a	Mean	0.07	0.34
	S.D.	0.10	0.25
	N	16	18
7 - Without Neoplasms	Mean	0.07	0.30
	S.D.	0.07	0.20
	N	20	22
8 - With Neoplasms ^a	Mean	0.65	2.19
	S.D.	0.44	1.21
	N	19	19
8 - Without Neoplasms	Mean	0.26 ^{S-}	1.12 ^{S-}
	S.D.	0.09	0.33
	N	4	4

^a Includes adenomas and carcinomas involving the lung, liver, Zymbal gland, and mammary gland and also squamous and basosquamous carcinomas, malignant lymphomas, and hemangiosarcomas.

^b All of the animals in this group had neoplasia.

^{S-} Statistically significantly lower than the mean for those animals with neoplasms at $p < 0.05$.

Figure 14
Incidences of Neoplasms and Proliferative Lesions
MOCA: 104-Week Carcinogenicity Study in Male Rats

ORGAN AND DESCRIPTION	Diet: Protein Adequate Diet				Protein Deficient Diet				
	Group:								
	Level (ppm):	1	2	3	4	5	6	7	8
		0	250	500	1000	0	125	250	500
LUNG									
Alveolar/Bronchiolar Adenoma			11	8	4		3	6	9
Adenomatous Hyperplasia		2	67	60	47	1	32	42	47
Alveolar/Bronchiolar Carcinoma			13	21	31		3	6	8
Carcinoma, Metastatic			5	3	5				
Hepatocellular Carcinoma, Metastatic					3				1
Epidermoid Carcinoma					3		1	1	1
Adenocarcinoma, Metastatic		2	1		2				
Squamous Cell Carcinoma		1							
Squamous Cell Carcinoma, Metastatic			2					1	2
Hemangiosarcoma, Metastatic			1	1					
Liposarcoma, Metastatic						1	1		
Malignant Fibrous Histiocytoma					1				
Fibrous Histiocytoma, Metastatic				1		4	2		
Malignant Lymphoma, Histiocytic Type			2	2					
LIVER									
Hepatocellular Carcinoma			3	3	19				10
Hemangiosarcoma				1			1	1	1
Hemangiosarcoma, Metastatic			1						
Sarcoma			1						
Malignant Lymphoma, Histiocytic Type		2	2	2					
Malignant Lymphoma, Lymphocytic Type							1	1	
Malignant Fibrous Histiocytoma									
Fibrous Histiocytoma, Metastatic					1	1	1		
Liposarcoma, Metastatic						3			
Myelogenous Leukemia			1			1			
Neoplastic Nodule				1	4			1	
Foci of Altered Cells			2	1	2				
Hemangioma				1					

Figure 14 - Continued
Incidences of Neoplasms and Proliferative Lesions
MOCA: 104-Week Carcinogenicity Study in Male Rats

ORGAN AND DESCRIPTION	Diet: Protein Adequate Diet				Protein Deficient Diet				
	Group:								
	1	2	3	4	5	6	7	8	
Level (ppm):	0	250	500	1000	0	125	250	500	
SPLEEN									
Carcinoma, Metastatic					1				
Hemangiosarcoma		3	1		1		2	1	
Hemangiosarcoma, Metastatic							1		
Malignant Lymphoma, Lymphocytic Type						1			
Malignant Lymphoma, Histiocytic Type	1								
Fibrous Histiocytoma, Metastatic					2	1			
PITUITARY									
Carcinoma	2	1	1			2			
Carcinoma, Metastatic				1					
Alveolar/Bronchiolar Carcinoma, Metastatic								1	
Neurofibrosarcoma						1			
Adenoma	40	37	19	4	22	14	9	9	
Chromophobe Hyperplasia	2	5	4	2	3	2	3	1	
MAMMARY GLAND									
Adenocarcinoma	1	5	9	14		1	3	3	
Fibroadenoma		2			2	1	1		
Adenoma		1							
ZYMBAI GLAND									
Carcinoma	1	8	5	11			4	6	
EAR/EAR DUCT									
Alveolar/Bronchiolar Carcinoma, Metastatic			1						
Fibro-sarcoma			1	1					
Squamous Cell Papilloma			2						
PANCREAS									
Islet Cell Carcinoma					1	1			
Carcinoma, Metastatic		1	1						
Alveolar/Bronchiolar Carcinoma, Metastatic			4	5				2	
Adenocarcinoma, Metastatic			1						
Hemangiosarcoma, Metastatic									
Islet Cell Adenoma	10	11	4		1	4	2		
Acinar Cell Adenoma		1							
Fibrous Histiocytoma, Metastatic				1					

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Figure 14 - Continued
Incidences of Neoplasms and Proliferative Lesions
MOCA: 104-Week Carcinogenicity Study in Male Rats

ORGAN AND DESCRIPTION	Diet:		Protein Adequate Diet				Protein Deficient Diet			
	Group:	Level (ppm):	1	2	3	4	5	6	7	8
			0	250	500	1000	0	125	250	500
KIDNEY										
Renal Tubular Carcinoma							1			1
Clear Cell Carcinoma								1	1	
Carcinoma, Metastatic				1		1				1
Alveolar/Bronchiolar Carcinoma, Metastatic					2	7				3
Nephroblastoma	1									
Malignant Lymphoma, Histiocytic Type	1									
Malignant Fibrous Histiocytoma								1		
Adenoma					1					
Hamartoma				1						
Malignant Lymphoma, Lymphocytic Type									1	
BRAIN										
Astrocytoma							1			1
Granular Cell Myoblastoma				1						
Myelogenous Leukemia				1						
HEART										
Adenocarcinoma (Thymic Origin)	1									
Alveolar/Bronchiolar Carcinoma, Metastatic					1	4				1
Squamous Cell Carcinoma, Metastatic				1						
Hemangiosarcoma										1
Fibrous Histiocytoma, Metastatic					1					
THYROID										
"C" Cell Carcinoma							1			
Follicular Cell Carcinoma						2				
Alveolar/Bronchiolar Carcinoma, Metastatic					1	1				
Fibrous Histiocytoma, Metastatic										
"C" Cell Adenoma				1	1			1		
Follicular Cell Adenoma				3				2	2	
"C" Cell Hyperplasia	2									
Follicular Cell Hyperplasia				3		1		2	1	
PARATHYROID										
Adenoma				1						
Hyperplasia				1						

Figure 14 - Continued
Incidences of Neoplasms and Proliferative Lesions
MOCA: 104-Week Carcinogenicity Study in Male Rats

ORGAN AND DESCRIPTION	Diet: Protein Adequate Diet				Protein Deficient Diet				
	Group:	1	2	3	4	5	6	7	8
	Level (ppm):	0	250	500	1000	0	125	250	500
ADRENAL									
Cortical Carcinoma									1
Alveolar/Bronchiolar Carcinoma, Metastatic				4	5				
Pheochromocytoma		1		1				1	
Liposarcoma									
Cortical Adenoma							1		
Cortical Cell Hyperplasia							1		
Medullary Cell Hyperplasia		1	6		2			1	
Alveolar/Cell Carcinoma, Metastatic				1					
THYMUS									
Alveolar/Bronchiolar Carcinoma, Metastatic					3				1
Malignant Lymphoma, Lymphocytic Type						1			1
Thymoma									
Carcinoma, Metastatic			1						
Fibrous Histiocytoma, Metastatic							1		
STOMACH									
Fibrosarcoma		1							
Squamous Cell Papilloma							1		
SMALL INTESTINE									
Cystadenocarcinoma (Mucinous)				1					
SALIVARY GLAND									
Hemangiosarcoma, Metastatic			1						
LYMPH NODES									
Adenocarcinoma, Metastatic		1		1					
Alveolar/Bronchiolar Carcinoma, Metastatic					2				1
Hemangiosarcoma							1		
Sarcoma, Metastatic			1						
Fibrous Histiocytoma, Metastatic							1		
SPINAL COLUMN									
Fibrous Histiocytoma, Metastatic						1			
SKIN									
Squamous Cell Carcinoma			1						

Figure 14 - Continued
Incidences of Neoplasms and Proliferative Lesions
MOCA: 104-Week Carcinogenicity Study in Male Rats

ORGAN AND DESCRIPTION	Diet:		Protein Adequate Diet			Protein Deficient Diet		
	Group:	Level (ppm):	1	2	3	5	6	7
			0	250	500	0	125	250
PROSTATE								
Adenocarcinoma		1						
Carcinoma								1
SEMINAL VESICLE								
Carcinoma, Metastatic								
Adenocarcinoma, Metastatic		1						1
TESTES								
Interstitial Cell Tumor				1		1		
Mesothelioma				1		1		
Hemangiosarcoma, Metastatic								
Hemangiosarcoma								1
URINARY BLADDER								
Transitional Cell Carcinoma								
Alveolar/Bronchiolar Carcinoma, Metastatic					2			1
Fibrous Histiocytoma, Metastatic						1		
Adenocarcinoma, Metastatic		1						
CRANIUM								
Alveolar/Bronchiolar Carcinoma, Metastatic				1	1			
DIAPHRAGM								
Carcinoma, Metastatic				1			1	
THORACIC WALL								
Carcinoma, Metastatic							1	
MULTIPLE ORGANS								
Granulocytic Leukemia							1	1
Lymphocytic Leukemia		1					1	2
Myelogenous Leukemia								
Malignant Lymphoma, Histiocytic Type		1		5	2			
Malignant Lymphoma, Lymphocytic Type				3	3		1	3

Figure 14 - Continued
Incidences of Neoplasms and Proliferative Lesions
MOCA: 104-Week Carcinogenicity Study in Male Rats

ORGAN AND DESCRIPTION	Diet: Protein Adequate Diet				Protein Deficient Diet				
	Group:								
	1	2	3	4	5	6	7	8	
	Level (ppm):				0	125	250	500	
UNUSUAL LESIONS									
Squamous Cell Carcinoma	1	3	5	2	1	1		4	
Basal Cell Carcinoma			1					1	
Basosquamous Carcinoma							1	1	
Malignant Fibrous Histiocytoma			2	1	3	2			
Malignant Lymphoma, Histiocytic Type		1							
Malignant Hemangiopericytoma								1	
Hemangiosarcoma	2	1	1					1	
Fibrosarcoma	1	1	1	1		1	2	1	
Liposarcoma					1			1	
Osteogenic Sarcoma	1								
Squamous Cell Papilloma	3	1	5	2	1	1	1		
Keratoacanthoma	1	3	8	1	2	3	7	2	
Fibroma	3	7	11	2	1	2	2	2	
Hemangioma	1								
Alveolar/Bronchiolar Carcinoma, Metastatic			3						
Lipoma						1			

Table 1
Mean Body Weights, Food Consumption, Survival, Number of Palpable Tumors (No. of P.T.)
and Number of P.T. Bearing Animals (No. of PTBA)
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group 1						Group 2					
Time Interval	Body Mean	Food	Survival	No. of P.T.	No. of PTBA	Time Interval	Body Mean	Food	Survival	No. of P.T.	No. of PTBA
0	119	--	100/100	0	0	0	118	--	100/100	0	0
4	330	143	100/100	0	0	4	333	150	100/100	0	0
8	466	--	100/100	0	0	8	468	--	100/100	0	0
12	547	--	100/100	1	1	12	550	--	100/100	0	0
16	610	--	100/100	1	1	16	616	--	100/100	1(1*)	1
20	645	132	100/100	1	1	20	643	127	100/100	0	0
24	664	--	100/100	1	1	24	664	--	100/100	1	1
28	680	--	100/100	1	1	28	689	--	99/100	1	1
32	700	--	100/100	2	2	32	700	--	99/100	3	3
36	717	139	100/100	2	2	36	713	135	98/100	1	1
40	723	--	99/100	1(1*)	2	40	740	--	97/100	1(2*)	3
44	735	--	96/100	1(1*)	2	44	734	--	96/100	3(1*)	4
48	741	--	96/100	2	2	48	751	--	94/100	4(2*)	6
52	751	145	92/100	2	2	52	765	142	94/100	8(1*)	8
56	767	--	91/100	1(1*)	2	56	781	--	93/100	13(4*)	12
60	780	--	91/100	1(2*)	3	60	796	--	90/100	19(2*)	15
64	760	--	87/100	1(1*)	2	64	803	--	86/100	14(2*)	14
68	770	144	85/100	1(2*)	3	68	801	133	82/100	13(1*)	14
72	769	--	80/100	5(1*)	5	72	820	--	75/100	23(3*)	23
76	770	--	74/100	4	3	76	820	--	71/100	20(7*)	24
80	757	--	69/100	5	4	80	816	--	67/100	30(4*)	29
84	727	143	61/100	3	3	84	794	142	59/100	24	23
88	718	--	52/100	7(2*)	9	88	772	--	53/100	29(7*)	26
92	699	--	48/100	4(2*)	6	92	728	--	47/100	24(1*)	18
96	670	--	41/100	5	5	96	741	--	32/100	17(1*)	14
100	649	--	30/100	3(1*)	3	100	655	--	25/100	12(1*)	8
104	616	138	20/100	2	2	104	633	118	14/100	9(1*)	8

* Number of wart-like lesions in addition to tumors.

Table 1 - Continued
Mean Body Weights, Food Consumption, Survival, Number of Palpable Tumors (No. of P.T.)
and Number of P.T. Bearing Animals (No. of PTBA)
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group 3										Group 4									
Time Interval	Body Mean	Food	Survival	No. of		Time Interval	Body Mean	Food	Survival	No. of									
				P.T.	PTBA					P.T.	PTBA								
0	122	--	75/75	0	0	0	122	--	50/50	0	0								
4	326	147	75/75	0	0	4	285	143	50/50	0	0								
8	453	--	75/75	0	0	8	400	--	50/50	1	1								
12	534	--	75/75	0	0	12	469	--	50/50	1	1								
16	595	--	75/75	0	0	16	523	--	50/50	1(1*)	1								
20	629	130	75/75	0	0	20	562	126	49/50	2	2								
24	652	--	75/75	0	0	24	571	--	49/50	1	1								
28	679	--	75/75	1	1	28	588	--	49/50	2	2								
32	695	--	75/75	3	3	32	615	--	48/50	3	3								
36	720	135	74/75	2	2	36	628	126	48/50	7	6								
40	734	--	73/75	2	2	40	639	--	46/50	10	8								
44	747	--	73/75	7(1*)	7	44	643	--	45/50	12(1*)	10								
48	752	--	71/75	12	11	48	662	--	41/50	7(2*)	6								
52	751	140	70/75	10(1*)	10	52	653	131	38/50	8(1*)	7								
56	771	--	68/75	12(3*)	11	56	664	--	37/50	10(1*)	9								
60	788	--	66/75	18(2*)	16	60	667	--	34/50	13(4*)	13								
64	779	--	63/75	22(1*)	20	64	671	--	29/50	10(1*)	8								
68	774	129	57/75	22	19	68	665	120	25/50	11(1*)	10								
72	808	--	48/75	16	16	72	633	--	20/50	11	10								
76	787	--	46/75	19(5*)	21	76	586	--	16/50	7	7								
80	793	--	38/75	13(4*)	15	80	613	--	11/50	7(2*)	7								
84	733	140	30/75	18(5*)	16	84	641	119	6/50	6	4								
88	751	--	25/75	27(1*)	19	88	589	--	3/50	2	1								
92	720	--	18/75	12	10	92	503	--	1/50	2	1								
96	721	--	12/75	11(1*)	8	96	--	--	0/50	--	--								
100	691	--	10/75	10	8	100	--	--	0/50	--	--								
104	656	138	10/75	16(1*)	9	104	--	--	0/50	--	--								

* Number of wart-like lesions in addition to tumors.

Table 1 - Continued
Mean Body Weights, Food Consumption, Survival, Number of Palpable Tumors (No. of P.T.)
and Number of P.T. Bearing Animals (No. of PTBA)
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group 5										Group 6									
Time Interval	Body Mean	Food	Survival	No. of P.T.	No. of PTBA	Time Interval	Body Mean	Food	Survival	No. of P.T.	No. of PTBA	Time Interval	Body Mean	Food	Survival	No. of P.T.	No. of PTBA	Time Interval	Body Mean
0	118	--	100/100	0	0	0	118	--	100/100	0	0	0	118	--	100/100	0	0	0	118
4	193	138	100/100	0	0	4	192	129	100/100	0	0	4	192	129	100/100	0	0	4	192
8	272	--	100/100	0	0	8	266	--	100/100	0	0	8	266	--	100/100	0	0	8	266
12	329	--	100/100	0	0	12	322	--	100/100	0	0	12	322	--	100/100	0	0	12	322
16	381	--	100/100	0	0	16	372	--	100/100	0	0	16	372	--	100/100	0	0	16	372
20	421	127	100/100	0	0	20	411	124	100/100	0	0	20	411	124	100/100	0	0	20	411
24	446	--	100/100	0	0	24	441	--	100/100	0	0	24	441	--	100/100	0	0	24	441
28	476	--	100/100	0	0	28	470	--	100/100	0	0	28	470	--	100/100	0	0	28	470
32	512	--	100/100	1	1	32	507	--	99/100	0	0	32	507	--	99/100	0	0	32	507
36	541	140	99/100	3	3	36	536	138	98/100	0	0	36	536	138	98/100	0	0	36	536
40	566	--	97/100	3	3	40	554	--	97/100	0	0	40	554	--	97/100	0	0	40	554
44	593	--	92/100	1	1	44	574	--	96/100	0	0	44	574	--	96/100	0	0	44	574
48	609	--	88/100	1	1	48	586	--	92/100	1	1	48	586	--	92/100	1	1	48	586
52	619	147	84/100	2	2	52	607	151	89/100	3(1*)	4	52	607	151	89/100	3(1*)	4	52	607
56	643	--	82/100	4	4	56	639	--	83/100	6	6	56	639	--	83/100	6	6	56	639
60	656	--	78/100	5	5	60	657	--	79/100	6	6	60	657	--	79/100	6	6	60	657
64	658	--	75/100	5	5	64	658	--	70/100	5(3*)	8	64	658	--	70/100	5(3*)	8	64	658
68	658	141	66/100	3	3	68	662	138	63/100	6	6	68	662	138	63/100	6	6	68	662
72	664	--	62/100	1	1	72	674	--	58/100	5(2*)	7	72	674	--	58/100	5(2*)	7	72	674
76	680	--	56/100	0	0	76	671	--	47/100	5(1*)	6	76	671	--	47/100	5(1*)	6	76	671
80	686	--	55/100	1	1	80	677	--	42/100	7	7	80	677	--	42/100	7	7	80	677
84	686	148	51/100	0	0	84	669	152	38/100	7	7	84	669	152	38/100	7	7	84	669
88	687	--	49/100	7(1*)	7	88	663	--	36/100	12	11	88	663	--	36/100	12	11	88	663
92	691	--	45/100	2(1*)	3	92	647	--	33/100	8	8	92	647	--	33/100	8	8	92	647
96	685	--	42/100	6(1*)	7	96	632	--	32/100	11	9	96	632	--	32/100	11	9	96	632
100	688	--	37/100	5	5	100	628	--	26/100	10	9	100	628	--	26/100	10	9	100	628
104	682	146	34/100	8(1*)	8	104	630	165	22/100	14	10	104	630	165	22/100	14	10	104	630

* Number of wart-like lesions in addition to tumors.

Table 1 - Continued
Mean Body Weights, Food Consumption, Survival, Number of Palpable Tumors (No. of P.T.)
and Number of P.T. Bearing Animals (No. of PTBA)
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group 7						Group 8					
Time Interval	Body Mean	Food	Survival	No. of P.T.	No. of PTBA	Time Interval	Body Mean	Food	Survival	No. of P.T.	No. of PTBA
0	121	--	75/75	0	0	0	123	--	50/50	0	0
4	185	140	75/75	0	0	4	173	147	50/50	0	0
8	256	--	75/75	0	0	8	235	--	50/50	0	0
12	316	--	75/75	0	0	12	284	--	50/50	0	0
16	367	--	75/75	0	0	16	327	--	50/50	0	0
20	406	132	75/75	0	0	20	354	137	50/50	0	0
24	436	--	75/75	0	0	24	376	--	50/50	0	0
28	464	--	75/75	0	0	28	400	--	50/50	1	1
32	506	---	75/75	1	1	32	431	--	50/50	1	1
36	536	142	75/75	(1*)	1	36	456	144	48/50	2	2
40	557	--	72/75	1(1*)	2	40	479	--	47/50	1	1
44	576	--	69/75	5(1*)	6	44	493	--	47/50	1	1
48	596	--	67/75	7(1*)	7	48	516	--	46/50	2	2
52	608	157	64/75	4(1*)	5	52	531	150	43/50	5	5
56	637	--	61/75	7(5*)	11	56	565	--	41/50	4	4
60	657	--	59/75	6(4*)	9	60	582	--	37/50	6	5
64	662	--	52/75	6(6*)	11	64	567	--	36/50	7(2*)	8
68	653	137	44/75	7(3*)	9	68	569	137	29/50	5	5
72	675	--	41/75	11(1*)	11	72	600	--	27/50	5(1*)	5
76	672	--	37/75	13(3*)	15	76	601	--	23/50	3	3
80	671	--	35/75	13(4*)	15	80	602	--	23/50	4(1*)	5
84	651	150	29/75	8(2*)	10	84	575	163	20/50	4	4
88	642	--	26/75	8(2*)	9	88	581	--	18/50	6(1*)	6
92	657	--	22/75	5(1*)	6	92	566	--	15/50	8	6
96	642	--	22/75	9(1*)	7	96	535	--	13/50	9	6
100	641	--	20/75	12(2*)	12	100	575	--	8/50	3(1*)	3
104	614	149	14/75	7(1*)	7	104	545	119	5/50	1	1

* Number of wart-like lesions in addition to tumors.

Table 2
Group Mean Hematology Values with Standard Deviations
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group	Hematocrit (%)		Hemoglobin (%)		Hematocrit (%)		Hemoglobin (%)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
	<u>Week 4</u>				<u>Week 26</u>			
1 (Control)	44.8	2.9	14.2	1.4	45.8	2.0	15.0	0.5
2	41.2	3.2	14.1	0.5	45.5	1.3	14.8	0.8
3	40.9	6.0	13.5	1.9	46.4	2.5	14.9	0.9
4	39.6	2.5	12.4	0.8	41.9	1.3	13.6	0.7
5 (Control)	46.2	2.4	14.1	0.6	44.8	2.5	14.0	1.3
6	44.8	4.1	13.5	1.0	43.3	2.3	12.2	0.7
7	43.0	3.3	12.8	0.8	43.4	3.5	12.0	0.7
8	40.2	2.4	11.5	1.5	42.4	1.8	11.6	0.7
	<u>Week 52</u>				<u>Week 78</u>			
1 (Control)	46.9	5.5	14.5	1.6	38.7	7.8	12.3	3.6
2	44.3	2.0	13.9	1.1	39.5	2.7	13.1	1.4
3	43.9	3.2	14.2	1.4	35.4	8.2	11.8	3.3
4	42.1	2.9	13.3	0.7	39.0	7.7	11.6	3.0
5 (Control)	45.8	1.3	15.0	0.5	45.6	2.9	14.3	1.0
6	46.2	2.1	14.9	0.6	41.6	6.9	12.7	2.6
7	45.3	2.4	14.7	0.7	41.7	6.1	13.2	2.2
8	43.6	2.4	14.0	1.0	41.1	3.4	12.7	0.9

Table 3
Individual Urine Volume and Specific Gravity Values
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group Number	Animal Number	Week 0		Week 4	
		Specific Gravity	Volume	Specific Gravity	Volume
1	20054	1.006	25	1.008	23
1	20055	1.008	15	1.010	28
1	20056	1.006	23	1.004	48
1	20057	1.025	3	1.017	12
1	20058	1.009	21	1.007	28
1	20059	1.011	14	1.013	21
1	20060	1.009	18	1.008	26
1	20061	1.011	12	1.006	37
1	20062	1.006	23	1.006	41
1	20063	1.010	20	1.005	56
2	20154	1.013	13	1.008	41
2	20155	1.007	24	1.006	34
2	20156	1.007	28	1.008	23
2	20157	1.013	11	1.006	2
2	20158	1.026	4	1.013	24
2	20159	1.015	12	1.014	24
2	20160	1.009	18	1.006	29
2	20161	1.006	33	0.0000Q	Q
2	20162	1.006	33	1.018	12
2	20163	1.005	4	1.016	13
3	20254	1.006	33	1.012	19
3	20255	1.007	20	1.006	22
3	20256	1.012	10	1.007	24
3	20257	1.034	4	1.022	9
3	20258	1.013	10	1.013	17
3	20259	1.005	35	1.004	70
3	20260	1.014	9	1.012	18
3	20261	1.027	4	1.008	25
3	20262	1.005	47	1.004	64
3	20263	1.029	4	1.006	43
4	20329	1.005	33	1.004	47
4	20330	1.022	6	1.012	22
4	20331	1.017	7	1.009	23
4	20332	1.012	12	1.011	19
4	20333	1.060E	1	1.045	4
4	20334	1.055	3	1.007	27
4	20335	1.060E	1	1.018	19
4	20336	1.020	9	1.008	20
4	20337	1.012	15	1.016	12
4	20338	1.060	1	1.007	23

Q Quantity not sufficient.

E Actual value exceeds this value.

Table 3 - Continued
Individual Urine Volume and Specific Gravity Values
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group Number	Animal Number	Week 0		Week 4	
		Specific Gravity	Volume	Specific Gravity	Volume
5	20379	1.014	14	1.008	9
5	20380	1.016	7	0.000U	U
5	20381	1.009	15	1.003	43
5	20382	1.023	7	1.011	8
5	20383	1.028	5	1.015	3
5	20384	1.042	3	1.002	46
5	20385	1.029	4	1.004	16
5	20386	1.030	3	1.004	16
5	20387	1.0006	35	1.005	13
5	20388	1.043	2	1.006	12
6	20479	1.013	12	1.005	18
6	20480	1.044	2	1.005	13
6	20481	1.035	3	1.010	6
6	20482	1.024	5	1.003	30
6	20483	1.014	12	1.003	23
6	20484	0.000Q	Q	1.008	7
6	20485	1.021	5	1.019	2
6	20486	1.012	12	1.008	10
6	20487	1.008	22	1.004	21
6	20488	1.008	19	1.004	9
7	20579	1.021	5	1.014	4
7	20580	1.012	12	1.003	12
7	20581	1.014	9	1.004	19
7	20582	1.055	2	1.035	1
7	20583	1.011	12	1.006	9
7	20584	1.015	9	1.002	39
7	20585	1.017	8	1.005	15
7	20586	1.032	3	1.004	18
7	20587	0.000Q	Q	1.007	7
7	20588	1.009	20	1.004	18
8	20654	1.060E	1	1.017	4
8	20655	1.060E	1	1.004	26
8	20656	1.030	6	1.005	10
8	20657	1.013	10	1.004	13
8	20658	1.011	17	1.005	8
8	20659	1.012	7	1.013	2
8	20660	1.060	1	1.060E	1
8	20661	0.000	Q	1.060E	1
8	20662	1.029	4	1.060E	1
8	20663	1.023	7	1.013	7

Q Quantity not sufficient.

E Actual value exceeds this value.

U Unable to determine.

* Animal died prior to Week 52.

Table 3 - Continued
Individual Urine Volume and Specific Gravity Values
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group Number	Animal Number	Week 26		Week 52	
		Specific Gravity	Volume	Specific Gravity	Volume
1	20054	1.019	15	1.011	30
1	20055	1.033	9	1.018	13
1	20056	1.013	28	1.008	33
1	20057	1.021	13	1.017	14
1	20058	1.018	13	1.009	38
1	20059	1.021	14	1.019	12
1	20060	1.015	25	1.015	29
1	20061	1.037	8	1.028	10
1	20062	1.033	8	1.025	12
1	20063	1.011	29	1.020	14
2	20154	1.019	19	1.017	11
2	20155	1.022	12	1.013	15
2	20156	1.060	5	1.046	9
2	20157	1.014	20	—*	—
2	20158	1.030	12	1.020	19
2	20159	1.036	10	1.032	8
2	20160	1.020	16	1.021	16
2	20161	1.015	25	1.060E	1
2	20162	1.023	17	—*	—
2	20163	1.019	15	1.019	20
2	20164			1.018	23
2	20165			1.023	20
3	20254	1.030	11	1.060E	0.5
3	20255	1.010	30	1.014	18
3	20256	1.029	9	1.034	8
3	20257	1.027	16	1.023	13
3	20258	1.021	11	1.032	8
3	20259	1.018	19	1.030	11
3	20260	1.022	16	1.010	27
3	20261	1.014	22	1.010	43
3	20262	1.016	23	1.009	42
3	20263	1.011	34	1.010	35
4	20329	1.014	19	1.022	21
4	20330	1.023	10	1.037	12
4	20331	1.021	13	—*	—
4	20332	1.010	30	1.021	23
4	20333	1.060E	2	1.037	1
4	20334	1.050	6	—*	—
4	20335	1.029	10	—*	—
4	20336	1.020	15	1.060E	5
4	20337	1.060	1	1.028	16
4	20338	1.017	11	1.060E	1
4	20339			1.015	25
4	20340			1.043	7
4	20341			1.031	8

Q = Quantity not sufficient

E = Actual value exceeds this value

U = Unable to determine

* = Animal died prior to Week 52

Table 3 - Continued
Individual Urine Volume and Specific Gravity Values
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group Number	Animal Number	Week 26		Week 52	
		Specific Gravity	Volume	Specific Gravity	Volume
5	20379	1.035	5	1.007	38
5	20380	1.014	1	1.018	19
5	20381	1.019	7	1.060E	< 0.5
5	20382	1.011	13	—*	—
5	20383	1.006	22	1.006	28
5	20384	1.002	47	1.005	26
5	20385	1.008	13	1.009	17
5	20386	1.015	13	1.012	12
5	20387	1.013	9	1.014	15
5	20388	1.010	31	1.008	21
5	20389			1.021	7
6	20479	1.007	18	1.007	32
6	20480	1.008	20	1.011	18
6	20481	1.010	14	1.029	7
6	20482	1.007	25	1.007	28
6	20483	1.004	37	1.009	36
6	20484	1.008	17	1.007	22
6	20485	1.007	19	1.010	16
6	20486	1.026	6	1.012	20
6	20487	1.010	14	1.028	5
6	20488	1.005	26	1.009	21
7	20579	1.014	9	1.017	6
7	20580	1.008	18	1.007	24
7	20581	1.018	8	—*	—
7	20582	1.013	13	1.013	16
7	20583	1.036	4	1.015	10
7	20584	1.012	15	1.008	22
7	20585	1.003	50	1.006	28
7	20586	1.010	15	1.060E	3
7	20587	1.008	18	1.016	9
7	20588	1.007	21	—*	—
7	20589			0.000U	0U
7	20590			1.040	1
8	20654	1.006	19	1.006	25
8	20655	1.009	20	1.021	8
8	20656	1.018	8	1.036	4
8	20657	1.006	22	1.006	28
8	20658	1.005	20	1.010	17
8	20659	0.000Q	Q	1.006	8
8	20660	1.020	5	1.013	11
8	20661	1.060E	1	1.011	15
8	20662	1.011	12	1.008	17
8	20663	1.009	17	1.010	13

Q = Quantity not sufficient

E = Actual value exceeds this value

U = Unable to determine

* = Animal died prior to Week 52

Table 3 - Continued
Individual Urine Volume and Specific Gravity Values
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group Number	Animal Number	Week 78		Week 82	
		Specific Gravity	Volume	Specific Gravity	Volume
1	20055	1.060E	1.2	1.041	9.8
1	20056	1.023	19.0	1.024	19.8
1	20057	1.027	11.9	1.023	15.0
1	20058	1.013	53.2	1.017	37.0
1	20059	1.024	19.0	*	
1	20060	1.060E	1.1	1.060E	1.8
1	20061	1.060E	1.8	1.060E	3.5
1	20062	1.028	10.8	1.024	13.3
1	20063	1.026	15.3	1.021	16.8
1	20064	1.007	49.0	1.009	48.0
1	20065			1.030	15.4
2	20154	1.041	7.9	1.030	15.2
2	20156	1.043	10.0	1.045	9.4
2	20158	1.050	9.2	*	
2	20159	1.050	9.0	1.031	17.8
2	20163	1.031	13.1	1.030	10.0
2	20164	1.045	5.1	1.034	14.8
2	20165	1.019	15.2	1.020	15.2
2	20166	1.025	15.9	1.018	31.0
2	20167	1.047	9.5	1.013	47.0
2	20168	1.045	5.5	1.021	12.8
2	20169			1.015	27.0
3	20256	1.038	9.4	1.042	7.0
3	20257	1.055	8.9	1.060E	2.5
3	20259	1.031	13.8	1.032	13.0
3	20260	1.045	6.1	1.055	5.2
3	20261	1.022	21.1	1.013	37.0
3	20264	1.016	32.0	1.015	35.0
3	20265	1.030	13.6	1.035	9.0
3	20266	1.039	9.7	1.049	5.2
3	20267	1.027	13.6	1.060E	3.1
3	20269	1.031	16.2	1.055	7.2
4	20329	1.042	8.0	1.035	11.8
4	20332	1.020	31.0	*	
4	20333	1.032	13.3	1.031	13.8
4	20337	1.013	39.0	*	
4	20338	1.060E	5.8	1.060E	6.8
4	20341	1.050	8.9	1.029	11.6
4	20360	1.060E	2.7	*	
4	20361	1.060E	5.8	1.060E	4.2
4	20363	1.017	39.0	1.045	8.2
4	20374			1.027	11.2

E Actual value exceed this value.

* Animal died prior to Week 82.

Table 3 - Continued
Individual Urine Volume and Specific Gravity Values
MOCA: 104-Week Carcinogenicity Study in Male Rats

Group Number	Animal Number	Week 78		Week 82	
		Specific Gravity	Volume	Specific Gravity	Volume
5	20380	1.011	19.0	1.014	15.8
5	20383	1.060	2.8	1.015	13.4
5	20384	1.007	37.0	1.011	23.8
5	20385	1.060E	0.4	1.016	9.8
5	20386	1.010	17.5	*	
5	20387	1.026	10.9	1.060E	2.0
5	20392	1.070	7.1	1.015	11.8
5	20393	1.012	15.8	1.010	19.2
5	20395	1.006	2.2	1.007	26.2
5	20400	1.020	7.2	1.012	19.0
5	20401			1.004	72.0
6	20479	1.007	27.0	*	
6	20481	1.058	4.2	1.060E	2.0
6	20482	1.014	11.9	1.016	9.0
6	20484	1.012	17.8	1.016	9.4
6	20485	1.045	2.8	1.019	18.8
6	20488	1.018	13.2	1.011	15.2
6	20489	1.009	27.2	1.010	23.0
6	20490	1.021	11.4	1.036	5.0
6	20491	1.023	8.1	1.014	14.8
6	20492	1.013	15.3	1.010	23.6
6	20493			1.007	43.0
7	20579	1.022	8.1	1.015	8.8
7	20580	1.011	12.2	1.010	21.0
7	20583	1.010	19.0	*	
7	20584	1.015	10.9	1.009	19.0
7	20585	1.012	23.4	1.010	25.2
7	20590	1.038	4.8	1.015	5.2
7	20591	1.010	24.4	1.007	21.0
7	20592	1.018	10.9	1.010	8.8
7	20593	1.048	3.5	1.047	4.4
7	20595	1.023	11.8	1.027	7.6
7	20597			1.012	21.0
8	20655	1.017	10.9	*	
8	20659	1.060E	0.1	1.060E	0.7
8	20660	1.013	13.0	1.019	11.0
8	20661	1.014	23.0	1.015	22.0
8	20662	1.021	10.5	1.029	8.2
8	20663	1.013	16.2	1.012	18.2
8	20664	1.011	24.0	1.012	18.6
8	20665	1.021	15.5	1.025	13.4
8	20669	1.028	10.0	1.040	2.5
8	20670			1.013	18.0
8	20657			1.015	13.8

E Actual value exceeds this value.

* Animal died prior to week 82.

Table 4
Analysis of Urine for MOCA Residues
MOCA: 104-Week Carcinogenicity Study in Male Rats

<u>Human Urine Samples</u>					
<u>Sample Identification*</u>	<u>Fortified Level</u>	<u>Date Sample Taken</u>	<u>ug of MOCA/ml</u>	<u>ppm MOCA Detected</u>	<u>% Recovery</u>
Butts (Baseline)		10/04/74	<0.01	<0.01	
	1.0 ppm	10/04/74	0.89	0.89	89
		10/11/74	<0.01	<0.01	
		1/06/75	<0.01	<0.01	
		4/01/75	<0.01	<0.01	
Romanoff (Baseline)**		10/04/74	<0.01	<0.01	
		10/11/74	<0.01	<0.01	
		1/06/75	<0.01	<0.01	
Nadjarian (Baseline)		7/30/74	<0.01	<0.01	
		10/04/74	<0.01	<0.01	
	10.0 ppm	10/04/74	9.60	9.60	96
		10/11/74	<0.01	<0.01	
		1/07/75	.05	.05	
		4/01/75	<0.01	<0.01	

* Human urine samples obtained from personnel involved with the MOCA study.
** Individual no longer employed at Hazleton Labs.

Table 4 - Continued
Analysis of Urine for MOCA Residues
MOCA: 104-Week Carcinogenicity Study in Male Rats

Pooled Rat Urine Samples Taken from Animals
The First Day of Study

<u>Sample Identification</u>	<u>Date Sample Taken</u>	<u>ug of MOCA/ml</u>	<u>ppm MOCA Detected</u>
Group 1	10/17/74	<0.1	<0.1
2		<0.1	<0.1
3		<0.1	<0.1
4		<0.1	<0.1
5	10/18/74	<0.1	<0.1
6		<0.1	<0.1
7		<0.1	<0.1
8		<0.1	<0.1

Pooled Rat Urine Samples Taken from Animals That
Were on The Study for 28 Days

<u>Sample Identification</u>	<u>Date Sample Taken</u>	<u>ug of MOCA/ml</u>	<u>ppm MOCA Detected</u>
Group 1	11/14/74	<0.1	<0.1
2		<0.1	<0.1
3		<0.1	<0.1
4		0.58	0.58
5	11/15/74	<0.1	<0.1
6		<0.1	<0.1
7		<0.1	<0.1
8		0.58	0.58

Table 4 - Continued
Analysis of Urine for MOCA Residues
MOCA: 104-Week Carcinogenicity Study in Male Rats

Pooled Rat Urine Samples Taken from Animals
on Study for 26 Weeks*

<u>Sample Identification</u>	<u>Date Sample Taken</u>	<u>ppm MOCA Detected</u>
Group 1	4-20-75	<0.01
2		0.03
3		0.07
4		0.33
5	4-22-75	<0.01
6		<0.01
7		0.06
8		0.12

*The analytical procedure used was the same as described in report dated January 20, 1975 but a larger aliquot of rat urine was taken to obtain a sensitivity of 0.01 ppm instead of 0.1 ppm as previously reported.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats

Recovery of MOCA from control rat urine samples prior
 to and after acid hydrolysis

<u>Sample Identification</u>	<u>ppm MOCA Added</u>	<u>ppm MOCA Recovered</u>	<u>% Recovery</u>
Group 1	1.00	.70	70
Fortified rat urine	.10	.065	65
Samples analyzed	.50	.30	60
Prior to acid	.50	.30	60
Hydrolysis	.01	.0078	78
Average			67
Group 1	10.00	9.00	90
Fortified rat urine	10.00	10.00	100
Samples analyzed	5.00	4.50	90
After acid hydrolysis	1.00	.75	75
	.50	.24	48
	.10	.04	40
	.01	.005	50
Average			70

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 1 - Protein Adequate Diet - 0 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20142	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	Pituitary: Adenoma
20144	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	Subcutaneous Tissue Mass: Squamous Cell Papilloma
20145	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	Pituitary: Adenoma
20146	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	Prostate: Adenocarcinoma, Primary, Metastatic to Urinary Bladder, Seminal Vesicle, and Lung
20148	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	Subcutaneous Tissue Mass: Fibroma
20149	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	
20150	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	Pituitary: Adenoma
20151	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	
20152	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	Pituitary: Adenoma Subcutaneous Tissue Mass: Keratoacanthoma
20153	AH <.01 <.01	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	<.1 <.1	Pancreas: Islet Cell Adenoma

Table 4 - Continued.
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 2 - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites				Pathological Comments	
		1	2	3	4		5
20154	AH	.07 .29 .42	.17 .37	.14 .48	.11 O.S.	.21 O.S.	Tissue Mass: Squamous Cell Carcinoma, Primary Lung: Metastatic Squamous Cell Carcinoma Pituitary: Adenoma
20156	AH	N.D. .33 .75	.14 .26	.13 .75	.16 -	.40 -	Lung: Hyperplasia Adrenal: Hyperplasia, Medullary Cell Pituitary: Adenoma
20158	AH	.24 .13 1.06	.07 .18	.04 .30	.07 .60	.20 O.S.	Pituitary: Adenoma Thyroid: Follicular Cell Hyperplasia Lung: Hyperplasia
20159	AH	.32 1.50 1.60	.07 .40	.07 .20	.14 .60	.30 .42	Liver: Hamangiosarcoma, Metastatic Spleen: Hamangiosarcoma Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia Pituitary: Adenoma
20163	AH	.04 .20 .62	.12 .08 .15	.07 -	.02 -	.08 -	
20164	AH	.15 .50 .50	.18 .25 .25	.12 .05	.04 .25	.05 .17	Pituitary: Adenoma Lung: Hyperplasia Parathyroid: Adenoma
O.S. = Off Scale (could not be calculated because of the interfering peaks).							

O.S. = Off Scale (could not be calculated because of the interfering peaks).
 N.D. = Not Discernable (because of interference with high metabolite peaks four or five).
 Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 2 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20165	AH	.04 .20 .25	.04 .18	.07 -	.06 -	- -	Lung: Alveolar/Bronchiolar Carcinoma Pancreas: Islet Cell Adenoma Mammary Gland: Adenocarcinoma Pituitary: Adenoma
20166	AH	.09 .40	.15 .55	.03 .20	.04 -	.10 -	Liver: Foci of Altered Cells Spleen: Hemangiosarcoma Pancreas: Islet Cell Adenoma Lung: Hyperplasia
20167	AH	N.D. .20	.11 .25	.05 .15	.05 -	.07 .15	Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia
20168	AH	.12 1.65	0.S. 2.45	.04 1.22	.14 .70	.24 2.15	Necrotic Wart on Back: Squamous Cell Carcinoma Lung: Hyperplasia
20169	AH	N.D. .12	.15 .70	.03 .15	.05 .50	.20 .50	Multiple Organs: Malignant Lymphoma, Histiocytic Type Lung: Hyperplasia Pituitary: Adenoma

0.S. = Off Scale (could not be calculated because of the interfering peaks).

N.D. = Not Discernable (because of interference with high metabolite peaks four or five).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 2 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites				Pathological Comments
		1	2	3	4	
20170	N.D. AH .43	.34 .50	.11 .22	.08 .35	.11 .52	.28 .62 Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia Thyroid: Follicular Cell Adenoma
20171	.27 AH .60	.36 1.60	.10 .40	.03 .50	.09 1.35	.18 1.20 Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Diaphragm: Metastatic Alveolar/Bronchiolar Carcinoma Pituitary: Chromophobe Hyperplasia
20173	.07 AH .20	.11 .60	.06 .10	.02 .10	.02 .25	.02 .15 Pancreas: Islet Cell Adenoma Lung: Hyperplasia Pituitary: Adenoma
20174	.05 AH .27	.15 .72	- .15	- .10	- .30	- .20 Lung: Hyperplasia Adrenal: Hyperplasia, Medullary Cell
20175	<.01 AH .20	.07 .28	- .12	- -	- .10	- - Multiple Organs: Malignant Lymphoma, Histocytic Type Pituitary: Hyperplasia
20177	.07 AH .35	.20 .45	.05 .20	.14 .07	.14 .40	- - Zymal Gland: Carcinoma Lung: Metastatic Carcinoma
20178	.07 AH .60	.26 1.45	.04 .50	.08 .27	.22 1.00	.90 - Pituitary: Adenoma Adrenal: Hyperplasia, Medullary Cell Lung: Hyperplasia
20179	.12 AH .70	.12 1.08	.02 .18	.09 .11	.20 .72	.55 - Pituitary: Adenoma Adrenal: Hyperplasia, Medullary Cell Lung: Hyperplasia

N.D. = Not Discernable (because of interference with high metabolite peaks four or five).
 Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 2 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites				Pathological Comments
		1	2	3	4	
20182	AH	N.D. .27	N.D. .30	N.D. .15	.24 .30	- .22 Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Pituitary: Adenoma
20183	AH	N.D. .27	N.D. .20	N.D. .10	.15 .10	- .09 Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Tissue Masses: Malignant Lymphoma, Histiocytic Type Pituitary: Chromophobe Hyperplasia
20184	AH	.09 .27	.19 1.05	.10 .40	.07 -	.11 .30 Lung: Hyperplasia
20186	AH	N.D. .23	- 1.20	- .43	.20 .15	- .70 Tissue Mass: Squamous Cell Carcinoma, Primary, Metastatic to Heart and Lung Lung: Hyperplasia
20187	AH	N.D. .12	- .45	- .01	.18 .01	- .01 Pancreas: Islet Cell Adenoma Pituitary: Adenoma
20188	AH	N.D. .25	- .72	- .12	.35 .25	- .40 Lung: Hyperplasia Pituitary: Adenoma
20189	AH	N.D. .07	.17 .60	- .20	.16 .20	- .20 Nodule: Squamous Cell Carcinoma Nodule: Squamous Cell Papilloma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia

N.D. = Not Discernable (because of interference with high metabolite peaks four or five).
 Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 2 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites				Pathological Comments
		1	2	3	4	
20191	N.D. AH .35	.22 .55	.13 .35	.11 .10	.30 .35	Tissue Mass: Fibroma Lung: Hyperplasia Pituitary: Chromophobe Hyperplasia
20192	.27 AH 1.12	.15 .72	- .40	- .10	- .45	Lung: Alveolar/Bronchiolar Carcinoma Pituitary: Adenoma Adrenal: Hyperplasia
20193	N.D. AH .47	.21 .87	- .27	- .10	.32 .77	Multiple Organs: Malignant Lymphoma, Histocytic Type Lung: Hyperplasia
20194	N.D. AH .08	.09 .25	.05 .07	.05 .10	.17 .15	Pituitary: Adenoma Lung: Hyperplasia
20195	N.D. AH .05	.13 .50	- .17	- .17	- .10	Zymal Gland: Carcinoma, Primary Lung: Carcinoma, Metastatic, and Hyperplasia Liver: Hepatocellular Carcinoma
20197	N.D. AH .35	.33 .95	.06 .62	.09 .50	.27 .87	Pancreas: Islet Cell Adenoma Lung: Hyperplasia
20198	.16 AH .95	- .85	O.S. .75	.05 .85	.22 .35	Zymal Gland: Carcinoma, Primary Lung: Carcinoma, Metastatic
20199	.36 AH .95	O.S. 1.20	- .80	- 1.00	.11 .95	Lung: Alveolar/Bronchiolar Carcinoma, Primary, and Hyperplasia Thymus, Kidney, and Pancreas: Metastatic Alveolar/Bronchiolar Carcinoma Pituitary: Adenoma

N.D. = Not Discernable (because of interference with high metabolite peaks four or five).
 O.S. = Off Scale (could not be calculated because of other interfering peaks).
 Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 2 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20202	AH	.20 1.60	.44 1.65	O.S. 1.00	.45 1.30	- -	Mammary Gland: Adenocarcinoma Pancreas: Islet Cell Adenoma Lung: Hyperplasia
20203	AH	N.D. .40	.33 .68	.13 .25	.17 .30	.62 .65	- -
20204	AH	.07 .57	.25 .60	- .20	- .25	- .27	Thyroid: "C" Cell Adenoma Pituitary: Adenoma Lung: Hyperplasia
20205	AH	.06 .30	.20 .30	.07 .15	.11 .15	.21 .15	Liver: Hepatocellular Carcinoma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia
20206	AH	.06 .20	.05 -	.06 .20	.02 .10	.07 .65	Tissue Mass: Hemangiosarcoma, Primary, Metastatic to Salivary Gland and Lung Lung: Hyperplasia Thyroid: Follicular Cell Adenoma Pituitary: Adenoma
20207	AH	.06 .30	.14 .20	.05 .10	.03 .05	.01 .40	Pancreas: Islet Cell Adenoma Pituitary: Adenoma Lung: Hyperplasia
20208	AH	.08 .40	.05 .40	.06 .20	.01 .30	.03 .80	.03 .50

O.S. = Off Scale (could not be calculated because of other interfering peaks).

N.D. = Not Discernable (because of interference with high metabolite peaks four or five).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm.

Group 2 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20209	AH	.03 .30	.07 .15	.03 .40	.03 .75	.06 .75	Pituitary: Adenoma Adrenal: Hyperplasia, Medullary Cell Liver: Foci of Altered Cells
20210	AH	.11 .50	.06 .35	.05 .20	.04 .60	.05 .65	Lung: Hyperplasia
20212	AH	.30 .75	.20 .60	.10 .70	.23 1.50	.40 1.10	Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia Kidney: Hamartoma Pancreas: Adenoma Tissue Mass: Fibroma
20213	AH	.03 .10	.08 .20	.14 .20	<.01 .10	.12 .30	Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia Brain: Granular Cell Myoblastoma Pancreas: Islet Cell Adenoma Pituitary: Adenoma Mammary Gland: Adenocarcinoma
20214	AH	.20 .70	.06 .35	.20 .40	.04 .30	.28 .85	Testes: Interstitial Cell Adenoma Pituitary: Adenoma Lung: Hyperplasia Adrenal: Hyperplasia, Medullary Cell Lung: Alveolar/Bronchiolar Carcinoma Liver: Hepatocellular Carcinoma Mammary Gland: Adenoma
20215	AH	.12 .30	.16 .40	.12 .30	- .10	.18 .52	
20217	AH	.07 .15	.20 .60	.10 .40	.10 .10	.08 .30	Multiple Organs: Malignant Lymphoma, Histiocytic Type Lung: Hyperplasia

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 2 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20218	AH	.04 .32	.10 -	.11 .30	.04 .18	.04 .40	.16 .50 Lung: Alveolar/Bronchiolar Carcinoma, Malignant Lymphoma - Histiocytic Type, and Hyperplasia Pituitary: Adenoma Liver: Malignant Lymphoma, Histiocytic Type
20219	AH	.16 .86	.14 -	.16 .70	.08 .20	.06 1.10	.20 1.10 Subcutaneous Tissue Mass: Fibroma Spleen: Hemangiosarcoma Lung: Hyperplasia
20220	AH	<.01 .15	- -	.12 .25	.05 -	- .25	.05 .27 Thyroid: Follicular Cell Adenoma Pituitary: Adenoma Lung: Hyperplasia
20221	AH	.08 .63	.10 -	.29 .87	.08 .20	- .80	.27 1.15 Pancreas: Islet Cell Adenoma Lung: Hyperplasia Parathyroid: Hyperplasia
20222	AH	.43 .75	.12 -	.12 .30	.08 .20	- .75	.33 1.60 Pituitary: Adenoma
20223	AH	.05 .15	.12 .60	.04 .06	.10 .06	- .37	.08 .38 Lung: Adenomatous Hyperplasia
20224	AH	<.01 .52	.12 -	.05 .20	.05 .20	- .30	.05 .55 Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 2 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites				Pathological Comments
		1	2	3	4	
20225	AH	.07 .50	.12 .55	.20 .31	- .60	.10 .75 Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia Tissue Mass: Fibroma
20227	AH	.10 .85	.25 .60	.75 1.15	- .86	.20 1.70 Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Lung: Alveolar/Bronchiolar Adenoma
20228	AH	.08 .40	- .55	.30 .60	- .25	.05 .60 Lung: Hyperplasia
20229	AH	.05 .30	.07 .63	.20 .63	- .20	.05 .75 Zymbal Gland: Carcinoma
20230	AH	.08 .45	.05 .85	.22 .85	.05 .45	.17 1.08 Pituitary: Adenoma Lung: Hyperplasia Zymbal Gland: Carcinoma
20233	AH	.12 .55	- .80	.25 .70	.05 .35	.17 .28 Lung: Hyperplasia
20235	AH	.23 .38	- .35	.13 .26	- .20	.72 1.60 Zymbal Gland: Carcinoma Pituitary: Adenoma Lung: Hyperplasia
20237	AH	.10 .31	- .48	.30 .60	- .15	.10 .70 Pituitary: Adenoma

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 2 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites				Pathological Comments		
		1	2	3	4		5	
20238	AH	.25 .78	- 1.12	.55 1.10	.18 .63	.15 1.00	.57 1.73	Lung: Hyperplasia
20239	AH	.15 .55	- .72	.55 1.00	.05 .30	.15 .87	.15 1.10	Pituitary: Adenoma Nodule: Keratoacanthoma Lung: Hyperplasia
20243	AH	.12 .45	- .78	.18 .32	- .10	- .43	.10 .60	Lung: Alveolar/Bronchiolar Adenoma Pancreas: Islet Cell Adenoma Pituitary: Adenoma
20244	AH	.10 .30	- .20	.10 .30	- .15	- .30	.15 .65	Nodule (Wart): Keratoacanthoma
20245	AH	<.01 .18	- .45	- .13	- -	- .10	- .25	Tissue Mass: Fibroma Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia
20246	AH	.01 .10	- .45	.30 .50	- .05	- .20	.20 .30	Pituitary: Adenoma Testes: Mesothelioma Lung: Hyperplasia
20247	AH	.15 .28	- .90	.38 .45	.05 -	.02 .35	.15 .60	Pituitary: Carcinoma Lung: Hyperplasia Nodule: Keratoacanthoma
20251	AH	.13 .25	- 1.25	.20 .45	- .35	- .70	.60 2.50	Pituitary: Adenoma Pancreas: Islet Cell Adenoma
20252	AH	.18 .23	- 1.12	.52 .75	.10 .25	- .40	.20 .90	Multiple Organs: Malignant Lymphoma, Histiocytic Ty Lung: Hyperplasia
Lung: All Hyperplasias are Adenomatous Hyperplasia.								

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 3 - Protein Adequate Diet - 500 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20256	.09 AH 1.30	.32 2.20	.09 1.00	.07 .56	.34 1.50	- 1.50	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Pancreas: Alveolar/Bronchiolar Carcinoma, Metastatic
20257	.16 AH 1.30	.22 1.15	.05 .40	.09 .35	.20 1.10	- .60	Lung: Hyperplasia
20259	.10 AH 1.23	.32 1.90	- .83	.05 .40	.19 1.23	- .92	Multiple Organs: Malignant Lymphoma, Histiocytic Type
20260	.12 AH 1.00	.30 2.10	.04 1.35	.06 .75	.16 1.90	- 1.45	Tissue Mass on Back: Squamous Cell Carcinoma (Multiple) Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Subcutaneous Nodule: Keratoacanthoma Adrenal and Pancreas: Metastatic Alveolar/Bronchiolar Carcinoma
20261	N.D. AH .40	.19 .60	.09 1.05	.11 .20	.32 .85	- .50	Tissue Mass: Fibroma, Keratoacanthoma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia
20264	N.D. AH .72	.18 .60	.06 .40	.06 .23	.14 .25	- .37	Lung: Hyperplasia Pituitary: Adenoma
20265	N.D. AH .50	.25 .95	.11 .70	.06 .85	.30 .85	- 1.15	Mammary Gland: Adenocarcinoma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia

N.D. = Not Discernable (because of interference with high metabolite peaks four and five).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 3 Continued - Protein Adequate Diet - 500 ppm

Animal Number	MOCA	Metabolites				Pathological Comments		
		1	2	3	4		5	
20266	AH	N.D. .30	.21 .55	.12 .65	.08 .23	O.S. .95	- .60	Pituitary: Chromophobe Hyperplasia Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Liver: Foci of Altered Cells
20267	AH	N.D. .65	.25 1.40	.08 .75	.18 -	.38 1.00	- 1.95	Pituitary: Adenoma Lung: Hyperplasia
20269	AH	.23 1.90	.33 1.55	.10 1.40	.18 .50	.34 1.65	- 1.55	Tissue Mass: Keratoacanthoma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia
20272	AH	N.D. .25	.15 .85	.05 .40	.05 .55	.15 .60	- 1.00	Tissue Mass: Keratoacanthoma, Fibroma, Basal Cell Carcinoma Pituitary: Adenoma Lung: Hyperplasia
20273	AH	N.D. .50	.25 1.00	.11 .55	.06 .35	.40 .85	- 1.15	Lung: Hyperplasia
20274	AH	.08 .72	.23 1.10	.04 .55	.05 .37	.25 1.05	- 2.05	Pituitary: Adenoma Lung: Hyperplasia

O.S. = Off Scale (could not be calculated because of the interfering peaks).

N.D. = Not Discernable (because of interference with high metabolite peaks four and five).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 3 Continued - Protein Adequate Diet - 500 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20275	N.D. .90	.36 1.55	.09 1.80	.05 1.10	.34 1.90	- 2.50	Tissue Mass I: Hemangiosarcoma Tissue Mass II: Fibroma Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia Pituitary: Adenoma
20276	N.D. 1.00	.28 1.65	.04 1.05	.06 .60	.28 1.40	- 2.10	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Pituitary: Adenoma
20277	.03 .30	.10 .60	- .30	.04 N.D.	.07 N.D.	- .40	Liver: Malignant Lymphoma, Histiocytic Type Lung: Malignant Lymphoma, Histiocytic Type
20282	N.D. .20	.12 .60	- .24	- .09	.25 N.D.	- .74	Lung: Hyperplasia
20284	N.D. .20	.12 2.10	.12 .20	.08 .20	.10 N.D.	- .55	Pituitary: Chromophobe Hyperplasia
20285	.06 .90	.28 3.30	.02 1.40	.05 1.20	.16 O.S.	- -	Nodule: Fibroma Liver: Hepatocellular Carcinoma Lung: Hyperplasia
20286	N.D. .30	.30 2.00	.12 2.10	.10 2.10	.42 3.85	- -	Liver: Hemangiosarcoma Lung: Hemangiosarcoma, Metastatic and Hyperplasia

N.D. = Not Discernable (because of interference with high metabolite peaks four and five).

O.S. = Off Scale (could not be calculated because of the interfering peaks).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 3 Continued - Protein Adequate Diet - 500 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20287	AH	.32 .90	.38 2.80	.05 1.25	.10 .82	.28 1.25	Nodule (Ear): Fibrosarcoma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Pituitary: Adenoma
20288	AH	.08 .60	.25 1.25	.01 1.65	.01 -	.02 -	Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia
20289	AH	.08 .50	.15 1.00	- .70	- -	.04 -	Pituitary: Adenoma
20290	AH	.06 N.D.	.06 1.00	- -	- -	.01 -	Tissue Mass: Squamous Cell Papilloma Zymal Gland: Carcinoma Lung: Zymal Gland Carcinoma Metastatic and Hyperplasia Pancreas: Islet Cell Adenoma Pituitary: Adenoma
20292	AH	.13 .27	.19 1.80	- .90	- .30	.05 1.70	Tissue Mass: Mammary Gland Adenocarcinoma Lung Nodules: Alveolar/Bronchiolar Adenoma and Hyperplasia
20293	AH	.30 .65	.10 3.50	- 2.05	- .50	.05 O.S.	Tissue Mass: Fibroma Liver: Hepatocellular Carcinoma and Neoplastic Nodule Lung: Hyperplasia

N.D. = Not Discernable (because of interference with high metabolite peaks four and five).

O.S. = Off Scale (could not be calculated because of the interfering peaks).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
Analysis of Urine for MOCA Residues
MOCA: 104-Week Carcinogenicity Study in Male Rats
Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 3 Continued - Protein Adequate Diet - 500 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20294	AH	.09 .50	- 1.10	- 1.15	- -	- -	Mammary Gland: Adenocarcinoma Zymbal Gland: Carcinoma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Kidney: Alveolar/Bronchiolar Carcinoma, Metastatic Pituitary: Adenoma
20295	AH	.21 .80	.13 [2.40	- 2.40]	- .20	- N.D.	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Liver: Hepatocellular Carcinoma
20298	AH	.19 .65	.19 1.45	- .60	- -	.01 .60	
20299	AH	.30 .85	O.S. 3.00	- 2.50	- 1.00	.07 N.D.	Tissue Mass: Malignant Fibrous Histiocytoma Heart: Fibrous Histiocytoma, Metastatic Lung: Fibrous Histiocytoma, Metastatic
20301	AH	N.D. .35	.24 1.60	.14 .92	.12 .80	.44 N.D.	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Pituitary: Adenoma
20302	AH	.05 .20	.24 1.80	.08 .25	.08 .25	.34 N.D.	Tissue Mass: Fibroma Lung: Hyperplasia

N.D. = Not Discernable (because of interference with high metabolite peaks four and five).

O.S. = Off Scale (could not be calculated because of the interfering peaks).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
Analysis of Urine for MOCA Residues
MOCA: 104-Week Carcinogenicity Study in Male Rats
Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 3 Continued - Protein Adequate Diet - 500 ppm

Animal Number	MOCA	Metabolites				Pathological Comments		
		1	2	3	4		5	
20303	AH	.05 N.D.	.28 1.60	.07 .38	.05 .30	.19 N.D.	- 2.80	Lung: Alveolar/Bronchiolar Carcinoma Hyperplasia Adrenal, Ear Canal, and Pancreas: Alveolar/Bronchiolar Carcinoma, Metastatic Pituitary: Adenoma
20304	AH	.12 .18	.42 1.15	- .57	.04 .25	- N.D.	- .87	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Pancreas: Islet Cell Adenoma Subcutaneous Nodule: Keratoacanthoma
20307	AH	.24 .12	.52 1.70	.07 1.25	.14 1.10	.32 N.D.	- O.S.	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Heart: Alveolar/Bronchiolar Carcinoma, Metastatic
20308	AH	.80 .40	.25 1.20	.06 .50	.10 .60	.50 N.D.	- 1.50	Pituitary: Adenoma Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia
20313	AH	.22 .35	.28 2.50	.05 .32	.08 .50	.48 N.D.	- 2.60	Tissue Mass: Fibroma Pituitary: Adenoma Lung: Hyperplasia
20315	AH	.05 .40	.42 1.25	.02 .65	.05 .15	.12 .55	- .95	Nodules: Fibroma Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia

N.D. = Not Discernable (because of interference with high metabolite peaks four and five).

O.S. = Off Scale (could not be calculated because of the interfering peaks).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 3 Continued - Protein Adequate Diet - 500 ppm

Animal Number	MOCA	Metabolites					Pathological Comments	
		1	2	3	4	5		
20318	AH	.22 1.35	.40 1.10	- .65	.05 .25	.17 .95	- 1.10	Lung: Hyperplasia Skin: Squamous Cell Carcinoma Thyroid: "C" Cell Adenoma
20319	AH	.08 1.85	.52 2.15	.20 1.00	.24 .50	.42 1.25	- 1.75	Zymbal Gland: Carcinoma Tissue Mass on Back: Squamous Cell Carcinoma Lung: Hyperplasia
20320	AH	.14 .70	.34 1.15	.08 .65	.09 .20	.28 .55	- .40	Small Intestine: Mucinous Cystadenocarcinoma Pancreas: Cystadenocarcinoma, Metastatic Lung: Hyperplasia
20323	AH	.17 .95	.30 1.55	.07 .90	.15 .35	.28 1.05	- .95	Lung: Alveolar/Bronchiolar Adenoma, Carcinoma, and Hyperplasia
20324	AH	N.D. .25	- .40	.08 .20	.05 -	.28 .15	- .30	Tissue Mass I: Fibroma Tissue Mass II: Keratoacanthoma Pituitary: Adenoma Lung: Hyperplasia
20325	AH	.24 1.55	.30 2.25	.05 1.15	.11 .35	.23 .85	- .90	Lung: Alveolar/Bronchiolar Adenoma and Hyperplasia Subcutaneous Tissue Mass: Fibroma Pancreas: Islet Cell Adenoma

N.D. = Not Discernable (because of interference with high metabolite peaks four and five).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 3 Continued - Protein Adequate Diet - 500 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20326	N.D. AH .75	.19 1.45	.11 .80	.05 .70	.55 1.20	- 1.90	Multiple Organs: Malignant Lymphoma, Lymphocytic Lung: Hyperplasia Nodule: Squamous Cell Papilloma
20328	.08 AH .85	- 1.15	- .65	.06 .35	.21 1.10	- 1.30	Lung: Hyperplasia

N.D. = Not Discernable (because of interference with high metabolite peaks four and five).

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 4 - Protein Adequate Diet - 1000 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20329	6.75 AH 9.25	.60 6.75	- -	.15 -	- 1.25	- -	Zymal Gland: Carcinoma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Liver: Neoplastic Nodule
20330	4.50 AH 9.25	1.50 14.75	- -	- -	- 3.25	- -	Lung: Hepatocellular Carcinoma, Metastatic, and Hyperplasia Liver: Hepatocellular Carcinoma
20332	7.25 AH 11.50	- 5.75	- -	- -	- 1.25	- -	Liver: Hepatocellular Carcinoma and Neoplastic Nodule Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Pituitary: Adenoma
20333	7.75 AH 14.00	- 11.00	- -	- -	- 2.25	- -	Zymal Gland: Carcinoma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Liver: Hepatocellular Carcinoma and Neoplastic Nodule
20337	4.00 AH 7.25	- 2.50	- -	- -	- -	- -	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Adrenal: Alveolar/Bronchiolar Carcinoma, Metastatic Liver: Hepatocellular Carcinoma
20338	10.50 AH 22.50	.95 12.00	- -	.50 -	- -	- -	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Heart, Kidney, Pancreas, and Mesenteric Lymph Node: Alveolar/Bronchiolar Carcinoma, Metastatic Liver: Hepatocellular Carcinoma Subcutaneous Nodule: Keratoacanthoma Thyroid: Follicular Cell Carcinoma
20341	8.25 AH 14.75	1.00 7.50	- -	.50 -	- 1.75	- -	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Kidney and Thymus: Alveolar/Bronchiolar Carcinoma, Metastatic Liver: Hepatocellular Carcinoma

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 4 Continued - Protein Adequate Diet - 1000 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20344	AH 6.25 16.75	1.00 20.00	- -	.50 -	- 6.00	- -	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Zymal Gland: Carcinoma, Metastatic to Lung Liver: Hepatocellular Carcinoma Adrenal: Hyperplasia
20345	AH 1.55 .50	.07 2.45	- -	.04 -	- -	- -	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia
20347	AH 5.40 8.00	.70 6.70	- -	.20 -	- 2.50	- -	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Thyroid: Follicular Cell Carcinoma
20359	AH 2.80 8.70	.30 3.75	- -	.25 -	- 2.25	- -	Lung: Alveolar/Bronchiolar Carcinoma, Hyperplasia, and Metastatic Malignant Fibrous Histiocytoma Leg Mass: Malignant Fibrous Histiocytoma, Primary Lumbar Lymph Nodes, Pancreas, and Liver: Fibrous Histiocytoma, Metastatic
20360	AH 2.05 8.00	.50 5.75	- -	.25 -	- 1.00	- -	Wart on Ear: Fibrosarcoma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Adrenal and Mesenteric Lymph Node: Alveolar/Bronchiolar Carcinoma, Metastatic Liver: Hepatocellular Carcinoma and Neoplastic Nodule
20361	AH 2.35 9.25	.45 7.75	- -	.25 -	- 2.50	- -	Wart: Fibroma Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia Pituitary: Adenoma

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 4 Continued - Protein Adequate Diet - 1000 ppm

Animal Number	MOCA	Metabolites				Pathological Comments
		1	2	3	4	
20363	AH	1.90	-	.15	-	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia
		6.75	3.50	-	2.50	Liver: Hepatocellular Carcinoma
20365	AH	9.00	-	.25	-	Zymbal Gland: Carcinoma
		15.25	9.50	-	3.25	Mammary Gland: Adenocarcinoma Liver: Hepatocellular Carcinoma Lung: Alveolar/Bronchiolar Carcinoma, Hyperplasia, and Metastatic Hepatocellular Carcinoma
20371	AH	8.50	.75	.25	-	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia
		15.50	11.50	-	2.00	Liver: Hepatocellular Carcinoma Zymbal Gland: Carcinoma
20374	AH	1.60	.40	.20	-	Lung: Alveolar/Bronchiolar Carcinoma and Hyperplasia
		5.50	5.00	-	-	Urinary Bladder, Thyroid, Kidney, Pancreas, and Cranium: Alveolar/Bronchiolar Carcinoma, Metastatic
20376	AH	7.20	.27	.10	-	Liver: Hepatocellular Carcinoma
		18.50	10.00	-	-	Lung: Hyperplasia

Lung: All Hyperplasias are Adenomatous Hyperplasia.

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 5 - Protein Deficient Diet - 0 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20458	AH	<.01	<.1	<.1	<.1	<.1	Thyroid: "C" Cell Adenoma Pancreas: Islet Cell Adenoma
20461	AH	<.01	<.1	<.1	<.1	<.1	
20465	AH	<.01	<.1	<.1	<.1	<.1	Pituitary: Adenoma
20467	AH	<.01	<.1	<.1	<.1	<.1	Pituitary: Adenoma
20468	AH	<.01	<.1	<.1	<.1	<.1	Pituitary: Adenoma
20469	AH	<.01	<.1	<.1	<.1	<.1	
20472	AH	<.01	<.1	<.1	<.1	<.1	Skin on Back: Malignant Fibrous Mistiocytoma, Primary Liver and Lung: Malignant Fibrous Histiocytoma, Metastatic
20473	AH	<.01	<.1	<.1	<.1	<.1	Pituitary: Adenoma Thymus: Malignant Lymphoma, Lymphocytic Type
20477	AH	<.01	<.1	<.1	<.1	<.1	Pituitary: Chromophobe Hyperplasia
20478	AH	<.01	<.1	<.1	<.1	<.1	Pituitary: Adenoma Nodule on Back: Keratoacanthoma

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 6 - Protein Deficient Diet - 125 ppm

Animal Number	MOCA	Metabolites				Pathological Comments		
		1	2	3	4		5	
20479	AH	.05 .30	.20 .28	— .40	.17 .28	.13 .60	.23 .72	Pituitary: Adenoma Lung: Adenomatous Hyperplasia
20481	AH	.45 2.00	.60 2.10	.50 1.80	.15 1.00	.45 2.20	.70 O.S.	Lung: Adenomatous Hyperplasia
20482	AH	.03 .35	.10 .30	.10 .32	.04 .20	.05 .32	.26 .48	Lung: Adenomatous Hyperplasia
20484	AH	.05 .92	.15 .60	.13 .63	.10 .31	.15 .60	.40 .92	Pituitary: Adenoma
20485	AH	.03 .60	.10 .20	.04 .31	.04 .28	.15 .60	.35 .80	Subcutaneous Nodule: Keratoacanthoma Pituitary: Chromophobe Hyperplasia Lung: Adenomatous Hyperplasia
20488	AH	.10 .80	.25 .61	.20 .48	.10 .21	.30 .80	.43 .93	Pituitary: Adenoma Pancreas: Islet Cell Adenoma Mesenteric Lymphnode: Hemangiosarcoma Lung: Adenomatous Hyperplasia
20489	AH	.08 .60	.08 .12	.08 .12	— .20	— .38	.20 .37	Subcutaneous Tissue Mass: Fibroma Lung: Adenomatous Hyperplasia

O.S. = Off Scale (could not be calculated because of the interfering peaks).

Table 4 - Continued
Analysis of Urine for MOCA Residues
MOCA: 104-Week Carcinogenicity Study in Male Rats
Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 6 Continued - Protein Deficient Diet - 125 ppm

Animal Number	MOCA	Metabolites				Pathological Comments
		1	2	3	4	
20490	AH .15 1.05	.65 .30	.67 -	.15 .43	.45 .90	.40 .75 Subcutaneous Nodule (Back): Keratoacanthosis Subcutaneous Nodule (Axilla): Lipoma Pancreas: Islet Cell Adenoma Lung: Adenomatous Hyperplasia Adrenal: Cortical Cell Hyperplasia
20491	AH .25 .65	.20 .20	- -	.15 .20	.27 .45	.35 .43 Lung: Alveolar/Bronchiolar Adenoma and Adenomatous Hyperplasia
20492	AH .25 2.20	.50 1.50	.50 1.55	.40 1.10	.62 2.30	1.50 O.S. Pituitary: Adenoma
20493	AH <.01 .20	- -	- -	- -	- .20	- .25 Lung: Adenomatous Hyperplasia
20494	AH .25 .75	.20 .25	- -	.20 .35	.40 .90	.40 .87 Pituitary: Adenoma Stomach: Squamous Cell Papilloma
20495	AH .40 2.15	.10 1.00	.05 .85	.04 .45	.15 1.40	.25 1.70 Pancreas: Islet Cell Adenoma
20496	AH .10 1.35	.25 .85	.20 .60	.13 .50	.13 1.00	.45 1.55 Lung: Adenomatous Hyperplasia

O.S. = Off Scale (could not be calculated because of the interfering peaks).

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 6 Continued - Protein Deficient Diet - 125 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20497	AH .05 .45	-	-	-	-	.05 .40	Lung: Adenomatous Hyperplasia
20498	AH .01 .50	-	-	-	-	- .20 .30 .20	
20502	AH <.01 .20	-	-	-	-	- .10 .10 .05	
20503	AH Not enough sample 1.50	1.50	1.00	1.40	1.40	2.00	Subcutaneous Tissue Mass: Fibrosarcoma Lung: Adenomatous Hyperplasia
20506	AH <.01 .25	-	-	-	-	- .18 .20	Pituitary: Carcinoma Thyroid: "C" Cell Adenoma Pancreas: Islet Cell Adenoma
20507	AH <.01 .01	-	-	-	-	- .05 .10	Kidney: Clear Cell Carcinoma
20508	AH <.01 .35	.25 .36	.20 .25	.15 .40	.04 .25	.05 .15	Lung: Alveolar/Bronchiolar Carcinoma Diaphragm and Thoracic Wall: Alveolar/Bronchiolar Carcinoma Metastatic
20509	AH .07 .40	.75 .20	.25 .07	1.10 .15	.25 .35	.15 .40	Wart on Back: Squamous Cell Papilloma Lung: Adenomatous Hyperplasia

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 6 Continued - Protein Deficient Diet - 125 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20510	.05 AH .33	.40 .20	.28 .12	.55 .20	.13 .25	.07 .28	
20511	.05 AH .38	.07 .35	.05 .07	.10 .26	.04 .70	.05 .75	Head Mass: Malignant Fibrous Histiocytoma, Primary Lung and Thyroid: Metastatic Fibrous Histiocytoma
20512	<.01 AH .20	.10 .20	.05 .15	.05 .25	- .20	.10 .43	Kidney and Lung: Malignant Fibrous Histiocytoma Mammary Gland: Fibroadenoma
20513	.12 AH 1.00	.05 .40	.40 .30	.05 .40	.10 1.30	.25 1.10	Lung: Adenomatous Hyperplasia
20517	.10 AH .25	.12 -	.04 -	.17 .15	.48 .45	.45 .35	Pituitary: Adenoma Subcutaneous Tissue: Keratoacanthoma
20519	.03 AH .55	.10 .25	.04 -	.05 .25	.20 .85	.22 .80	Pituitary: Carcinoma Lung: Adenomatous Hyperplasia
20520	.10 AH .30	.15 -	- -	.33 .50	.25 .65	.35 .60	Lung: Adenomatous Hyperplasia
20521	Not enough sample AH 1.25	.60	.40	.90	1.40	1.30	Lung: Adenomatous Hyperplasia
20522	Not enough sample AH .45	.60	.40	.85	1.35	1.25	Lung: Adenomatous Hyperplasia

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 6 Continued - Protein Deficient Diet - 125 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20524		.05	.10	.03	.10	.22	.45
AH	.38	.16	.20	.30	.70	.60	
20525		.33	.60	.45	.05	-	.60
AH	.55	.75	.45	.55	.75	1.25	
20527		<.01	-	-	-	-	.30
AH	1.00	.65	.45	.50	1.20	.85	Pituitary: Adenoma Adrenal: Cortical Adenoma Mammary Gland: Adenocarcinoma Lung: Adenomatous Hyperplasia
20529		<.01	-	-	-	-	-
AH	.10	-	-	-	.02	.08	Tissue Mass: Malignant Fibrous Histiocytoma, Metastatic to Lymph Nodes, Lung, Spleen, Urinary Bladder, Liver, and Thymus
20532		<.01	-	-	-	-	-
AH	.10	-	-	-	-	.13	Pituitary: Adenoma
20536		<.01	.15	.14	.10	.17	.40
AH	.32	.30	.20	.12	.60	.80	
20537		.35	.45	.30	.12	-	.72
AH	.40	.90	.50	.40	.90	1.15	Lung: Adenomatous Hyperplasia
20539		.30	-	.30	.20	.35	1.05
AH	1.10	.45	.50	.45	1.30	1.35	Pituitary: Adenoma Liver: Hemanqiosarcoma

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 6 Continued - Protein Deficient Diet - 125 ppm

Animal Number	MOCA	Metabolites				Pathological Comments
		1	2	3	4	5
20542	AH .08 .45	.10 .25	.10 .25	.07 -	- .30	- .30 Pituitary: Neurofibrosarcoma
20543	AH <.01 .13	.07 -	.10 -	- -	- .10	.09 .20 Pituitary: Adenoma Lung: Adenomatous Hyperplasia
20545	AH <.01 .05	- -	- -	- -	- -	- .06
20548	AH .15 1.12	.25 .35	.15 .30	.10 .15	.25 .82	.28 .82
20554	AH .02 .30	.20 .33	.15 .30	.50 .05	- .25	.20 .55 Pituitary: Adenoma Lung: Adenomatous Hyperplasia
20555	AH .07 .38	.07 .25	- .15	- -	.05 .28	.10 .33 Pituitary: Chromophobe Hyperplasia
20557	AH .05 .30	- .12	- .10	- -	.05 .15	.05 .20 Lung: Alveolar/Bronchiolar Adenoma Thyroid: "C" Cell Hyperplasia Pituitary: Adenoma
20560	AH .32 2.45	.36 1.05	.18 .70	.19 .50	.28 2.15	.50 2.40 Pituitary: Adenoma Lung: Alveolar/Bronchiolar Adenoma and Adenomatous Hyperplasia

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 6 Continued - Protein Deficient Diet - 125 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20562	<.01 AH .05	- -	- -	- -	- .10	.25 .25	Lung: Adenomatous Hyperplasia
20564	.10 AH .62	- .28	- .25	- .20	1.10 .70	1.00 .70	Thyroid: "C" Cell Adenoma Pancreas: Islet Cell Adenoma Subcutaneous Tissue Mass: Squamous Cell Carcinoma Lung: Adenomatous Hyperplasia
20565	<.01 AH .20	- .13	- -	- .05	- .15	.30 .45	Pituitary: Adenoma Lung: Alveolar/Bronchiolar Carcinoma and Adenomatous Hyperplasia
20568	<.01 AH .15	- -	- -	- -	- .10	.10 .25	
20569	<.01 AH .55	.15 .28	.14 -	- .10	.05 .35	.20 .62	
20576	.05 AH .28	.17 .30	.15 .25	- .20	.09 .45	.17 .62	

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 7 - Protein Deficient Diet - 250 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20579	N.D. AH .30	- .45	- .25	- .35	- -	- .55	Lung: Adenomatous Hyperplasia
20580	.10 AH .38	.50 .50	.55 .45	.30 .45	.35 .43	.80 .92	Multiple Organs: Malignant Lymphoma, Lymphocytic Pituitary: Adenoma Lung: Adenomatous Hyperplasia
20583	.15 AH .39	.75 .85	.75 .65	.60 1.01	.38 .70	1.30 1.25	Pancreas: Islet Cell Adenoma Lung: Adenomatous Hyperplasia
20584	.05 AH .10	.22 .23	.25 .30	.25 .17	.15 -	.85 .87	Lung: Adenomatous Hyperplasia Pituitary: Chromophobe Hyperplasia
20585	.04 AH .35	- .20	.07 .10	.07 .17	.07 .20	.45 .57	Pituitary: Chromophobe Adenoma Lung: Alveolar/Bronchiolar Adenoma and Adenomatous Hyperplasia
20590	.06 AH .30	.20 .35	.28 .25	.30 .40	.25 .42	.60 .80	Thyroid: "C" Cell Adenoma Spleen: Hemangiosarcoma Lung: Adenomatous Hyperplasia
20591	.07 AH .12	.25 .20	- -	.06 -	.20 .20	.55 .45	Tissue Mass: Fibrosarcoma Lung: Adenomatous Hyperplasia

N.D. = Not Discernable (because of interference with high metabolite peaks four or five).

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 7 Continued - Protein Deficient Diet - 250 ppm

Animal Number	MOCA	Metabolites					Pathological Comments	
		1	2	3	4	5		
20592	AH	.25 .75	1.00 .85	.28 .30	.50 .50	.60 .75	1.50 1.60	Lung: Alveolar/Bronchiolar Carcinoma and Adenomatous Hyperplasia
20593	AH	.30 .80	.60 .90	.10 .30	.15 .40	.30 .76	.65 1.60	Lung: Alveolar/Bronchiolar Adenoma and Adenomatous Hyperplasia Pituitary: Adenoma
20595	AH	.10 .41	.35 .55	- .20	.20 .30	.25 .45	.65 1.10	Adrenal: Medullary Hyperplasia Lung: Adenomatous Hyperplasia
20597	AH	.15 .20	.13 .30	- .10	- .13	- .30	.15 .30	Lung: Adenomatous Hyperplasia
20600	AH	.25 .52	.20 .51	.10 .20	.15 .22	.35 .55	.60 .90	
20602	AH	.15 .58	- .62	.55 .62	.05 .48	- .75	.55 1.65	Lung: Adenomatous Hyperplasia
20603	AH	.10 .51	.40 .15	.20 .31	.20 .30	.22 .40	.55 1.35	Kidney: Clear Cell Carcinoma Subcutaneous Tissue Mass: Fibroma
20604	AH	.07 .20	.08 .25	.30 .40	.13 .30	.18 .42	.70 1.20	Multiple Organs (All Examined Tissues): Lymphocytic Leukemia
20608	AH	.07 .35	- .10	.30 .39	.15 .25	.17 .43	.55 1.05	Pituitary: Adenoma and Chromophobe Hyperplasia Lung: Adenomatous Hyperplasia

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 7 Continued - Protein Deficient Diet - 250 ppm

Animal Number	MOCA	Metabolites					Pathological Comments	
		1	2	3	4	5		
20609	AH	.03 .13	.06 .08	.20 .30	.08 .21	.06 .42	.28 .95	Subcutaneous Nodule: Keratoacanthoma
20610	AH	.06 .30	.12 .40	.42 .58	.18 .58	- .80	1.05 2.00	Subcutaneous Tissue Mass: Fibroma Lung: Adenomatous Hyperplasia
20611	AH	.10 .20	- .25	- -	.07 -	.10 -	.20 .55	Pituitary: Adenoma Subcutaneous Tissue Mass: Fibrosarcoma
20616	AH	<.01 .50	- .65	- -	- .42	- .60	.10 .90	Spleen: Hemangiosarcoma Zymbal Gland: Carcinoma
20619	AH	<.01 .20	- .45	- -	- -	- -	- .45	Zymbal Gland: Carcinoma Abdominal Nodule: Keratoacanthoma Lung: Adenomatous Hyperplasia
20622	AH	<.01 .75	- .55	.15 -	- .30	- .50	- .55	Liver: Hemangiosarcoma, Primary, Metastatic to Lung and Spleen Lung: Adenomatous Hyperplasia Pituitary: Chromophobe Hyperplasia
20623	AH	<.01 .60	- .65	.25 -	- .25	- .50	- .70	Pituitary: Adenoma Pancreas: Islet Cell Adenoma Lung: Alveolar/Bronchiolar Carcinoma and Adenomatous Hyperplasia
20625		<.01 .75	- .65	.50 .30	- .40	- .90	.40 1.50	Lung: Adenomatous Hyperplasia

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 7 Continued - Protein Deficient Diet - 250 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20626	AH	<.01 <.01	- -	- -	- -	- -	Lung: Alveolar/Bronchiolar Adenoma, Alveolar/Bronchiolar Carcinoma, and Adenomatous Hyperplasia
20630	AH	Not enough sample .50	.37 .10	.07	.25	.26	Adrenal: Liposarcoma Back Skin: Squamous Cell Papilloma Lung: Adenomatous Hyperplasia
20632	AH	<.01 .17	- .17	- .01	- .11	- .12	Nodule: Keratoacanthoma Lung: Adenomatous Hyperplasia
20633	AH	Not enough sample .27	.35 .07	.15	.22	-	Multiple Organs: Malignant Lymphoma, Lymphocytic
20637	AH	<.01 .20	- .23	- .05	- .10	- .15	Zymbal Galnd: Carcinoma Lung: Alveolar/Bronchiolar Carcinoma Pituitary: Adenoma
20640	AH	.12 .25	.25 .25	.05 .15	.10 .25	.15 .37	Lung: Adenomatous Hyperplasia Pituitary: Adenoma Lung: Adenomatous Hyperplasia
20641	AH	<.01 <.01	- -	- -	- -	.10 .95	Subcutaneous Tissue Mass: Basosquamous Carcinoma Lung: Adenomatous Hyperplasia
20642	AH	Not enough sample .10	.15 .20	.10	.25	.75	Testis: Hemangiosarcoma

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 7 Continued - Protein Adequate Diet - 250 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20643	AH	.20 .40	.15 .25	- -	.12 .22	- .17	.45 1.00 Lung: Alveolar/Bronchiolar Adenoma and Adenomatous Hyperplasia
20645	AH	<.01 <.01	- -	- -	- -	- .25	Thyroid: "C" Cell Adenoma Subcutaneous Tissue Mass: Keratoacanthoma
20646	AH	<.01 <.01	- -	- -	- -	.07 .65	Pituitary: Adenoma
20647	AH	<.01 .10	.17 .35	- -	- .15	- 1.20	Lung: Alveolar/Bronchiolar Adenoma and Adenomatous Hyperplasia
20649	AH	.06 .40	.15 .55	.06 .10	.12 .30	- .45	.45 1.40 Lung: Adenomatous Hyperplasia
20650	AH	<.01 .10	- -	- -	- .05	- -	.20 .55 Subcutaneous Tissue Mass: Keratoacanthoma Lung: Adenomatous Hyperplasia
20651	AH	.07 .20	- .10	- -	- .10	- -	.17 .35 Lung: Alveolar/Bronchiolar Adenoma and Adenomatous Hyperplasia
20652	AH	<.01 .22	.17 .35	- .12	- .20	- .20	.17 .40 Lung: Adenomatous Hyperplasia

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 8 - Protein Deficient Diet - 500 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20655	AH .80 2.20	.40 .35	- -	.10 .50	.30 1.90	.37 1.18	Pituitary: Adenoma Lung: Alveolar/Bronchiolar Carcinoma, Alveolar/Bronchiolar Adenoma, and Adenomatous Hyperplasia
20657	AH .33 1.40	.30 .24	- -	- .42	- 1.10	.28 .90	Multiple Organs: Malignant Lymphoma, Lymphocytic Lung: Adenomatous Hyperplasia
20658	AH .85 1.00	- -	- -	- -	- -	- -	Multiple Organs: Malignant Lymphoma, Lymphocytic Mammary Gland: Adenocarcinoma Lung: Adenomatous Hyperplasia
20659	Not enough sample Not enough sample						Liver: Hepatocellular Carcinoma Subcutaneous Tissue Mass: Malignant Hemangiopericytoma Lung: Adenomatous Hyperplasia
20660	AH 1.40 5.00	1.80 2.00	1.25 .50	.80 1.50	1.25 4.50	2.20 6.00	Liver: Hepatocellular Carcinoma Mesenteric Tissue Mass: Hemangiosarcoma Lung: Alveolar/Bronchiolar Adenoma and Adenomatous Hyperplasia
20661	AH .92 3.20	.55 1.00	.11 .50	.10 .50	.30 3.00	.60 2.80	Multiple Organs: Lymphocytic Leukemia Lung: Adenomatous Hyperplasia
20662	AH .50 1.50	1.20 1.50	.80 .50	.90 2.00	.48 3.00	1.85 3.20	Zymbal Gland: Carcinoma Liver: Hepatocellular Carcinoma Lung: Adenomatous Hyperplasia Pituitary: Chromophobe Hyperplasia

Table 4 - Continued

Analysis of Urine for MOCA Residues

MOCA: 104-Week Carcinogenicity Study in Male Rats

Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 8 Continued - Protein Deficient Diet - 500 ppm

Animal Number	MOCA	Metabolites				Pathological Comments
		1	2	3	4	
20663	1.10	1.25	.68	.58	.70	Pituitary: Adenoma Lung: Alveolar/Bronchiolar Adenoma, Alveolar/Bronchiolar Carcinoma, Metastatic Hemangiosarcoma, and Adenomatous Hyperplasia
	AH 3.20	.50	-	.60	2.30	
20664	.58	.88	.40	.32	.40	Heart: Hemangiosarcoma, Primary Subcutaneous Tissue Mass: Squamous Cell Carcinoma Subcutaneous Tissue Mass: Basal Cell Carcinoma Pancreas: Alveolar/Bronchiolar Carcinoma, Metastatic Urinary Bladder: Transitional Cell Carcinoma
	AH 2.20	.55	-	1.20	2.50	Pituitary: Adenoma Subcutaneous Nodule: Keratoacanthoma Subcutaneous Tissue Mass: Fibroma Lung: Adenomatous Hyperplasia
20665	1.80	.65	.45	.59	.80	Lung: Alveolar/Bronchiolar Carcinoma and Adenomatous Hyperplasia
	AH 5.00	.50	-	1.00	4.00	Kidney: Alveolar/Bronchiolar Carcinoma, Metastatic Subcutaneous Nodule: Keratoacanthoma Subcutaneous Nodule: Squamous Cell Carcinoma Tissue Mass: Fibroma
20669	.28	-	-	-	-	Lung: Alveolar/Bronchiolar Carcinoma, Alveolar/Bronchiolar Adenoma, and Adenomatous Hyperplasia
	AH 2.00	1.55	.25	1.00	1.95	Kidney: Alveolar/Bronchiolar Carcinoma, Metastatic Thymus: Lymphocytic Lymphoma Pituitary: Adenoma

0.5 = Off Scale (could not be calculated because of the interfering peaks).

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm
 Group 8 Continued - Protein Deficient Diet - 500 ppm

Animal Number	MOCA	Metabolites				Pathological Comments
		1	2	3	4	5
20670	AH .23 1.50	.23 1.05	.03 .50	.10 .60	.15 1.50	.55 2.01 Lung: Adenomatous Hyperplasia
20671	AH .50 1.30	.35 .60	.07 .30	.22 .38	.50 1.20	.90 .100 Subcutaneous Tissue Mass: Basosquamous Carcinoma Subcutaneous Nodule: Squamous Cell Carcinoma Lung: Adenomatous Hyperplasia
20673	AH .05 1.75	.10 .70	- .15	- .30	- 1.15	.07 1.00 Lung: Alveolar/Bronchiolar Carcinoma and Adenomatous Hyperplasia Heart: Metastatic Alveolar/Bronchiolar Carcinoma Liver: Hepatocellular Carcinoma
20682	AH .57 1.80	.37 2.00	- 1.20	.10 .12	.15 .75	.40 .45 Tissue Mass: Squamous Cell Carcinoma Thymus: Thymoma Lung: Adenomatous Hyperplasia
20684	AH .80 1.80	.15 1.00	- .15	.05 .60	.13 2.80	.40 2.60 Liver: Hemangiosarcoma, Primary Lung and Lymph Node: Metastatic Hemangiosarcoma Lung: Adenomatous Hyperplasia Pituitary: Adenoma
20687	AH .22 1.20	.10 .50	- .32	.05 .25	- .90	.22 .80 Tissue Mass: Liposarcoma Lung: Adenomatous Hyperplasia
20688	AH .18 .75	.10 .50	.06 .40	.05 .40	.08 1.50	.28 1.50 Pituitary: Adenoma Adrenal: Cortical Cell Carcinoma Lung: Alveolar/Bronchiolar Carcinoma and Adenomatous Hyperplasia

Table 4 - Continued
 Analysis of Urine for MOCA Residues
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Urine Analyzed Prior To and After Acid Hydrolysis (AH) - Results in ppm

Group 8 Continued - Protein Deficient Diet - 500 ppm

Animal Number	MOCA	Metabolites					Pathological Comments
		1	2	3	4	5	
20689	AH .70 1.85	.18 .70	.08 .52	.10 .80	.23 2.20	.57 2.05	Lung: Alveolar/Bronchiolar Carcinoma, Alveolar/Bronchiolar Adenoma, and Adenomatous Hyperplasia Pituitary: Adenoma
20690	AH .20 .70	.15 .60	.10 .30	.17 .50	.12 1.28	.55 1.50	Lung: Adenomatous Hyperplasia
20698	AH .40 1.08	.32 1.60	.50 1.00	.30 .90	.20 1.70	.90 2.40	Lung: Alveolar/Bronchiolar Adenoma and Adenomatous Hyperplasia Liver: Hepatocellular Carcinoma
20699	AH .32 3.00	.09 1.15	.04 .90	.02 .98	- 2.70	.50 3.30	Lung: Adenomatous Hyperplasia Liver: Hepatocellular Carcinoma Liver: Adenomatous Hyperplasia Liver: Hepatocellular Carcinoma Kidney: Renal Tubule Carcinoma Pituitary: Adenoma
20700	AH .20 .85	.07 1.30	- .20	- .27	- 1.10	.28 0.S.	Liver: Hepatocellular Carcinoma Lung: Metastatic Hepatocellular Carcinoma and Adenomatous Hyperplasia
20701	AH .45 1.85	- .20	- .10	- .18	- .80	- .65	Liver: Hepatocellular Carcinoma Spleen: Hemangiosarcoma Lung: Adenomatous Hyperplasia

O.S. = Off Scale (could not be calculated because of the interfering peaks).

Table 5A
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet: Group:	Protein Adequate				Protein Deficient				
		1	2	3	4	5	6	7	8	
		Dose Level(ppm):	0	250	500	1000	0	125	250	500
No. of Animals		82	88	67	50	68	79	62	46	
No. of Animals with No Gross Lesions		1	0	0	0	1	0	0	0	
BRAIN										
Soft in Texture		5	3	1	3	5	3	2	1	
Indentation from Pituitary			4	2		2			1	
Dark-Pink in Color			1							
White Nodule			1							
Cranium-Brittle			1	1	1		2	2		
Cranium-Nodular					1	1				
Meninges-Thickened				1						
Blood Vessels Dilated				1	1					
Dark-Red Material on Surface				1			1			
Dark-Red Fluid Beneath Brain					1					
Cranial Cavity-Contains Dark-Red,						1				
Clotted Material									2	
Dark-Red Fluid Adhering to Surface						1	1	1		
Yellowish-Green in Color							2			
Cranial Cavity-Contains Dark-Red Fluid							1	1		
Flattened							1			
Cerebellum-Contains Yellowish-Green Fluid								1		
Surface Vessels Prominent								1		
Frontal Area-Dark-Red Areas								1		
Cranium-Yellowish-Green in Color									1	

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:									
	1	2	3	4	5	6	7	8	9	10
	Dose Level (ppm):		0	250	500	1000				
EAR										
Small Pocket of Yellow Purulent Material				1						
THYROID										
Enlarged	6	9	11	6	4		3	2		
Dark-Red in Color	8	7	8	3	2		1	3		
Vascular		1								
Red in Color								3		
HEART										
Enlarged	19	20	20	4	4		6	7	2	
Atrium(a) - Enlarged	10	3	1	1	1		3	3	2	
Atrium(a) - Dark-Red in Color	1									
Mottled	3									
Surface Vessels Prominent	1				1		1	1	1	
Blood Vessels Enlarged	2	4	3	1					2	
Discolored Areas	3	1	2							
Surface Roughed	1		1	1						
Atrium(a) - Mottled		1	1							
Irregular in Shape		1	1							
White Tinge		1	1							
Firm Texture		2	1		2		1			
Auricles - Enlarged		1		1						
Soft in Texture			1							
Atrium(a) - Discolored			3				1			
Atrium(a) - Irregular Surface			1							
Surface - Discolored					1					
Atrium(a) - Firm Texture										
Pericardial Sac-Thickened										
Irregular Dark-Red Raised Areas										
Surrounding Membrane - Thickened								1		
Flaccid								1		
Encased in Fatty Tissue										1

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:	Dose Level(ppm):	1	2	3	4	5	6	7	8
			0	250	500	1000	0	125	250	500
PITUITARY										
Watery Cyst on Surface	1									
Enlarged	20	20	12	3			4	6	3	6
Irregular in Shape	2	1	1							
Red in Color with Light or Dark-Red Areas	4									
Red Cysts	3		1							
Total Discoloration	2									
Soft in Texture	2	2								
Vascular	2		1							
Red Areas	4	3		3						1
Dark-Red in Color		15	4	3			3	4	2	3
Discolored Areas		4						1		
Firm in Texture		1	3							
Cystic		3						1		
Brown Raised Area			1							1
Red in Color				1						
Raised Area on Surface							1			
Surrounded by Dark-Red Fluid							1			
Nodule on Surface								1		
Contains Dark-Red Clotted Material								1		
Dark-Red Cyst								1		
Dark-Red Areas			3	3			1	2	1	1
EYES										
Cloudy	1			1						
Cloudy Area in Center							1			
Dark in Appearance							1			
Protruding								1		
Opaque								1		1

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet: Group:	Protein Adequate				Protein Deficient			
		1	2	3	4	5	6	7	8
	Dose Level(ppm):	0	250	500	1000	0	125	250	500
LUNGS									
Dark-Red Areas	39	35	23	10	14	18	21	17	14
Median Lobe-Raised White Area (2.0mm Diameter)	1								
Dark-Red in Color	10	9	9	6	6	6	13	8	6
Discolored Areas	6	7	14	13	8	8	8	5	6
Left Lobe-Firm, Enlarged, Contains Pocket of Caseous Material	1								
Red in Color	13	24	10	6	2	2	3	3	7
Left Lobe-Firm, Discolored	1	3	1				2		1
Consolidated Area	1								
Posterior Lobe-Firm, Discolored	1								
Consolidated Area	1								
All Lobes Consolidated	1	1					1	1	
Anterior Lobe-Consolidated Area	2								
Total Discoloration	3	4				6	4	1	
Left Lobe-Abscessed	1								
Margins Uneven	1								
Median Lobe-Pocket of Yellow Purulent Material	1								
Median Lobe-Consolidated Area	2								
Surface-Roughened	1								
Consolidated Areas	1								
Anterior Lobe-Nodule	1		6	1			3	1	3
Cysts			1						
Pitted			2				3		
Foci			1						
Left Lobe-Nodule or Margin			2						
Right Lobe-Firm, Consolidated, Red in Color			1						
Posterior-Firm, Discolored Areas			1						
Posterior Lobe-Cystic Area			1						
Enlarged			1						

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:		1	2	3	4	5	6	7	8
	Dose Level (ppm):		0	250	500	1000	0	125	250	500
LUNGS (Continued)										
Firm Texture						1			1	1
Thickened						1			1	
Lobes Fused Together						1				
Yellow Caseous Material						1				
Red Areas					1	1	3	5	3	3
Right Lobe-Discolored Areas							1			
Depressed Areas								1		
Left Lobe-Dark-Red Clotted Material								1		
Median Lobe-Discolored Area								1		
Discolored Masses								1		
Left Lobe-Discolored Depressed Area									1	
Dark-Red Abscessed Areas									1	
Superior Lobe-Discolored Area									1	
Left Lobe Adhering to Rib Cage									1	
Median Lobe-Raised Areas										1
Posterior Lobe-Raised Areas										1
Encased in Fatty Tissue										1
THYMUS										
Enlarged	18	14	9	3			11	11	15	13
Dark-Red in Color	3							2		1
Dark-Red in Areas	2	3	2					3	3	3
Discolored Areas	3	2						2	2	
Thickened		1								
Discolored						1				1
Speckled							1			
Cysts							1	2	2	
Red Areas							1			
Firm Texture								1	2	
Tan Thymus-Like Material									1	
Firm, Rubbery, Tan Material-Adjacent to									2	
Red in Color									1	

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:	Dose Level (ppm):	1	2	3	4	5	6	7	8
			0	250	500	1000	0	125	250	500
LIVER										
Discolored	25	15	23	18			38	42	32	23
Friable Consistency	6	5	9	6			4	6	3	3
Surface-Uneven	4	1	1					18		2
Surface-Rough and/or Pitted	1		1	1			1		1	
Red in Color	12	20	3	3					1	5
Discolored Areas	16	20	16	23			16	21	15	19
Foci	1	18	19	16			16	32	18	13
Thickened	52	59	47	28			22	24	24	23
Dark-Red Areas	40	51	17	5			7	10	8	8
Left Lobe-Depressed Area	1									
Margins Rounded	44	47	43	19			16	19	20	14
Firm in Texture	10	3	3				1	2		2
Vascular	1									
Rubbery Consistency	11	2	3	1			1			2
Enlarged	21	23	21	11			4	12	5	7
Margins Vascular		3	2				1		1	
Yellowish Tinge		2	3				1			2
Margins Uneven		3					1		2	1
Depressed Areas		19	4	3			1	3	1	1
Caudate Lobe-Lobulated Dark-Brown Mass		1								
Margins Translucent		2								
Dark-Red in Color			8	2			6	5	4	
Left Lobe-Fissure at Margin			1							
Prominent Red Lobular Pattern			1	1						
Median Lobe-Nodule and/or Cyst			3							
Median Lobe-Thickened			1	2						
Margins Thickened				1				1		
Leathery Texture							1		1	
Lobes Rounded										
Grainy Appearance				5			1			1

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:	1	2	3	4		5	6	7	8
	Dose Level (ppm):	0	250	500	1000		0	125	250	500
LIVER (Continued)										
Left Lobe-Firm Red Area Near Margin							1	1		
Red Tinge								1		
Left Lateral Lobe-Granular Areas								1		
Nutmeg Appearance									1	
Small in Shape										1
SPLEEN										
Enlarged		23	18	18	13		2	7	8	7
Thickened		4		4	3					1
Margins Rounded		1							1	
Irregular in Shape		2	1							
Mottled		2								
Red Areas		2		1					1	
White Tinge		2								
Discolored Areas		3	3	1						1
Small in Size		1	5	1	1		2	3	2	1
Indentations		1								
Dark-Red Areas			1	1				2	1	
Surface Roughened				2	1					
Total Discoloration				3	1		2	4	8	2
Foci				1						
Elongated				1						
Black on one Side, Right Red on Other Side					1					
Wide in Size									1	
Raised Areas								1	1	
Cloudy White Film										1
Dark-Red in Color					1					

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:		1	2	3	4	5	6	7	8
	Dose Level (ppm):		0	250	500	1000	0	125	250	500
PANCREAS										
Dark-Red in Color			1							
Thickened			2				1			
Firm Texture			1					1		
Dark-Red Areas			1	1						
Enlarged					1			1		
Cysts						1				
Discolored							2	1		
Discolored Areas									1	
STOMACH										
Hair Ball(s) and/or Loose Hair			37	40	28	13	36	48	34	24
Lining is Discolored			6	4	2	1	3	1		2
Distended with Gas			3		4	4	1	2		1
Contains Colored Fluid			4	6	11	9	16	29	19	10
Contains Fed Fluid			1					2	1	2
Wall Thickened			7	8	7	3	4	1	5	1
Distended with Firm Food			1							
Lining Smooth				1			1		1	1
Distended				3					2	
Contains Reddish-Brown Material				1						
Depressions					1					
Contains Dark-Red Fluid					2	2	2	2	4	
Lining-Ulcerated Areas					1					
Contains Dark-Red Material					1				1	
Contains Yellow-Material						3				
Contains Red Material						1				
Lining-Fissure-Like Depressions										
Contains Dark-Brown and/or Black Material							5	3	4	1
Brownish-Black Fluid with Large Amount of Hair							4			
Walls have Red Areas							1		2	

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:									
	1	2	3	4	5	6	7	8		
					0	125	250	500		
STOMACH (Continued)										
Contains White Material						1			1	
Contains Light Colored Material						1			1	
Small in Size						1			1	
Walls-Thin						1	1		1	
Lining-Cystic Areas						1				
Walls-Foci						1				
Contains Granular Material								1		
Enlarged								1		
Contains Gelatinous Material								1		
Raised Areas								1	1	
Walls-Discolored									1	
SMALL INTESTINES										
Distended with Gas	2	6	2	4					1	
Contains Colored Fluid	3	8	2	4		1	4		2	
Walls-Discolored	1	1		1		1				
Contains Dark-Red Material		2					1		2	
Contains Red Fluid				1						
Contains Dark-Red Fluid						4			1	
Hair Ball(s) and/or Loose Hair						4				
Contains Black Material										
Lining-Discolored										
Distended with Light Colored Material						1	1			
Ileum-Contains Firm Material							1			
Ileum-Walls Thickened							1			
Contains Dark Gelatinous Material										
Duodenum-Distended and Bright-Pink in Color							1			
Ileum-Walls Discolored									1	
Ileum-Contains Dark-Red Fluid									1	

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Dose Level(ppm):	Group:	1	2	3	4	5	6	7	8
			0	250	500	1000	0	125	250	500
LARGE INTESTINES										
Distended with Gas			3	7	3			1		1
Thickened			1							
Lining-Discolored			1							
Blocked with Firm Fecal Material			1		1					
Hair Balls(s)			1	1	1		2			
Contains Colored Fluid				3	2		1	1	2	
Walls Thickened				1	1					
Contains Light Colored Material				1						
Contains Dark-Red Material				1						
Contains Dark Colored Material				2			1			
Discolored						1				
Completely Empty							1			
Walls-Discolored								1		
Contains Nodules of Material									1	
CECUM										
Discolored				1						
Hair Balls(s)					1	1			1	
Contains Dark-Red Fluid										
Firm in Texture					1		1			
Contains Hard Fecal Material								1		
Dark-Red Areas on Surface								1		
Contains Greenish-Yellow Material								1		
Contains Red Fluid								1		
Contains Greenish-Brown Material									1	
Distended with Gas										1

[illegible]

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet: Group:	Protein Adequate				Protein Deficient			
		1	2	3	4	5	6	7	8
	Dose Level (ppm):	0	250	500	1000	0	125	250	500
KIDNEYS (Continued)									
Dark-Red Area at Junction of Cortex and Medulla		4	2	1					1
Soft Texture		1	2		1		1	2	3
Irregular Shaped		1							1
Watery Cyst		3							
Medulla-Small Yellowish-White Depressed Area		1							
Cortex-Tan Areas		1							
Cortex-Dark-Red in Color		1						1	
Foci			2						
Surface Granular			1				1		1
Capsule-Thickened and Milky			1						
Medulla-Yellow			1						
Cyst-Cortex and/or Medulla			1	1	4	1	3	1	
Poor Differentiation Between Cortex and Medulla			3	5	2	3	3	4	2
Contains Colored Fluid			2						2
Surface Rough and/or Pitted			5	3	2	1	2		1
Surface Irregular			4	4	1				
Cyst-Like Area			2			2			
Cortex-Yellow Areas			1			1		1	
Cortex-Wide				1					1
Firm Texture				1					
Yellow Depressed Area on Surface Extending									
Extending into Cortex				1	2			1	
Cut Surfaces Striated				2					1
Discolored Areas				2	1		1	1	1
Medulla-Particles of Firm Yellow Material				1					
Semi-Firm Texture				1					
Raised Areas				1	1				

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet: Group:	Protein Adequate				Protein Deficient			
		1	2	3	4	5	6	7	8
	Dose Level(ppm):	0	250	500	1000	0	125	250	500
KIDNEY (Continued)									
Cortex-Speckled					1				
Pitted Areas on Cortex and Medulla						1			
Medulla-Wide						2			
Cortex-Small in Size						1			
Cortex-Striated						1			
Layered Appearance						1		2	
Cortex-Greenish in Color						1			
Medulla-Red in Color							1		
Small in Size							2		
Cortex-Narrow							1		
Medulla-Brown in Color							1		
Surrounded by Dark-Red Clotted Material								1	2
									1
ADRENALS									
Adhered to Liver	1								
Foci	1								
Enlarged	16	17	13		9	2	2	4	3
Discolored Areas	10	8	7		10	1	2		1
Discolored	3	3	3		7	1		4	2
Dark-Red in Color	4		3		17	3	3	2	1
Dark-Red Areas		2	3		1	1	2		1
Firm in Texture		1							
Small in Size					11		1	1	1
Cystic					2				
Vascular					1				1
PROSTATE									
Enlarged									
Dark-Red in Color	1		1			4	2	4	1
Discolored Areas		1				2	1	3	
Firm in Texture						1		1	
Dark-Red Areas						1			
						2	3	1	

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

[illegible]

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:	1	2	3	4	5	6	7	8	
			Dose Level(ppm):	0	250	500	1000	0	125	250
LYMPH NODES										
Cervical-Enlarged		7	5	6	2		1	4	4	
Cervical-Discolored		1	1				3	3		
Cervical-Dark-Red in Color		4	3	6					4	
Mesenteric-Enlarged		3	7	4	2		1	2	1	
Mesenteric-Dark-Red in Color		3		3						
Inguinal-Enlarged		1								
Inguinal-Dark-Red in Color		1								
Inguinal-Vascular Areas		1								
Lumbar-Enlarged		2								
All Nodes-Enlarged			2		1		2	2		
Mesenteric-Discolored			4		1			1		
Mesenteric-Soft Texture			1							
Axillary-Enlarged				2						1
Mandibular-Enlarged				1				1	1	1
Mandibular-Discolored				1						1
All Nodes-Discolored					1		1	1		
Renal-Enlarged					1					
Mesenteric-Firm Texture					1					
SALIVARY GLANDS										
Enlarged		2					1			
Firm in Texture		3	1				1			
Red in Color		1					1			
MAMMARY GLANDS										
Distended with Milk		15	7	5	1		2	3	2	
Thickened		5	4	3				1	1	
Enlarged					1					

Table 5A - Continued
Gross Pathology Findings
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:	1	2	3	500	1000	5	6	7	8
	Dose Level (ppm):	0	250	500	1000		0	125	250	500
THORACIC CAVITY										
Contains Colored Fluid		12	2	3	1		1	1	1	
Contains Red Fluid		6	6	4	7				2	
Contains Light Colored Material			2							
Contains Cluster of Nodules			4	2	8			1		
Contains Tan Thymus-Like Material				1				2	1	
Contains "BB" Shot Nodules				1				1		
Fat Encompassing Heart and Most of Lungs				1						
Contains Clotted Material					1			2	2	2
Contains Dark-Red Fluid							1	3	5	2
ABDOMINAL CAVITY										
Contains Red Fluid		2		1	1					
Contains Dark-Red Fluid		1								1
Contains Colored Fluid		2								
Severe Peritonitis-Fibronous Exudate										
Adhesions, Pale-Yellow Fluid Present				1						
Blood Vessels Enlarged					1					
Contains Dark-Red Clotted Material										1
Fat-Thickened Firm Texture, Cream Colored				1						
Subcutaneous Pocket of Yellow-Green Purulent Material									1	
SORES										
Both Hind Feet		30	9	6	1					
Hind Foot		5	12	5			3	1	1	1
Tail		2	4							1
Front Foot			1							

Table 5A - Continued
 Gross Pathology Findings
 Animals Found Dead or Sacrificed in Extremis
 MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:	1	2	3	4		5	6	7	8
	Dose Level(ppm):	0	250	500	1000		0	125	250	500
MESENTERY										
Firm Texture			1							
Thickened			1							
Masses of Yellow Nodules										1
BODY FAT AND SKIN HAVE YELLOW TINGE		1								
ALL ORGANS, SKIN, AND/OR BODY FAT IN ABDOMINAL CAVITY HAVE YELLOW TINGE			1	1						
FAT-THICKENED WITH FIRM GRANULAR AREAS			1							
PERICARDIUM AND PLEURA ARE THICKENED AND/OR MILKY APPEARANCE			2							
BLOOD VESSELS OF NECK AND CHEST AREAS ARE ENLARGED AND PROMINENT					1					
LARGE DARK-RED AREAS OF GELATINOUS MATERIAL SURROUNDING SALIVARY GLANDS AND TRACHEA							1			
NUMEROUS NODULES EMBEDDED IN BODY WALL AND FAT							1			
BODY FAT HARDENED								1		

Table 5B
Gross Pathology Findings
Animals Sacrificed at Termination
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet: Group:	Protein Adequate				Protein Deficient			
		1	2	3	4	5	6	7	8
	Dose Level (ppm):	0	250	500	1000	0	125	250	500
No. of Animals Sacrificed		18	12	8	0	32	21	13	4
No. of Animals with Gross Lesions		0	0	0	0	0	0	0	0
BRAIN									
Indentation from Pituitary						1	1		
PITUITARY									
Enlarged		5	2	1		6	4	3	1
Dark-Red in Color		3		1		3		3	
Discolored		1	2						
Irregular in Shape		1				1			
Soft Texture			2						
Discolored Areas						1	1		2
Dark-Red Areas						1	1		
Firm Texture							1	1	
Cysts								1	1
EYES									
Both Opaque							1		
Left Opaque								1	
THYROID									
Enlarged				2				1	
Dark-Red in Color				2				1	
HEART									
Enlarged		1		1				1	
Atrium(a) - Enlarged		1							
Blood Vessels Enlarged		1							
Soft in Texture		1							
Surface Vessels Prominent		1						2	

1 111 1

Table 5B - Continued
Gross Pathology Findings
Animals Sacrificed at Termination
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:	Dose Level (ppm):	1	2	3	4	5	6	7	8
			0	250	500	1000	0	125	250	500
LUNGS										
Red Areas	2				1			5		1
Dark-Red Areas	2	1					7	3	1	
Discolored Areas	1		1				8	9	2	1
All Lobes Consolidated	1									
Cysts				1			1	1	1	
Left Lobe-Consolidated				1						
Discolored				1	2					1
Red in Color				1	1				1	1
Foci				1			1		1	1
Enlarged					1					
Firm in Texture					1					
Consolidated Areas								1		
Post Caval Lobe-Firm, Yellow, Nodular, Consolidated Area					2					
Dark-Red in Color					1					
Posterior Lobe-Small White Raised Area							4			
Anterior Lobe-Consolidated							1			
Left Lobe-Discolored Areas								1		
THYMUS										
Enlarged	1						2	1		2
Discolored							1			
Firm in Texture										1

Table 5B - Continued
Gross Pathology Findings
Animals Sacrificed at Termination
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet: Group:	Protein Adequate				Protein Deficient			
		1	2	3	4	5	6	7	8
	Dose Level (ppm):	0	250	500	1000	0	125	250	500
LIVER									
Yellowish Tinge	1		1			1	2	2	
Nodule Attached to Hilus-Greenish-Tan									
in Color and Contains Caseous Material	1								
Thickened	7	6	6			19	14	9	3
Margins Rounded	7	6	6			21	13	9	3
Vascular	2	2				1	1	1	
Discolored	9	2	4			6	1	5	1
Foci	3	5	2			2		3	
Dark-Red in Color	1	1				1	1	2	
Dark-Red Areas	8	3	4			20	12	3	
Discolored Areas	1	2	1			6	2		3
Enlarged		1	2						
Red in Color		1				1	1		1
Depressed Areas			1			2			
Cyst-like Areas			1						
Margins Vascular			1			2		1	
Dark-Red Indentations						1		1	1
Red Areas							1		
Margins Irregular							2		
Indentations									
Firm in Texture								1	
Left Lobe-Irregular Shaped									1
Friable Consistency									1
SPLEEN									
Dark-Red in Color		1							
Enlarged		1	2					4	
Dark-Red Areas						1			
Small in Size						1	2	1	
Contains Soft Dark-Red Tissue								1	
Surrounding Membrane-Thickened, Milky Appearance	1							1	
Raised Areas								1	

Table 5B - Continued
 Gross Pathology Findings
 Animals Sacrificed at Termination
 MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:		1	2	3	4	5	6	7	8
	Dose Level (ppm):		0	250	500	1000	0	125	250	500
STOMACH										
HairBall(s) and/or Loose Hair			9	7	3		21	18	10	2
Walls Thickened			6	8	5		23	15	6	4
Contains Colored Fluid					2		1			
Lining-Discolored							1			
Lining-Raised Areas							1			
Contains Granular Material							1	1		
Distended with Gas									1	
SMALL INTESTINES										
Distended with Gas									1	
Contains Yellow Fluid									1	
LARGE INTESTINES										
Contains Gas			1							
Contains Firm Fecal Material					1					
URINARY BLADDER										
Walls Thickened				1						
Contains Small, Yellow, Firm, Stone-Like Object				1						
Contains Dark-Red Fluid							1			
KIDNEYS										
Cortex-Brown in Color			2	1						
Enlarged			2	1						
Outer Membrane Discolored			1							
Pitted Surface			1							
Pelvis(es) Dilated			1	1						
Foci					1					
Discolored Areas				3						
Dark-Red Areas				1						
								1		

Table 5B - Continued
Gross Pathology Findings
Animals Sacrificed at Termination
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:	Dose Level (ppm):	1	2	3	4	5	6	7	8
			0	250	500	1000	0	125	250	500
KIDNEYS (Continued)										
Pelvis-Continas Brown Caseous Material					1					
Surrounding a Stone-Like Object										
Cortex-Dark-Red in Color							1			
Cortex-Wide							1			
Irregular in Shape							1			
Watery Cysts Under Capsule							2			
Capsule-Contains Dark-Red Fluid							2			
Cortex-Cysts							1	1	1	
Pockets of Dark-Brown Fluid								1		
Medulla-Dark-Red in Color								1		
Dark-Red in Color									1	1
Poor Differentiation between Cortex and Medulla										
ADRENALS										
Enlarged	2	3	1				1			1
Discolored	2	1	1				1	1	1	2
Dark-Red Areas		1					2	1		1
Firm in Texture		1								
Small in Size								1		1
PROSTATE										
Discolored							2			
Dark-Red Areas								1		
Cut-Surface-Red, Gelatinous Material								1		
TESTES										
Small in Size	4	4						2		1
Soft in Texture	3	4	1					1		1
Discolored	1	2	1					1		
Enlarged		1								
Firm in Texture										

Table 5B - Continued
 Gross Pathology Findings
 Animals Sacrificed at Termination
 MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:		1	2	3	4	5	6	7	8
	Dose Level(ppm):	0	250	500	1000	0	125	250	500	
TESTES (Continued)										
Firm in Texture			1							
Contain Dark-Red Fluid			1							
Contain Yellow Fluid							1			
Epididymis of Testis-Firm Nodules							1			
SEMINAL VESICLES										
Small In Size			1							
Dark-Red Areas								1		
LYMPH NODES										
Mesenteric-Enlarged					1			1		
Mesenteric-Dark-Red in Color					1					
MAMMARY GLANDS										
Distended with Milk		3	1	2			1	3	1	
Thickened		1		2			1	1	1	
THORACIC CAVITY										
Contains Dark-Red Gelatinous Material		1	1							
Contains Clear Fluid				1						
Contains Tan Thymus-Like Material								1		
Contains Dark-Red Clotted Material									1	
SORES										
Both Hind Feet		3	2	3					1	
Hind Foot		2	2				3		1	
Back										1

Table 6A
Incidences of Nodules and Tissue Masses Observed at Necropsy
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:		1	2	3	4	5	6	7	8
	Dose Level(ppm):		0	250	500	1000	0	125	250	500
No. of Animals Started on Test			100	100	75	50	100	100	75	50
No. of Animals Necropsed*			82	88	67	50	68	79	62	46
SKIN-WART-LIKE LESIONS, NODULES, OR MASSES										
Location:										
Left Hind Leg			1		1					
Back			2	7	8	1	1	3	3	3
Eyelid			1							
Head			1							1
Tail				1						
Left Ear				2		1	1		1	
Left Side of Body				1						
Left Side of Head				3	1					
Chest				1					1	
Right Side of Neck				1						
Left Flank				1						
Forehead				1						
Abdomen				1						
Right Shoulder					1			1		
Right Ear					1					
Neck					1	1		1	1	
Left Inguinal					1					
Left Axilla					1					
Right Inguinal					1					
Right Flank					2			1		
Right Side of Head		2		2	2		1	1		
Ear										1

* All animals found dead or sacrificed in extremis prior to termination of the study have been necropsied.

[illegible]

OBSERVATIONS

**SKIN-WART-LIKE LESIONS, NODULES,
OR MASSES (Continued)**

Location:
Left Front Paw
Groin Area
Left Shoulder
Left Hind Food
Right Front Paw
Right Hind Leg
Tail
Right Front Leg

SUBCUTANEOUS TISSUE-NODULES OR MASSES

[illegible]

Table 6A - Continued

Incidences of Nodules and Tissue Masses Observed at Necropsy
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

Protein Deficient	5	6	7	8
	$\frac{0}{5}$	$\frac{125}{6}$	$\frac{250}{7}$	$\frac{500}{8}$
	1		1	
		1	1	
			1	

SUBCUTANEOUS TISSUE-NODULES OR MASSES (Continued)

Location:	
Left Front Leg	2
Perineal Region	1
Left Flank	1
Head	
Left Side of Body	
Abdomen	

MUSCLE AND/OR BONE-NODULES OR MASSES

[illegible]

Table 6A - Continued
Incidences of Nodules and Tissue Masses Observed at Necropsy
Animals Found Dead or Sacrificed in Extremis
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet: Group:	Protein Adequate				Protein Deficient			
		1	2	3	4	5	6	7	8
	Dose Level (ppm):	0	250	500	1000	0	125	250	500
INTERNAL ORGANS-NODULES OR MASSES									
Location:									
Pituitary	8	2	3			2	1		
Heart	1				2				
Lungs	3	10	21		17	2	8	7	13
Thymus	3				1	1	6		1
Liver	3	3	4		19	2	1	1	12
Spleen	1		1			2			
Pancreas		1	3		2	2			1
Stomach		2							
Stomach-Lining	1		1						1
Small Intestines			1						
Large Intestines			1					1	
Urinary Bladder		1							
Kidney(s)	1		3		5		3	3	6
Adrenals			1				1		
Prostate	1								1
Testis			1						
Epididymis						1			
Seminal Vesicles	1	1							1
All Abdominal Organs			1						
THORACIC CAVITY									
Left Lumbar Lymph Node					1				

Table 6B
Incidences of Nodules and Tissue Masses Observed at Necropsy
Animals Sacrificed at Termination
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate				Protein Deficient			
	Group:		1	2	3	4	5	6	7	8
	Dose Level(ppm):		0	250	500	1000	0	125	250	500
No. of Animals Started on Test			100	100	75	50	100	100	75	50
No. of Animals Sacrificed			18	12	8	0	32	21	13	4
SKIN-WART-LIKE LESIONS, NODULES, OR MASSES										
Location:										
Back			1	1	1			1		
Right Front Paw			1							
Midline					1					
Left Ear					1					
Left Flank					1					
Left Axilla					1					
Upper Lip					1				1	
Head										1

SUBCUTANEOUS TISSUE-NODULES OR MASSES

Location:										
Right Axilla			1	2				2		
Back of Neck			1							
Back				1	1				1	
Right Inguinal				1						

MUSCLE AND/OR BONE-NODULES OR MASSES

Location:										
Left Upper Jaw									1	

Table 6B - Continued
Incidences of Nodules and Tissue Masses Observed at Necropsy
Animals Sacrificed at Termination
MOCA: 104-Week Carcinogenicity Study in Male Rats

OBSERVATIONS	Diet:		Protein Adequate			Protein Deficient			
	Group:	Dose Level (ppm):	1	2	3	5	6	7	8
			0	250	500	0	125	250	500
INTERNAL ORGANS-NODULES OR MASSES									
Location:									
Pituitary					1				
Lungs				7	3	4	1	3	2
Thymus					3				
Liver				1					1
Pancreas				2					1
Stomach				1					
Small Intestines									1
Spleen				1					
Kidneys	2			2			1		
Epididymis				2					

KEY TO INDIVIDUAL HISTOPATHOLOGY FINDINGS
NEOPLASMS AND PROLIFERATIVE LESIONS

X = Tissue Examined and Not Remarkable

P = Finding Present

Table 7

MOCA: 104-Week Carcinogenicity Study in Male Rats Neoplasms and Proliferative Lesions

Protein Adequate Diet = 0 ppm

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Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 0 ppm																							
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
No Neoplasia or Pre-Neoplastic Lesions	X	X																						
PITUITARY																								
Adenoma																								
Chromophobe Hyperplasia																								
THYROID																								
"C" Cell Hyperplasia																								
ADRENAL																								
Pheochromocytoma																								
SPLEEN																								
Malignant Lymphoma, Histiocytic																								
LIVER																								
Malignant Lymphoma, Histiocytic																								
PANCREAS																								
Islet Cell Adenoma																								
MULTIPLE ORGANS																								
Lymphocytic Leukemia																								

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

	Protein Adequate Diet - 0 ppm																							
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	7	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

UNUSUAL LESIONS

Hemangiosarcoma (Left Hind Leg)
Osteogenic Sarcoma (Lower Jawbone)
Hemangiosarcoma (Subcutaneous Right Axilla)

P

P

P

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LENGTH ON STUDY (WEEKS)

7	7	8	1	6	9	9	1	5	1	1	1	1	1	1	8	9	8	4	1	1	7	8	3	9
8	3	6	0	2	5	8	0	0	0	0	0	0	0	0	7	7	2	2	0	0	0	8	8	4
			2				4		4	4	4	4	4	4					4	1				

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 0 ppm																											
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
No Neoplasia or Pre-Neoplastic Lesions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PITUITARY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Adenoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carcinoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chromophobe Hyperplasia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KIDNEY	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8			
Nephroblastoma	X	X				X			X		X		X		X	X	X	X	X	X	X	X	X					
STOMACH																												
Fibrosarcoma																												
PANCREAS																												
Islet Cell Adenoma																												
UNUSUAL LESIONS																												
Fibrosarcoma (On Back)																												
Squamous Cell Carcinoma (Eyelid)																												
Carcinoma (Zymbal Gland)																												
LENGTH ON STUDY (WEEKS)	9	6	5	9	1	5	1	7	8	8	5	8	8	9	7	8	6	6	9	7	1	1	7	1	8			
	9	2	1	7	0	2	0	7	3	6	0	6	5	5	2	3	6	3	4	3	0	0	4	0	2			
					4		4																					

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 0 ppm																							
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
No Neoplasia or Pre-Neoplastic Lesions	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
PITUITARY Adenoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADRENAL Medullary Cell Hyperplasia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LUNG Squamous Cell Carcinoma	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Adenocarcinoma, Metastatic	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2
Adenomatous Hyperplasia																								
LIVER Malignant Lymphoma, Histiocytic																								
KIDNEY Malignant Lymphoma, Histiocytic																								
PANCREAS Islet Cell Adenoma																								
PROSTATE Adenocarcinoma, Primary																								
SEMINAL VESICLE Adenocarcinoma, Metastatic																								

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 0 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
URINARY BLADDER																				
Adenocarcinoma, Metastatic																				
MAMMARY GLAND																				
Adenocarcinoma																				
INGUINAL LYMPH NODE																				
Adenocarcinoma, Metastatic																				
UNUSUAL LESIONS																				
Fibroma (On Back)																				
Keratoacanthoma (On Back)																				
Squamous Cell Papilloma (On Head)																				
Fibroma (Subcutaneous, Left Inguinal)																				
LENGTH ON STUDY (WEEKS)	9	4	8	1	4	9	8	1	6	1	9	8	7	1	7	1	1	8	7	9
	9	0	3	0	1	6	3	0	2	0	2	8	6	0	2	0	0	4	0	9
				4					4			4		3		4		4		0
																				1
																				9
																				9
																				3
																				1
																				0
																				0
																				4
																				4

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

		Protein Adequate Diet - 250 ppm																									
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Animal	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Number:	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	7	8

ORGAN AND DESCRIPTION

No Neoplasia or Pre-Neoplastic Lesions

X

PITUITARY

Adenoma

Chromophobe Hyperplasia

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

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P

P

P

P

THYROID

Follicular Cell Adenoma

Follicular Cell Hyperplasia

P

P

P

P

P

P

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P

P

P

P

P

P

P

P

P

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P

P

P

P

P

P

P

P

P

ADRENAL

Medullary Cell Hyperplasia

P

P

P

P

P

P

P

P

P

P

P

LUNG

Squamous Cell Carcinoma,

Metastatic

P

P

P

P

P

P

P

P

P

P

P

Adenocarcinoma, Metastatic

P

P

P

P

P

P

P

P

P

P

Alveolar/Bronchiolar Adenoma

P

P

P

P

P

P

P

P

P

P

Alveolar/Bronchiolar Carcinoma

P

P

P

P

P

P

P

P

P

P

Carcinoma, Metastatic

P

P

P

P

P

P

P

P

P

P

Adenomatous Hyperplasia

P

P

P

P

P

P

P

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P

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P

P

P

P

P

P

P

P

P

SPLEEN

Hemangiosarcoma, Primary

P

P

P

P

P

P

P

P

P

P

P

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 250 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Animal	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Number:	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3

LIVER

Hemangiosarcoma, Metastatic

Sarcoma

Foci of Altered Cells

PANCREAS

Islet Cell Adenoma

DIAPHRAGM

Carcinoma, Metastatic

ZYMBAL GLAND

Carcinoma, Primary

MULTIPLE ORGANS

Malignant Lymphoma, Histiocytic

SKIN

Squamous Cell Carcinoma

UNUSUAL LESIONS

Fibroma (Hind Leg)

Squamous Cell Carcinoma (On Back)

P

P

P P

P

P

P

P

P

P

P

P

Table 7 - Continued
 Individual Histopathology Findings
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Neoplasms and Proliferative Lesions

		Protein Adequate Diet - 250 ppm																			
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Animal		5	5	5	5	5	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7
Number:		4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3

ORGAN AND DESCRIPTION

MAMMARY GLAND
 Adenocarcinoma
 Fibroadenoma

P P P P

MESENTERIC LYMPH NODE
 Sarcoma, Metastatic

P

PARATHYROID
 Adenoma

P

LENGTH ON STUDY (WEEKS)

8 7 8 6 8 1 7 7 4 9 9 1 1 1 9 9 9 9 6 1 9 1 7 8 9
 9 1 6 4 1 0 5 3 4 0 2 0 0 0 6 4 9 9 5 0 6 0 1 1 9

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

		Protein Adequate Diet - 250 ppm																			
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Animal		7	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	9
Number:		9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8

ORGAN AND DESCRIPTION

No Neoplasia or Pre-Neoplastic Lesions

BRAIN

Myelogenous Leukemia

PITUITARY

Adenoma

Chromophobe Hyperplasia

ADRENAL

Medullary Cell Hyperplasia

LUNG

Squamous Cell Carcinoma,

Metastatic

Alveolar/Bronchiolar Carcinoma

Carcinoma, Metastatic

Malignant Lymphoma, Histiocytic

Adenomatous Hyperplasia

LIVER

Malignant Lymphoma, Histiocytic

Myelogenous Leukemia

Hepatocellular Carcinoma

X X X

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

		Protein Adequate Diet - 250 ppm																			
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Animal		7	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9
Number		9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8

ORGAN AND DESCRIPTION

PANCREAS

Islet Cell Adenoma
Carcinoma, Metastatic

P

P

P

KIDNEY

Carcinoma, Metastatic

P

ZYMBAL GLAND

Carcinoma, Primary

P

P

MULTIPLE ORGANS

Malignant Lymphoma, Histiocytic

P

UNUSUAL LESIONS

Fibroma (Flank)

Squamous Cell Carcinoma (On Back)

Squamous Cell Papilloma (On Back)

Malignant Lymphoma, Histiocytic

(Abdominal Cavity)

P

P

P

P

P

HEART

Squamous Cell Carcinoma,
Metastatic

P

Table 7 - Continued
 Individual Histopathology Findings
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 250 ppm																								
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
MAMMARY GLAND																									
Adenocarcinoma																									
Fibroadenoma																									
THYMUS																									
Carcinoma, Metastatic																									
LENGTH ON STUDY (WEEKS)	1	7	2	2	9	1	9	4	8	1	8	9	7	1	9	7	9	9	5	1	9	1	6	6	9
	0	0	6	9	0	2	1	3	0	3	4	0	0	0	5	9	4	9	8	0	5	0	9	3	6
	2				4				3				0						3			4			2

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[illegible]

Table 7 - Continued
 Individual Histopathology Findings
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Neoplasms and Proliferative Lesions

Animal Number	Protein Adequate Diet - 250 ppm																								
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9

ORGAN AND DESCRIPTION

KIDNEY

Hamartoma

MAMMARY GLAND

Adenocarcinoma

Adenoma

P

P

LENGTH ON STUDY (WEEKS)

9	1	8	1	8	1	9	5	1	1	1	1	4	7	1	9	8	9	8	7	1	1	1	8	1
0	0	2	0	4	0	0	4	0	0	0	0	4	8	0	8	5	4	0	5	0	0	6	0	0
4		4	4	4	4			4	4	4	3			4						4	1	4	4	4

Table 7 - Continued

Individual Histopathology Findings

MOCA: 104-Week Carcinogenicity Study in Male Rats

Neoplasms and Proliferative Lesions

[illegible]

Table 7 - Continued

Individual Histopathology Findings

MOCA: 104-Week Carcinogenicity Study in Male Rats

Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION

UNUSUAL LESIONS

Keratoacanthoma (On Back)

Fibroma (Subcutaneous,

Axi11a)

Ketatocanthoma (Chest)

2

P

P

PL

LENGTH ON STUDY (WEEKS)

9 9 3 6 9 7 7 6 1 9 9 9 7 6 5 9 8 8 1 8 7 6 6 8 8 6 7 1
3 3 4 9 4 4 3 8 6 0 3 6 2 1 7 6 1 1 0 1 1 5 2 6 6 7 1
4 2

LENGTH ON STUDY (WEEKS)

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 500 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
PITUITARY																				
Adenoma																				
Carcinoma																				
Chromophobe Hyperplasia																				
ADRENAL																				
Alveolar/Bronchiolar Carcinoma, Metastatic																				
Alveolar Cell Carcinoma, Metastatic																				
THYROID																				
Alveolar/Bronchiolar Carcinoma, Metastatic																				
LUNG																				
Alveolar/Bronchiolar Carcinoma, Primary																				
Carcinoma, Metastatic																				
Malignant Lymphoma, Histiocytic Type																				
Alveolar/Bronchiolar Adenoma																				
Adenomatous Hyperplasia																				
SPLEEN																				
Hemangiosarcoma																				
LIVER																				
Malignant Lymphoma, Histiocytic Type																				
Foci of Altered Cells																				

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 500 ppm																											
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
KIDNEY																												
Tubular Adenoma																												
PANCREAS																												
Alveolar/Bronchiolar Carcinoma, Metastatic																												
Alveolar Cell Carcinoma, Metastatic																												
SEMINAL VESICLE																												
Alveolar Cell Carcinoma, Metastatic																												
MAMMARY GLAND																												
Adenocarcinoma																												
MULTIPLE ORGANS																												
Malignant Lymphoma, Histiocytic																												
UNUSUAL LESIONS																												
Keratoacanthoma (On Back)																												
Squamous Cell Carcinoma (Lower Midline)																												
Fibroma (Subcutaneous)																												
Hemangiosarcoma																												
Squamous Cell Papilloma (Ear Duct)																												
Squamous Cell Carcinoma (Head and Jaw)																												
Basal Cell Carcinoma																												

LENGTH ON STUDY (WEEKS)	6	7	9	8	7	8	1	9	6	7	1	8	1	9	5	9	6	5	9	7	8	9	9	9	6	8	6	8
	5	1	3	3	2	4	0	0	8	2	0	6	0	1	9	7	7	4	5	9	3	0	4	6	8	4	6	8
							4				4																	

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 500 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal Number:	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8

No Neoplasia or Pre-Neoplastic Lesions

PITUITARY

Adenoma

Chromophobe Hyperplasia

ADRENAL

Alveolar/Bronchiolar Carcinoma, Metastatic

HEART

Malignant Fibrous Histiocytoma, Metastatic

LUNG

Alveolar/Bronchiolar Carcinoma, Primary

Carcinoma, Metastatic

Malignant Lymphoma, Histiocytic Type

Hemangiosarcoma, Metastatic

Alveolar/Bronchiolar Adenoma

Malignant Fibrous Histiocytoma, Metastatic

Adenomatous Hyperplasia

X X

143

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Animal Number:	Protein Adequate Diet - 500 ppm																			
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
LIVER		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Malignant Lymphoma, Histiocytic Type	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hepatocellular Carcinoma		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Hemangiosarcoma		7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Neoplastic Nodule		9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8
KIDNEY																					
Alveolar/Bronchiolar Carcinoma, Metastatic																					
PANCREAS																					
Alveolar/Bronchiolar Carcinoma, Metastatic																					
Islet Cell Adenoma																					
MAMMARY GLAND																					
Adenocarcinoma	P																				
ZYMBAL GLAND																					
Carcinoma																					
MULTIPLE ORGANS																					
Malignant Lymphoma, Lymphocytic	P																				
UNUSUAL LESIONS																					
Squamous Cell Papilloma (On Back)																					
Malignant Fibrous Histiocytoma (Subcutaneous)	P																				

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Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 500 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
ANIMAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3
CRANIUM																				
Alveolar/Bronchiolar Carcinoma, Metastatic																				
PITUITARY																				
Adenoma																				
Chromophobe Hyperplasia																				
ADRENAL																				
Alveolar/Bronchiolar Carcinoma, Metastatic																				
Pheochromocytoma																				
THYROID																				
"C" Cell Adenoma																				
HEART																				
Alveolar/Bronchiolar Carcinoma, Metastatic																				
LUNG																				
Alveolar/Bronchiolar Carcinoma, Primary																				
Alveolar/Bronchiolar Adenoma																				
Carcinoma, Metastatic																				
Adenomatous Hyperplasia																				
LIVER																				
Hemangioma																				

Table 7 - Continued

MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

Animal
Number:

Alveolar/Bronchiolar Carcinoma,
Metastatic

Mucinous Cystadenocarcinoma

Islet Cell Adenoma

P

Adenocarcinoma

Adenocarcinoma, Metastatic

Carcinoma

Malignant Lymphoma, Lymphocytic

P

Keratoacanthoma (On Back)

2

P

P

P.

LENGTH ON STUDY (WEEKS)

Table 7 - Continued

Individual Histopathology Findings

MOCA: 104-Week Carcinogenicity Study in Male Rats

Neoplasms and Proliferative Lesions

[illegible]

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Adequate Diet - 1000 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
LIVER																				
Neoplastic Nodule																				
Hepatocellular Carcinoma																				
Foci of Altered Cells																				
KIDNEY																				
Alveolar/Bronchiolar Carcinoma,																				
Metastatic																				
PANCREAS																				
Alveolar/Bronchiolar Carcinoma,																				
Metastatic																				
URINARY BLADDER																				
Alveolar/Bronchiolar Carcinoma,																				
Metastatic																				
MAMMARY GLAND																				
Adenocarcinoma																				
ZYMBAL GLAND																				
Carcinoma																				
MESENTERIC LYMPH NODE																				
Alveolar/Bronchiolar Carcinoma,																				
Metastatic																				

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

		Protein Adequate Diet - 1000 ppm																			
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Animal		2	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	5	5
Number:		9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8

ORGAN AND DESCRIPTION

THYMUS

Alveolar/Bronchiolar Carcinoma,
Metastatic

P

P

UNUSUAL LESIONS

Keratoacanthoma (Subcutaneous)
Fibroma

P

Squamous Cell Papilloma

P P

LENGTH OF STUDY (WEEKS)

8 7 3 8 9 3 4 6 8 9 7 7 8 6 4 7 7 6 7 5 7 6 6 7 4
8 8 7 0 0 1 7 8 1 4 2 2 9 6 9 7 6 7 8 2 6 5 0 0 5

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

		Protein Adequate Diet - 1000 ppm																			
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Number:	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3

ORGAN AND DESCRIPTION

No Neoplasia or Pre-Neoplastic Lesions

X

CRANIUM

Alveolar/Bronchiolar Carcinoma,
Metastatic

P

PITUITARY

Adenoma

Chromophobe Hyperplasia

P

P

ADRENAL

Alveolar/Bronchiolar Carcinoma,
Metastatic

P

P

THYROID

Alveolar/Bronchiolar Carcinoma,
Metastatic

P

HEART

Alveolar/Bronchiolar Carcinoma,
Metastatic

P

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Animal Number:	Protein Adequate Diet - 1000 ppm																			
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
LUNG		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Alveolar/Bronchiolar Carcinoma		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alveolar/Bronchiolar Adenoma		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Adenomatous Hyperplasia		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Hepatocellular Carcinoma, Metastatic		4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3
Carcinoma, Metastatic																					
Malignant Fibrous Histiocytoma																					
LIVER																					
Neoplastic Nodule																					
Hepatocellular Carcinoma																					
Malignant Fibrous Histiocytoma, Metastatic																					
KIDNEY																					
Alveolar/Bronchiolar Carcinoma, Metastatic																					
Zymbal Gland Carcinoma, Metastatic																					
PANCREAS																					
Alveolar/Bronchiolar Carcinoma, Metastatic																					
Malignant Fibrous Histiocytoma, Metastatic																					
URINARY BLADDER																					
Alveolar/Bronchiolar Carcinoma, Metastatic																					

Table 7 - Continued

Individual Histopathology Findings

Neoplasms and Proliferative Lesions

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Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Animal Number:	Protein Deficient Diet - 0 ppm																			
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
No Neoplasia or Pre-Neoplastic Lesions		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SPINAL COLUMN																					
Malignant Fibrous Histiocytoma, Metastatic	P																				
PITUITARY																					
Adenoma																					
Chromophobe Hyperplasia																					
THYROID																					
"C" Cell Carcinoma																					
"C" Cell Hyperplasia																					
LUNG																					
Malignant Fibrous Histiocytoma, Metastatic	P																				
SPLEEN																					
Malignant Fibrous Histiocytoma, Metastatic	P																				
Hemangiosarcoma																					
LIVER																					
Malignant Fibrous Histiocytoma, Metastatic	P																				

	Protein Deficient Diet - 0 ppm															
Animal	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4

Renal Tubular Carcinoma.

Hemangiosarcoma, Metastatic
Islet Cell Adenoma

Hemangiosarcoma, Metastatic

**Malignant Fibrous Histiocytoma
(Subcutaneous)**

Keratoacanthoma (On Back)

[illegible]

ORGAN AND DESCRIPTION	Protein Deficient Diet - 0 ppm																											
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal Number:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No Neoplasia or Pre-Neoplastic Lesions	X	X																										
PITUITARY Adenoma Carcinoma																												
THYROID "C" Cell Adenoma																												
LUNG Malignant Fibrous Histiocytoma, Metastatic																												
SPLEEN Malignant Fibrous Histiocytoma, Metastatic																												
LIVER Malignant Fibrous Histiocytoma, Metastatic																												
TESTES Interstitial Cell Tumor																												
UNUSUAL LESIONS Fibroma Malignant Fibrous Histiocytoma (Hind Foot)																												
LENGTH ON STUDY (WEEKS)	1	3	1	1	1	5	1	8	9	1	4	5	4	1	1	9	4	8	9	1	1	9	5	1	4	4	7	2

Table 7 -- Continued

Individual Histopathology Findings

MOCA: 104-Week Carcinogenicity Study in Male Rats

Neoplasms and Proliferative Lesions

	Protein Deficient Diet - 0 ppm															
Animal	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4

ORGAN AND DESCRIPTION

No Neoplasia or Pre-Neoplastic Lesions

PITUITARY

Adenoma

Chromophobe Hyperplasia

THYROID

"C" Cell Hyperplasia

LUNG

**Malignant Fibrous Histiocytoma,
Metastatic**

Adenomatous Hyperplasia

LIVER

**Malignant Fibrous Histiocytoma,
Primary**

PANCREAS

Islet Cell Adenoma

MAMMARY GLAND

Fibroadenoma

UNUSUAL LESIONS

Squamous Cell Carcinoma (Front Paw)

Squamous Cell Papilloma

(Subcutaneous)

LENGTH ON STUDY (WEEKS)

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 0 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
No Neoplasia or Pre-Neoplastic Lesions	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BRAIN																				
Astrocytoma																				
PITUITARY																				
Adenoma																				
Chromophobe Hyperplasia																				
THYROID																				
"C" Cell Adenoma																				
LUNG																				
Malignant Fibrous Histiocytoma, Metastatic																				
Liposarcoma, Metastatic																				
SPLEEN																				
Carcinoma, Metastatic																				
LIVER																				
Malignant Fibrous Histiocytoma, Metastatic																				
Liposarcoma, Metastatic																				

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 0 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
PANCREAS																				
Islet Cell Adenoma																				
Islet Cell Carcinoma																				
THYMUS																				
Malignant Lymphoma, Lymphocytic																				
MAMMARY GLAND																				
Fibroadenoma																				
UNUSUAL LESIONS																				
Malignant Fibrous Histiocytoma (Subcutaneous)																				
Liposarcoma																				
Keratoacanthoma (On Back)																				
LENGTH ON STUDY (WEEKS)	1	1	9	3	1	4	6	1	5	6	4	1	6	1	1	9	4	3	9	1
	0	0	8	3	0	4	7	0	7	5	5	0	9	0	0	5	4	8	0	0
	2	4			4			4				4		4	4				4	4

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 125 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8

No Neoplasia or Pre-Neoplastic Lesions

PITUITARY

Adenoma

Chromophobe Hyperplasia

LUNG

Adenomatous Hyperplasia

Alveolar/Bronchiolar Adenoma

PANCREAS

Islet Cell Adenoma

Islet Cell Carcinoma

STOMACH

Squamous Cell Papilloma

MESENTERIC LYMPH NODE

Hemangiosarcoma

UNUSUAL LESIONS

Keratoacanthoma

Fibroma

Lipoma

Fibrosarcoma

ADRENAL

Cortical Cell Hyperplasia

LENGTH ON STUDY (WEEKS)

X

X X

X X X X X

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 125 ppm																							
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
No Neoplasia or Pre-Neoplastic Lesions	X																							
PITUITARY																								
Adenoma																								
Carcinoma																								
THYROID																								
"C" Cell Adenoma																								
Malignant Fibrous Histiocytoma, Metastatic																								
ADRENAL																								
Cortical Adenoma																								
LUNG																								
Adenomatous Hyperplasia																								
Alveolar/Bronchiolar Carcinoma																								
Malignant Fibrous Histiocytoma, Metastatic																								
Malignant Fibrous Histiocytoma, Primary																								
SPLEEN																								
Malignant Lymphoma, Lymphocytic																								

[illegible]

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 125 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Animal	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number:	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8
No Neoplasia or Pre-Neoplastic Lesions	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PITUITARY																				
Adenoma																				
Neurofibrosarcoma																				
LUNG																				
Adenomatous Hyperplasia																				
Alveolar/Bronchiolar Carcinoma																				
Malignant Fibrous Histiocytoma, Metastatic																				
Epidermoid Carcinoma																				
SPLEEN																				
Malignant Fibrous Histiocytoma, Metastatic																				
LIVER																				
Malignant Fibrous Histiocytoma, Metastatic																				
Hemangiosarcoma																				
THYMUS																				
Malignant Fibrous Histiocytoma, Metastatic																				

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 125 ppm																											
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
No Neoplasia or Pre-Neoplastic Lesions	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8			
PITUITARY																												
Adenoma	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Chromophobe Hyperplasia	P																											
THYROID																												
"C" Cell Adenoma																												
"C" Cell Hyperplasia																												
LUNG																												
Adenomatous Hyperplasia	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Alveolar/Bronchiolar Adenoma																												
Alveolar/Bronchiolar Carcinoma																												
PANCREAS																												
Islet Cell Adenoma																												
MULTIPLE ORGANS																												
Malignant Lymphoma, Lymphocytic Type																												
UNUSUAL LESIONS																												
Squamous Cell Carcinoma																												
LENGTH ON STUDY (WEEKS)	1	8	6	1	5	6	1	4	7	6	4	9	1	5	6	8	9	5	6	6	3	6	5	1	6	6		
	0	9	9	0	7	1	0	7	6	4	4	7	0	7	6	1	9	4	5	3	2	4	9	0	5	5		
	4			4			4					4											4					

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 250 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8

No Neoplasia or Pre-Neoplastic Lesions

PITUITARY

Adenoma

Chromophobe Hyperplasia

THYROID

"C" Cell Adenoma

ADRENAL

Medullary Hyperplasia

LUNG

Adenomatous Hyperplasia

Alveolar/Bronchiolar Adenoma

Alveolar/Bronchiolar Carcinoma

Epidermoid Carcinoma

SPLEEN

Hemangiosarcoma

LIVER

Malignant Lymphoma, Lymphocytic

KIDNEY

Clear Cell Carcinoma

Malignant Lymphoma, Lymphocytic

PANCREAS

Islet Cell Adenoma

Table 7 - Continued
 Individual Histopathology Findings
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Animal Number	Protein Deficient Diet - 250 ppm																			
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
MAMMARY GLAND																					
Adenocarcinoma																					P
ZYMBAL GLAND																					
Carcinoma																					P
MULTIPLE ORGANS																					
Malignant Lymphoma, Lymphocytic																					P
UNUSUAL LESIONS																					
Fibrosarcoma																					P
Fibroma																					
LENGTH ON STUDY (WEEKS)		1	1	3	6	7	1	1	5	6	4	5	1	1	1	1	1	5	1	6	8
		0	0	8	1	1	0	0	2	2	1	2	0	0	0	0	2	0	1	5	0
		2	4				4	4				4	4	0	4	4		4	6	8	5
																					9
																					9
																					0
																					8

Table 7 - Continued

MOCA: 104-Week Carcinogenicity Study in Male Rats Neoplasms and Proliferative Lesions

Protein Deficient Diet - 250 ppm

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Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 250 ppm																								
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8
ZYMBAL GLAND																									
Carcinoma																									
MULTIPLE ORGANS																									
Lymphocytic Leukemia	P																								
Granulocytic Leukemia	P																								
UNUSUAL LESIONS																									
Fibrosarcoma																									
Fibroma																									
Keratoacanthoma																									
LENGTH ON STUDY (WEEKS)	9	6	6	6	1	8	8	1	6	3	6	4	1	6	6	8	3	4	1	1	5	7	8	7	4
	2	0	5	5	0	1	3	0	5	9	4	7	0	4	4	2	8	2	0	0	1	6	0	3	0
					2			4					4						0		4				

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 250 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8

No Neoplasia or Pre-Neoplastic Lesions

PITUITARY Adenoma

THYROID "C" Cell Adenoma

ADRENAL Liposarcoma

LUNG Adenomatous Hyperplasia
Alveolar/Bronchiolar Adenoma
Alveolar/Bronchiolar Carcinoma

TESTES Hemangiosarcoma

ZYMBAL GLAND Carcinoma

MULTIPLE ORGANS Malignant Lymphoma, Lymphocytic

X

X

X

X

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

Table 7 - Continued
 Individual Histopathology Findings
 MOCA: 104-Week Carcinogenicity Study in Male Rats
 Neoplasms and Proliferative Lesions

		Protein Deficient Diet - 250 ppm																											
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Animal		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
		2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Number:		9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	3	3	

ORGAN AND DESCRIPTION

UNUSUAL LESIONS
 Keratoacanthoma
 Basosquamous Carcinoma
 Squamous Cell Papilloma

P

P P

P

P

LENGTH ON STUDY (WEEKS)

5 1 6 9 7 6 5 6 1 4 7 8 8 1 1 6 1 8 1 7 8 8 1 7 6
 2 0 8 0 7 5 3 7 0 4 4 5 3 4 0 0 5 0 9 0 0 7 6 0 6 6
 4

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Table 7 - Continued

Individual Histopathology Findings

MOCA: 104-Week Carcinogenicity Study in Male Rats Neoplasms and Proliferative Lesions

Protein Deficient Diet - 500 ppm

Animal

Number:

ORGAN AND DESCRIPTION

No Neoplasia or Pre-Neoplastic Lesions

PITUITARY

Adenoma

Alveolar/Bronchiolar Carcinoma,
Metastatic

Chromophobe Hyperplasia

HEART

Hemangiosarcoma

Alveolar/Bronchiolar Carcinoma,
Metastatic

LUNG

Alveolar/Bronchiolar Adenoma

Alveolar/Bronchiolar Carcinoma

Epidermoid Carcinoma

Adenomatous Hyperplasia

Hemangiosarcoma, Metastatic

LIVER

Hepatocellular Carcinoma

KIDNEY

Alveolar/Bronchiolar Carcinoma, Metastatic

Table 7 - Continued
Individual Histopathology Findings
MOCA: 104-Week Carcinogenicity Study in Male Rats
Neoplasms and Proliferative Lesions

ORGAN AND DESCRIPTION	Protein Deficient Diet - 500 ppm																			
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number:	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3

PANCREAS

Alveolar/Bronchiolar Carcinoma,
Metastatic

P

URINARY BLADDER

Transitional Cell Carcinoma

P

MAMMARY GLAND

Adenocarcinoma

P

THYMUS

Malignant Lymphoma, Lymphocytic Type

P

ZYMBAI GLAND
Carcinoma

P

MULTIPLE ORGANS

Malignant Lymphoma, Lymphocytic
Lymphocytic Leukemia

P P

P

UNUSUAL LESIONS

Malignant Hemangiopericytoma

P

Squamous Cell Carcinoma

P

Basal Cell Carcinoma

P

Basosquamous Carcinoma

P

Keratoacanthoma

P

Fibroma

P

Hemangiosarcoma

P

LENGTH ON STUDY (WEEKS)

7 8 5 1 7 1 1 8 9 1 9 9 3 7 7 9 8 9 7 9 4 5 5 3 6
3 0 7 0 6 0 0 6 9 0 9 8 8 0 5 6 3 0 0 4 6 7 1 5 8
3 0 3 1

[illegible]

Table 8
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MOCA: 104-Week Carcinogenicity Study in Male Rats

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