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(3-3-2003)

Data Evaluation Report on the Reproductive Effects of H-18, 053 (Chlorsulfuron) on Avian Species *Anas platyrhynchos*

PMRA Submission Number {.....} EPA MRID Number 42634002

Data Requirement:

PMRA DATA CODE	{.....}
EPA DP Barcode	D273992
OECD Data Point	{.....}
EPA MRID	42634002
EPA Guideline	71-4(b)

Test material: H-18, 053 (Chlorsulfuron) **Purity:** 97.5% (plant analysis); 98.2% (reanalysis)
Common name: Chlorsulfuron
Chemical name: IUPAC: Benzenesulfonamide, 2-chloro-N-[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]
CAS name: Chlorsulfuron
CAS No.: 64902-72-3
Synonyms: Chlorsulfuron; DPX-W4189-165

Primary Reviewer: Teri Myers, Ph.D.
Dynamac Corporation
Signature: Teri S. Myers
Date: 6/28/01

QC Reviewer: Kathleen Ferguson, Ph.D.
Dynamac Corporation
Signature: Kathleen Ferguson
Date: 6/28/01

Primary Reviewer: Dana Spatz
EPA/OECD/PMRA
Signature:
Date:

Secondary Reviewer(s): Dan Ballard
EPA/OECD/PMRA
Signature: Daniel Ballard
Date: 3/3/03

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Company Code	{.....}	[For PMRA]
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EPA PC Code	118601	

Date Evaluation Completed: {dd-mmm-yyyy}

CITATION: Beavers, J.B. *et al.* 1992. H-18, 053 (Chlorsulfuron): A one-generation reproduction study with the mallard (*Anas platyrhynchos*). Unpublished study performed by Wildlife International Ltd., Easton, MD and sponsored by E.I. du Pont de Nemours & Company, Newark, Delaware. Wildlife International Ltd. study no. 112-267, sponsor study no. 565-92. Study initiated September 30, 1991 and completed September 1, 1992.

EXECUTIVE SUMMARY:

The one generation reproductive toxicity of H-18, 053 (Chlorsulfuron) to groups (16 pens/treatment level) of 1 male and 1 female of 23-week-old mallard ducks was assessed over 140 days. H-18, 053 was administered to the birds in the diet at 0, 26.4, 174, and 961 mg ai/kg dw diet. The NOAEC was determined to be ≥961 mg ai/kg dw diet because no toxicity was shown at any treatment level. The LOAEC was, therefore, >961 mg ai/kg dw diet.

There were no apparent behavioral abnormalities or other treatment-related signs of toxicity on the parental generation.

This toxicity study is scientifically sound and satisfies the guideline requirements for a mallard duck reproductive toxicity study.

Results Synopsis

Test Organism Size/Age (mean Weight): 23 weeks at test initiation (1154 g)

NOAEC: ≥961 mg a.i./L
LOAEC: >961 mg a.i./L Endpoint(s) Affected: None

I. MATERIALS AND METHODS

GUIDELINE FOLLOWED: 71-4(b); Minor deviations that did not affect the acceptability or validity of the study included the instability of the a.i. in the 26 ppm diet, a slightly different photoperiod than recommended, a slightly lower egg storage and humidity than recommended, a lower hatching temperature and higher hatching humidity than recommended, and a slightly later removal date from the hatcher. Deviations that impacted the acceptability, but not the validity, of the study included a shorter exposure period to the test substance prior to egg-laying and no determination of a LOAEC or NOAEC.

COMPLIANCE: A statement of no data confidentiality claims, a certification of good laboratory practices, and a quality assurance statement were provided.

A. MATERIALS:

1. Test Material H-18, 053 (Chlorsulfuron)

Description: A whitish to off-white powder

Lot No./Batch No. : Lot 12-51; Batch 12-51-88

Purity: 97.5% (plant analysis); 98.2% (reanalysis)

Stability of Compound Under Test Conditions: Most test concentrations were stable after one week under test conditions, except samples from the 40 ppm treatment group, which also showed poor stability when measured on day 0. Stability samples from the 200 ppm and 1000 ppm treatments averaged 76% and 101% after 7 days, while stability of the 40 ppm treatment averaged 67% on day 0 and 53% on day 7. Verification of the test substance in the diets yielded high recoveries (within 20% of nominal concentrations), except for samples from the 40 ppm treatment. Recovery of test substance from this treatment ranged from 22.4 to 31.1 ppm (56% to 78% of nominal). Reanalysis of the diets from the 40 ppm level confirmed the low stability and recovery of test substance in this treatment. It was suggested that the cause of this was either degradation of the test material or increased sorption of the a.i. to the diet matrix. The pilot study showed that the test material was stable in avian diets at 100 ppm.
(OECD requires water solubility, stability in water and light, pKa, Pow, vapor pressure of test compound)

Storage Conditions of Test Chemicals: The test substance was stored at ambient temperature. Premix containing acetone, corn oil, basal diet, and the test material was maintained frozen, except during weekly preparation of fresh diets.

2. Test organism:

Parameter	Details	Remarks *Criteria*
Species (common and scientific names):	Mallard duck (*Anas platyrhynchos*)	*EPA requires: a wild waterfowl species, preferably the mallard, Anas platyrhynchos, or an upland game species, preferably the northern bobwhite, Colinus virginianus.*
Age at Study Initiation:	23 weeks	Birds were approaching their first breeding season. *EPA requires Birds should be approaching their first breeding season.*
Body Weight: (mean and range)	Test initiation: Control males: 1246 g (1115-1430 g) females: 1084 g (931-1257 g) 40 ppm males: 1226 g (1092-1436 g) females: 1077 g (940-1244 g) 200 ppm males: 1257 g (1146-1374 g) females: 1064 g (906-1196 g) 1000 ppm males: 1224 g (1033-1410 g) females: 1052 g (933-1161 g)	Aside from test initiation, weights were recorded at biweekly intervals up to week eight, and at test termination. *EPA requires that body weights should be recorded at test initiation and at biweekly intervals up to week eight or up to the onset of egg laying and at termination.*
Source:	Whistling Wings Box 1, 113 Washington St. Hanover, IL 61041	*EPA requires that all birds should be from the same source.*

B. STUDY DESIGN:

1. Experimental Conditions

a) Range-finding Study: A pilot reproduction study was conducted with mallard ducks (35 weeks old at test initiation). Birds (5 replicate pens per level; 1 male and 1 female per pen) were exposed to nominal dietary concentrations of H #18, 053 (Chlorsulfuron) at 0, 160, 400, and 1000 ppm for 6 weeks (mean measured concentrations were 0, 103, 380, and 907). No treatment-related effects on mortality, clinical toxicity, body weight, feed consumption, or egg production were observed at any of the concentrations tested. As a result, the NOAEC in this pilot study was equal or greater to 907 ppm, the highest treatment concentration tested.

b) Definitive Study

Table 1 . Experimental Parameters

Parameter	Details	Remarks Criteria
Acclimation period: conditions (same as test or not): feeding: health (any mortality observed):	-Birds were subject to an acclimation period for 20 days. -Environmental conditions during acclimation were identical to test conditions. -Water and feed were provided *ad libitum*. -At test initiation, birds were examined for physical injuries and general health. Unhealthy birds were discarded.	*EPA recommends a 2-3 week health observation period prior to selection of birds for treatment. Birds must be generally healthy without excess mortality. Feeding should be ad libitum, and sickness, injuries or mortality be noted.*
Test duration pre-laying exposure: egg-laying exposure: withdrawal period, if used:	-8 weeks -10 weeks -No withdrawal period	The pre-laying exposure duration was shorter than recommended. Reduced reproduction was not observed, so a withdrawal period was not necessary. *EPA requires* ***Pre-laying exposure duration*** *At least 10 weeks prior to the onset of egg-laying.* ***Exposure duration with egg-laying*** *At least 10 weeks.* ***Withdrawal period*** *If reduced reproduction is evident, a withdrawal period of up to 3 weeks should be added to the test phase.*

Parameter	Details	Remarks Criteria
Pen (for parental and offspring) size:	-Parents were housed in pens manufactured by Safeguard Products Inc. (75 x 90 x 45 cm^3; Model 5355). Offspring were housed in Safeguard Products Inc. brooding pens (62 x 92 x 25.5 cm^3).	A diagram was provided (Appendix XIII, p. 110) of the pen layout, relative to treatment groups.
construction materials:	-Adult pens were constructed of galvanized wire grid and galvanized sheeting. Offspring pens were constructed of vinyl coated wire mesh and stainless steel sheeting.	*Pens* *Adequate room and arranged to prevent cross contamination* *Materials* *Nontoxic material and nonbinding material, such as galvanized steel.*
number:	-16 pens/treatment level	*Number* *At least 5 replicate pens are required for mallards housed in groups of 7. For other arrangements, at least 12 pens are required, but considerably more may be needed if birds are kept in pairs. Chicks are to be housed according to parental grouping.*
Number of birds per pen (male:female)	2 birds/pen (1 male:1 female)	*EPA requires one male and 1 female per pen. For quail, 1 male and 2 females is acceptable. For ducks, 2 males and 5 females is acceptable.*
Number of pens per group/treatment negative control: solvent control: treated:	-N/A -16 pens -16 pens/treatment	Sixty-four pens were used in the experiment. *EPA requires at least 12 pens, but considerably more if birds are kept in pairs. At least 16 is strongly recommended.*

Parameter	Details	Remarks Criteria
Test concentrations (mg ai/kg diet) nominal: measured:	-0, 40, 200, and 1000 ppm -0, 26.4 ± 2.6, 174 ± 18, and 961 ± 82 ppm	Test concentrations were chosen in consultation with the Sponsor and were based upon known toxicity data, a pilot reproduction study, and Expected Environmental Concentrations. *EPA requires at least two concentrations other than the control are required; three or more are recommended. The highest test concentrations should show a significant effect or be at or above the actual or expected field residue level.*
Maximum labeled field residue anticipated and source of information:	Not reported	*EPA requires The highest test concentrations should show a significant effect or be at or above the actual or expected field residue level. The source [i.e., maximum label rate (in lb ai/A & ppm), label registratin no., label date, and site should be cited]*
Solvent/vehicle, if used type: amount:	-Acetone (solvent) and corn oil (vehicle) - Less than 2% of the diet by weight	*EPA requires corn oil or other appropriate vehicle not more than 2% of diet by weight*
Was detailed description and nutrient analysis of the basal diet provided? (Yes/No)	Yes	Basal diets contained 27% protein, 2.5% fat, and 5% fiber (minimum). Five percent limestone was added to adult diets to provide a source of calcium. *EPA requires a commercial breeder feed (or its equivalent) that is appropriate for the test species.*

Parameter	Details	Remarks Criteria
Preparation of test diet	H-18, 053 (Chlorsulfuron) was added to a pre-mix with corn oil and incorporated into aliquots of basal diet using a Hobart mixer.	*A premixed containing the test substance should be mechanically mixed with basal diet. If an evaporative vehicle is used, it must be completely evaporated prior to feeding.*
Indicate whether stability and homogeneity of test material in diet determined (Yes/No)	Yes	
Were concentrations in diet verified by chemical analysis?	Yes	
Did chemical analysis confirm that diet was stable and homogeneous?	Yes	
Feeding and husbandry	Feeding and husbandry conditions appeared to be adequate, given guideline recommendations.	Housing and husbandry practices adhered to the guidelines established by the National Institutes of Health.
Test conditions (pre-laying) temperature: relative humidity: photoperiod:	-Average temperature was maintained at 19.4 ± 1.6°C. -45 ± 16% -8 h light up to week 8, 17 h light thereafter; 31 footcandles of illumination	Birds were exposed to 8 hours of light for the first 8 weeks, instead of the recommended 7 hours for 8 weeks. *EPA Requires* *Temperature:* *About 21°C (70°F)* *Relative humidity:* *About 55%* *Lighting* *First 8 weeks: 7 h per day.* *Thereafter: 16-17 h per day.* *At least 6 footcandles at bird level.*

Parameter	Details	Remarks Criteria
Egg Collection and Incubation		
Egg collection and storage collection interval: storage temperature: storage humidity:	-Eggs were collected daily -13.8 ± 1.1°C -45 ± 9% relative humidity	Eggs were stored at a temperature and humidity that was slightly lower than recommended. *EPA requires eggs to be collected daily; egg storage temperature approximately 16°C (61°F); humidity approximately 65%. Collection interval: daily*
Were eggs candled for cracks prior to setting for incubation?	Eggs were candled prior to incubation (Day 0).	*EPA requires eggs to be candled on day 0*
Were eggs set weekly?	Yes	
When candling was done for fertility?	Day 14 for embryo viability and Day 21 for embryo survival	*EPA requires:* *Quail: approx. day 11* *Ducks: approx. day 14*
When the eggs were transferred to the hatcher?	Day 24	Eggs were transferred to the hatcher one day later than recommended. *EPA requires:* *Bobwhite: day 21* *Mallard: day 23*
Hatching conditions temperature: humidity: photoperiod:	-37.2°C -76% -Not reported	Hatching temperature was slightly lower and humidity was higher than recommended.. *EPA requires:* *temperature of 39°C (102°F)* *humidity of 70%*

Parameter	Details	Remarks Criteria
Day the hatched eggs were removed and counted	Day 27 or Day 28	*EPA requires Bobwhite: day 24 Mallard: day 27*
Were egg shells washed and dried for at least 48 hrs before measuring?	Yes, shells were washed and dried for one week at room temperature.	
Egg shell thickness no. of eggs used: intervals: mode of measurement:	-One egg was collected (when available) from alternate pens in each treatment group. -Once weekly throughout the egg laying period. -Dried shell plus membrane at the waist was determined by measuring five points around the shell circumference to the nearest 0.005 mm.	*EPA requires newly hatched eggs be collected at least once every two weeks. Thickness of the shell plus membrane should be measured to the nearest 0.01 mm; 3 - 4 measurements per shell.*
Reference chemical, if used	None used	

2. Observations:

Table 2: Observations

Parameter	Details	Remarks/Criteria
Parameters measured		
Parental: (mortality, body weight, mean feed consumption)	-mortality -body weight -food consumption	Data for all parameters were reported on a per pen basis.
Egg collection and subsequent development: (no. of eggs laid, no. of eggs cracked, shell thickness, no. of eggs set, no. of viable embryos, no. of live 3 week embryos, no. hatched, no. of 14-day survivors, average weight of 14-d old survivors, mortality, gross pathology, others)	-eggs laid/pen -eggs cracked/pen -eggs set/pen -viable embryos/pen -live 3-week embryos/pen -normal hatchlings/pen -hatchling body weight/pen -14-day-old survivors/pen -14-day-old survivor body weight/pen -eggshell thickness/pen	*EPA requires:* • *Eggs laid/pen* • *Eggs cracked/pen* • *Eggs set/pen* • *Viable embryos/pen* • *Live 3-week embryos/pen* • *Normal hatchlings/pen* • *14-day-old survivors/pen* • *14-day-old survivors/pen* • *Weights of 14-day-old survivors (mean per pen)* • *Egg shell thickness* • *Food consumption (mean per pen)* • *Initial and final body weight (mean per pen)*
Indicate if the test material was regurgitated	No indications of dietary regurgitation.	
Observation intervals (for various parameters)	Body weight was measured biweekly and food consumption was estimated weekly. Eggs were collected weekly for weight and thickness measurements.	*Body weights and food consumption must be measured at least biweekly.*
were raw data included?	Yes	

II. RESULTS AND DISCUSSION:

A. MORTALITY: Two birds died during the experiment; one in the control group and one in the 174 ppm treatment. One drake in the control group was found dead at the beginning of week 12. This drake was noted with extensive bumblefoot and a reluctance to walk the day before death. The drake was in good condition upon necropsy. Lesions of bumblefoot were noted on both feet, a small yellow plaque was located at the lower margin of the right lung, the spleen was slightly enlarged and pale, the liver was slightly pale and mottled, and the kidneys were slightly pale. The gastrointestinal tract was primarily empty and the testes were developing.

One hen in the 174 ppm treatment was found dead during week 20. Clinical signs prior to death included limping, loss of coordination, and lower limb weakness at the beginning of week 17. By week 18, the bird appeared thin and clinical signs noted on week 17 continued until death. The hen was in good condition upon

necropsy. Slight bumblefoot was noted on both feet, a breast blister was evident, slight feather loss occurred on the neck and back, and the feathers were wet. The spleen was enlarged and the splenic capsule ruptured, causing hemorrhaging throughout the abdominal cavity. The interior of the spleen was dark, hemorrhagic, and granular. The kidneys were pale, and the hen was in active production.

Because no other mortalities were noted, these deaths were considered to be incidental and not treatment-related.

Table 3: Effect of H-18, 053 (Chlorsulfuron) on mortality of *Anas platyrhynchos*.

Treatment (mg a.i./kg diet) measured and (nominal conc.)		Observation Period					
		Day 47		Day 94		Day 140	
		No. Dead		No. Dead		No. Dead	
		Male	Female	Male	Female	Male	Female
Control		0	0	1	0	1	0
26.4 (40)		0	0	0	0	0	0
174 (200)		0	0	0	0	0	1
961 (1000)		0	0	0	0	0	0
LD_{50}		>961ppm	>961ppm	>961ppm	>961ppm	>961ppm	>961ppm
Reference chemical	mortality	N/A	N/A	N/A	N/A	N/A	N/A
	LD_{50}						

B. <u>REPRODUCTIVE AND OTHER ENDPOINTS:</u> Pathological observations were noted for some birds that survived the experiment, but none appeared to be treatment-related. Common clinical observations included foot lesions and feather loss normally associated with penwear and/or penmate aggression. The study authors also reported that gross necropsies revealed no treatment-related patterns.

There were no significant reductions in adult body weight or food consumption. The percentage of eggs cracked in the treatment groups were 1.8 and 2 times greater than the percentage of eggs cracked in the control group. The study authors detected this increase to be statistically significant in the 174 ppm treatment group. Low numbers of eggs cracked (particularly in the control group) contributed to the large relative differences and, because there were no effects of treatment on eggshell thickness, differences in eggs cracked were not considered to be treatment-related. The study author reported that the number of eggs cracked at all levels was within the range historically found for this endpoint.

The study authors reported that there were no apparent treatment-related effects upon any reproductive parameters at the 26, 174, and 961 ppm treatment levels.

Table 4. Reproductive and other parameters.

Parameter	Control	26.4 ppm	174 ppm	961 ppm	NOAEC/ LOAEC
Eggs laid/pen	51	49	49	53	≥961ppm >961ppm
Eggs laid/hen/day	0.69	0.67	0.67	0.73	≥961ppm >961ppm
Eggs cracked	5	14	15	14	26.4ppm 174ppm
Eggs set	683	693	647	760	≥961ppm >961ppm
Shell thickness (mm ± SD)	0.387	0.382	0.396	0.390	≥961ppm >961ppm
Viable embryos	621	668	609	729	≥961ppm >961ppm
Live 3-week embryos	613	664	604	720	≥961ppm >961ppm
No. of hatchling/hen	34.9	36.2	33.3	38.4	≥961ppm >961ppm
No. of normal hatchlings	524	579	499	614	≥961ppm >961ppm
Hatchling weight (g)	37	37	37	37	≥961ppm >961ppm
14-day old survivors	505	557	487	589	≥961ppm >961ppm
14-day old survivors weight (g)	275	279	282	282	≥961ppm >961ppm
Mean food consumption (g)	155.4	159.1	154.0	158.4	≥961ppm >961ppm
Weight of females and males (parent) at test initiation: at onset of egg laying: at test termination:	 males: 1246g females: 1084g males: 1233g females: 1084g males: 1247g females: 1224g	 males: 1226g females: 1077g males: 1274g females: 1091g males: 1272g females: 1236g	 males: 1257g females: 1064g males: 1306g females: 1091g males: 1288g females: 1252g	 males: 1224g females: 1052g males: 1259g females: 1081g males: 1270g females: 1236g	 ≥961ppm >961ppm

Parameter	Control	26.4 ppm	174 ppm	961 ppm	NOAEC/ LOAEC
Gross pathology (proportion of birds with pathological incidents)	22/30	24/32	19/30	24/32	≥961ppm >961ppm

C. REPORTED STATISTICS: Significant differences between the treatment groups and the control group for eggs laid, eggs cracked, eggs set, viable embryos, live three-week embryos, hatchlings, hatchling body weight, 14-day-old survivors, 14-day-old survivor body weight, egg weight, and eggshell thickness were determined using Dunnett's method. Percentage data were arcsin transformed and pens with mortality were excluded from statistical comparisons of reproductive data.

D. VERIFICATION OF STATISTICAL RESULTS:

Statistical Method: Analyses were conducted using "chicks.sas" (Ver. 2; Jan.1998), a SAS program provided by EFED/OPP/USEPA. For most endpoints, ANOVA was followed by Dunnett's multiple comparison test to determine whether statistically significant treatment effects were present. For male and female body weight, ANCOVA was substituted for ANOVA prior to performing Dunnett's test. For percent data, ANOVA and Dunnett's test were conducted on the arcsin transformed data. See Appendix I for output of reviewer's statistical verification.

NOAEC: ≥961 ppm
LOAEC: >961 ppm
Most Sensitive endpoint(s): None affected

E. STUDY DEFICIENCIES:

1. Environmental conditions during the adult and offspring phases slightly deviated from US EPA guideline recommendations. Photoperiod was 8 hours for the first 8 weeks, rather than 7 hours for the first 8 weeks. During the offspring phase, egg storage temperature and humidity were slightly lower (13.8 ± 1.1 °C and 45 ± 9%) than recommended (16°C and 65%). Hatching temperature was slightly lower (37.2°C) than recommended (39°C) and humidity was higher (76%) than recommended (70%). None of these deviations impacted the acceptability or the validity of the study.

2. Eggs were transferred to the hatcher one day later (day 24) than recommended (day 23). This deviation did not impact the acceptability or validity of the study.

3. Chemical analysis of the test diets revealed that the test substance was unstable at the 26.4 ppm level. Recovery of the test material from stability samples averaged 67% and 53% of nominal at day 0 and 7, respectively. Verification of the test substance at this dietary concentration yielded recoveries averaging 56% to 78% of nominal. However, recovery of test material at the two higher dietary concentrations (174 ppm and 961 ppm) yielded values >20% of nominal concentrations. Because the a.i. was shown to be stable

in the higher test concentrations (where treatment effects were shown), the low recovery of the a.i. in the lowest treatment level was not considered to have impacted acceptability or validity of the study.

4. The pre-laying exposure duration to test substance was two weeks shorter (8 weeks) than required by US EPA (10 weeks). This shorter exposure period to test substance prior to reproduction may have impacted the results and, so, affected the classification of the study.

5. A LOAEC and NOAEC were not identified because no reproductive toxicity was shown at the concentrations tested. The maximum application rate of H-18, 053 (Chlorsulfuron) was not reported in the study so it is unclear if higher levels need to be tested. This deviation affected the classification of the study. If this information is provided and it is determined that the levels tested were appropriate, the classification of this study may be upgraded.

F. REVIEWER'S COMMENTS:

Results of the reviewer's statistical analysis differed slightly from those of the study authors, however, conclusions reached regarding NOAEC and LOAEC values were identical. The reviewer detected reductions in the number of eggs not cracked/eggs laid at all levels, with a significant reduction at the 174 ppm treatment. The percent reduction from control for this treatment, however, was only 1%. Because this difference was so small and because the study authors did not detect this difference, it was not considered to be biologically significant. The study authors detected a significant increase in the number of eggs cracked at the 174 ppm treatment level. The study authors explained that low numbers of eggs cracked (particularly in the control group) contributed to the large relative differences and, because there were no effects of treatment on eggshell thickness, differences in eggs cracked were not considered to be treatment-related. The study authors also reported that the number of eggs cracked at all levels was within the range historically found for this endpoint. The reviewer did not detect significant differences for this endpoint and agreed with the study authors' explanation. As a result, the LOAEC and NOAEC were determined to be >961 ppm and ≥961 ppm, respectively. Because no reproductive toxicity was shown in this study and the levels tested cannot be confirmed by report of a maximum application rate, this study was classified as Supplemental.

The a.i. in the 26 ppm diet was shown to be unstable under test conditions and, thus, yielded low recovery. The study authors attributed this to either degradation or sorption of the a.i. to the basal diet. Because no adverse effect was detected, this was not considered to have impacted the acceptability or the validity of the study.

G. CONCLUSIONS: This study is scientifically sound, however some deviations were considered to have impacted the acceptability of the study. Birds were only exposed to the test substance for 8 weeks prior to egg laying and no LOAEC or NOAEC was determined because no toxicity was shown. As a result, this study is classified as Supplemental.

NOAEC: ≥961 mg a.i./L
LOAEC: >961 mg a.i./L Endpoint(s) Affected: None

III. REFERENCES:

American Society for Testic and Materials. 1986. Standard Practice for Conducting Reproductive Studies with Avian Species. E1062-86. Philadelphia, PA. 15 pp.

Anonymous, Pesticide Assessment Guidelines, FIFRA Subdivision E, Hazard Evaluation: Wildlife and Aquatic Organisms, subsection 71-4, Environmental Protection Agency, Office of Pesticide Programs, October, 1982.

National Institute of Health. 1985. Guide for the Care and Use of Laboratory Animals. Pub No 85-23. 83 pp.

Dunnett, C.W., "A Multiple Comparison Procedure for Comparing Several Treatments with a Control," Jour. Amer. Statis. Assoc. 50: 1096-1121, 1955.

Dunnett, C.W., "New Tables for Multiple Comparisons with a Control," Biometrics 20: 482-491, 1964.

APPENDIX I. OUTPUT OF REVIEWER'S STATISTICAL VERIFICATION:

42634002 18:17 Monday, June 25, 2001

Obs	TRT	EL	EC	ES	VE	LE	NH	HS	THIC	HATW	SURVW	FOOD	PREM	POSTM	PREF	POSTF
1	CONTROL	58	2	51	50	50	49	49	0.374	38	285	152.00	1261	1249	1120	1300
2	CONTROL	36	0	32	5	5	5	5	0.386	37	267	183.15	1398	1284	1096	1293
3	CONTROL	47	0	43	43	43	39	37	0.384	36	262	170.55	1191	1157	954	1133
4	CONTROL	58	2	49	48	48	42	40	0.390	38	279	130.90	1180	1235	1022	1260
5	CONTROL	65	0	59	44	43	36	34	0.373	35	257	135.55	1171	1253	931	1148
6	CONTROL	38	0	34	34	34	34	33	0.373	35	279	198.80	1329	1366	1079	1149
7	CONTROL	.	.	.	.	.	.	.	.	.	.	117.82	1315	.	1094	.
8	CONTROL	58	0	53	52	50	42	40	0.375	40	279	152.90	1201	1160	1222	1318
9	CONTROL	62	0	57	49	48	31	30	0.416	40	282	134.35	1430	1425	1137	1301
10	CONTROL	55	0	50	50	49	39	38	0.414	38	287	137.50	1086	1130	1257	1379
11	CONTROL	71	0	66	63	63	50	50	0.384	39	296	164.70	1194	1171	1145	1271
12	CONTROL	46	0	41	40	37	23	23	0.395	35	265	169.55	1200	1185	1073	1141
13	CONTROL	27	0	24	23	23	22	22	0.360	34	245	181.85	1115	1128	1055	1159
14	CONTROL	59	1	52	50	50	48	47	0.365	34	292	148.90	1265	1371	1155	1172
15	CONTROL	32	0	30	28	28	23	22	0.428	40	258	151.65	1327	1375	973	1230
16	CONTROL	46	0	42	42	42	41	35	0.394	33	257	120.05	1269	1215	1034	1099
17	TRT1	34	0	30	30	30	30	28	0.359	38	269	173.95	1286	1234	1054	1189
18	TRT1	61	1	55	54	54	51	48	0.365	35	252	175.90	1165	1190	1080	1245
19	TRT1	41	0	38	38	38	37	36	0.363	36	251	151.30	1133	1261	940	1206
20	TRT1	1	0	1	1	1	1	1	.	36	262	128.60	1092	1296	1042	1017
21	TRT1	57	0	52	50	50	49	46	0.383	37	276	163.50	1256	1375	1073	1150
22	TRT1	65	1	58	53	53	47	46	0.382	38	273	151.75	1391	1266	1244	1442
23	TRT1	57	1	50	42	42	24	24	0.418	37	282	169.50	1156	1121	1152	1203
24	TRT1	50	1	43	43	43	39	36	0.385	37	290	174.95	1243	1377	1051	1243
25	TRT1	51	2	44	42	42	39	38	0.375	38	282	139.50	1436	1243	1151	1355
26	TRT1	48	0	43	41	39	19	17	0.436	34	253	143.70	1260	1352	1039	1146
27	TRT1	64	3	56	54	54	50	49	0.350	35	296	185.30	1139	1154	1041	1103
28	TRT1	60	3	51	50	49	44	41	0.389	41	299	182.65	1296	1318	1151	1270
29	TRT1	53	0	49	49	49	46	46	0.366	36	251	145.85	1199	1345	953	1221
30	TRT1	51	1	45	45	44	38	38	0.388	38	299	165.45	1150	1172	1045	1402
31	TRT1	50	1	45	45	45	41	41	0.357	36	282	150.15	1196	1286	989	1135
32	TRT1	37	0	33	31	31	24	22	0.389	44	317	151.70	1218	1256	1223	1441
33	TRT2	56	0	51	47	45	44	44	0.366	37	266	126.45	1196	1121	906	1221
34	TRT2	51	2	45	42	42	36	35	0.395	34	301	130.00	1337	1357	1001	1264
35	TRT2	43	1	37	29	29	29	29	0.382	41	322	138.25	1251	1322	1196	1426
36	TRT2	48	1	42	41	41	27	27	0.430	38	258	122.40	1146	1118	1068	1205
37	TRT2	45	1	39	36	35	34	34	0.383	36	281	178.90	1371	1456	1139	1235
38	TRT2	57	2	47	44	44	42	42	0.403	38	279	136.45	1271	1200	1017	1144
39	TRT2	42	0	38	35	34	27	26	0.404	36	289	182.40	1374	1655	1043	1144
40	TRT2	54	1	48	47	47	30	27	0.390	38	280	169.25	1274	1255	1065	1209
41	TRT2	46	2	39	39	39	32	30	0.427	39	288	140.50	1176	1155	1053	1383
42	TRT2	53	2	46	43	43	39	38	0.407	37	283	148.95	1235	1286	1142	1318
43	TRT2	46	1	41	40	40	22	22	0.403	40	294	142.00	1174	1178	1063	1211
44	TRT2	42	0	38	36	36	28	27	0.377	33	266	130.85	1327	1347	1160	1302
45	TRT2	51	1	44	41	41	33	32	0.395	39	309	176.20	1287	1332	1081	1328
46	TRT2	35	0	31	30	30	21	21	0.385	36	271	185.90	1233	1299	1090	1296

47	TRT2	.	.	.	.	.	.	.	.	.	.	184.32	1272	.	1089	.
48	TRT2	67	1	61	59	58	55	53	0.393	35	266	172.10	1190	1234	918	1093
49	TRT3	58	2	52	51	51	49	47	0.370	37	292	129.95	1335	1531	1128	1205
50	TRT3	64	4	53	52	52	47	46	0.376	38	275	207.60	1231	1254	1140	1229

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Obs	LEVEL	EL	EC	ES	VE	LE	NH	HS	THICK	HATWT	SURVWT	FOOD	PRETM	POSTM	PREFT	POSTF
51	TRT3	41	0	37	37	37	29	29	0.408	37	272	137.35	1254	1192	971	1173
52	TRT3	45	0	40	38	38	32	28	0.390	38	276	200.50	1209	1213	1059	1192
53	TRT3	45	1	39	39	39	32	31	0.398	33	278	125.50	1033	1014	1029	1210
54	TRT3	67	0	61	58	58	50	50	0.413	35	78	123.85	1160	1192	1036	1239
55	TRT3	41	0	36	34	33	21	19	0.399	35	275	211.85	1276	1187	1073	1319
56	TRT3	50	1	43	41	41	28	27	0.428	34	259	144.00	1268	1377	1161	1306
57	TRT3	47	0	43	42	41	32	32	0.392	33	283	158.05	1146	1231	933	1079
58	TRT3	69	0	64	63	63	62	58	0.402	39	280	173.05	1343	1528	1135	1392
59	TRT3	49	0	45	42	41	36	34	0.373	39	306	143.60	1273	1337	1050	1249
60	TRT3	59	1	53	51	50	45	42	0.384	39	317	158.70	1410	1445	1016	1279
61	TRT3	59	1	54	52	51	40	38	0.359	36	285	192.65	1096	1101	964	1128
62	TRT3	61	0	56	56	56	50	50	0.376	37	288	160.05	1151	1290	1056	1250
63	TRT3	55	4	46	37	33	30	28	0.380	42	303	151.20	1237	1249	1061	1377
64	TRT3	42	0	38	36	36	31	30	0.395	34	241	115.95	1162	1186	1012	1146

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	LEVEL			
	CONTROL	TRT1	TRT2	TRT3
	Mean	Mean	Mean	Mean
EL	50.53,	48.75,	49.07,	53.25,
EC	0.33,	0.88,	1.00,	0.88,
ES	45.53,	43.31,	43.13,	47.50,
VE	41.40,	41.75,	40.60,	45.56,
LE	40.87,	41.50,	40.27,	45.00,
NH	34.93,	36.19,	33.27,	38.38,
HS	33.67,	34.81,	32.47,	36.81,
ES/EL (%)	90.10,	89.59,	87.89,	89.15,
(EL-EC)/EL (%)	99.43,	98.47,	98.02,	98.46,
VE/ES (%)	89.91,	96.81,	93.99,	95.83,
LE/VE (%)	98.82,	99.43,	99.23,	98.60,
NH/EL (%)	69.08,	76.01,	67.09,	71.16,
NH/ES (%)	76.73,	84.66,	76.41,	79.69,
NH/LE (%)	86.74,	87.44,	82.40,	84.27,
HS/ES (%)	73.92,	81.55,	74.64,	76.37,
HS/NH (%)	96.67,	96.16,	97.63,	95.72,
THICK	0.39,	0.38,	0.40,	0.39,
HATWT	36.80,	37.25,	37.13,	36.63,
SURVWT	272.67,	277.13,	283.53,	269.25,
FOOD	153.14,	159.61,	154.06,	158.37,
POSTM	1246.93,	1265.38,	1287.67,	1270.44,
POSTF	1223.53,	1235.50,	1251.93,	1235.81,

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---------- LEVEL=CONTROL ----------

The MEANS Procedure

Variable	Label	N	Mean	Std Dev	Coeff of Variation
EL		15	50.533	12.922	25.571
EC		15	0.333	0.724	217.124
ES		15	45.533	11.807	25.931
VE		15	41.400	14.171	34.230
LE		15	40.867	14.020	34.306
NH		15	34.933	12.337	35.317
HS		15	33.667	11.992	35.620
THICK		15	0.387	0.019	5.026
HATWT		15	36.800	2.396	6.512
SURVWT		15	272.667	15.022	5.509
FOOD		16	153.139	23.497	15.343
PREM		16	1245.750	96.228	7.724
POSTM		15	1246.933	97.585	7.826
PREF		16	1084.188	90.201	8.320
POSTF		15	1223.533	85.352	6.976
ES_EL	ES/EL (%)	15	90.095	2.320	2.575
NH_EL	NH/EL (%)	15	69.081	19.910	28.821
ENC_EL	(EL-EC)/EL (%)	15	99.427	1.246	1.253
VE_ES	VE/ES (%)	15	89.908	21.629	24.057
NH_ES	NH/ES (%)	15	76.725	22.374	29.161
HS_ES	HS/ES (%)	15	73.916	21.302	28.819
LE_VE	LE/VE (%)	15	98.823	2.131	2.156
NH_LE	NH/LE (%)	15	86.736	12.001	13.837
HS_NH	HS/NH (%)	15	96.666	3.769	3.899

---------- LEVEL=TRT1 ----------

Variable	Label	N	Mean	Std Dev	Coeff of Variation
EL		16	48.750	15.571	31.941
EC		16	0.875	1.025	117.108
ES		16	43.313	13.744	31.732
VE		16	41.750	13.082	31.334
LE		16	41.500	13.044	31.430
NH		16	36.188	13.566	37.487
HS		16	34.813	13.263	38.097
THICK		15	0.380	0.023	6.064
HATWT		16	37.250	2.436	6.539
SURVWT		16	277.125	20.053	7.236
FOOD		16	159.609	16.604	10.403
PREM		16	1226.000	93.962	7.664
POSTM		16	1265.375	78.186	6.179
PREF		16	1076.750	87.136	8.092

POSTF		16	1235.500	121.992	9.874
ES_EL	ES/EL (%)	16	89.593	3.522	3.931
NH_EL	NH/EL (%)	16	76.009	16.060	21.129

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---------- LEVEL=TRT1 ----------

The MEANS Procedure

Variable	Label	N	Mean	Std Dev	Coeff of Variation
ENC_EL	(EL-EC)/EL (%)	16	98.469	1.728	1.755
VE_ES	VE/ES (%)	16	96.808	4.328	4.471
NH_ES	NH/ES (%)	16	84.663	16.592	19.598
HS_ES	HS/ES (%)	16	81.545	16.668	20.440
LE_VE	LE/VE (%)	16	99.431	1.355	1.363
NH_LE	NH/LE (%)	16	87.442	14.656	16.761
HS_NH	HS/NH (%)	16	96.160	3.549	3.691

---------- LEVEL=TRT2 ----------

Variable	Label	N	Mean	Std Dev	Coeff of Variation
EL		15	49.067	7.796	15.889
EC		15	1.000	0.756	75.593
ES		15	43.133	7.120	16.507
VE		15	40.600	7.385	18.190
LE		15	40.267	7.206	17.895
NH		15	33.267	8.940	26.874
HS		15	32.467	8.766	26.999
THICK		15	0.396	0.017	4.371
HATWT		15	37.133	2.200	5.923
SURVWT		15	283.533	17.655	6.227
FOOD		16	154.058	23.372	15.171
PREM		16	1257.125	70.556	5.612
POSTM		15	1287.667	139.565	10.839
PREF		16	1064.438	78.729	7.396
POSTF		15	1251.933	91.709	7.325
ES_EL	ES/EL (%)	15	87.894	2.458	2.797
NH_EL	NH/EL (%)	15	67.091	9.328	13.904
ENC_EL	(EL-EC)/EL (%)	15	98.023	1.490	1.520
VE_ES	VE/ES (%)	15	93.993	4.987	5.306
NH_ES	NH/ES (%)	15	76.408	10.890	14.252
HS_ES	HS/ES (%)	15	74.635	11.149	14.938
LE_VE	LE/VE (%)	15	99.228	1.412	1.423
NH_LE	NH/LE (%)	15	82.402	13.953	16.933
HS_NH	HS/NH (%)	15	97.631	2.904	2.974

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LEVEL=TRT3

The MEANS Procedure

Variable	Label	N	Mean	Std Dev	Coeff of Variation
EL		16	53.250	9.434	17.716
EC		16	0.875	1.360	155.445
ES		16	47.500	8.794	18.514
VE		16	45.563	9.048	19.858
LE		16	45.000	9.402	20.894
NH		16	38.375	10.990	28.639
HS		16	36.813	10.815	29.378
THICK		16	0.390	0.018	4.581
HATWT		16	36.625	2.527	6.898
SURVWT		16	269.250	54.078	20.085
FOOD		16	158.366	30.821	19.462
PREM		16	1224.000	97.187	7.940
POSTM		16	1270.438	143.137	11.267
PREF		16	1051.500	65.840	6.262
POSTF		16	1235.813	85.725	6.937
ES_EL	ES/EL (%)	16	89.154	2.991	3.354
NH_EL	NH/EL (%)	16	71.158	10.405	14.622
ENC_EL	(EL-EC)/EL (%)	16	98.464	2.320	2.357
VE_ES	VE/ES (%)	16	95.825	4.625	4.826
NH_ES	NH/ES (%)	16	79.694	10.521	13.202
HS_ES	HS/ES (%)	16	76.368	10.946	14.334
LE_VE	LE/VE (%)	16	98.600	2.745	2.784
NH_LE	NH/LE (%)	16	84.265	9.281	11.014
HS_NH	HS/NH (%)	16	95.719	3.598	3.759

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                  1. ANALYSIS OF EGGS LAID
                  ************************

                     The GLM Procedure

                  Class Level Information

      Class         Levels    Values

      LEVEL              4    CONTROL TRT1 TRT2 TRT3


                Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

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1. ANALYSIS OF EGGS LAID

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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1. ANALYSIS OF EGGS LAID

****

The GLM Procedure

Dependent Variable: EL

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	200.430108	66.810036	0.47
Error	58	8160.666667	140.701149	
Corrected Total	61	8361.096774		

Source	Pr > F
Model	0.7010
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	EL Mean
0.023972	23.52619	11.86175	50.41935

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	200.4301075	66.8100358	0.47

Source	Pr > F
LEVEL	0.7010

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1. ANALYSIS OF EGGS LAID
****

The GLM Procedure
Least Squares Means

LEVEL	EL LSMEAN	LSMEAN Number
CONTROL	50.5333333	1
TRT1	48.7500000	2
TRT2	49.0666667	3
TRT3	53.2500000	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: EL

i/j	1	2	3	4
1		0.6773	0.7361	0.5265
2	0.6773		0.9410	0.2877
3	0.7361	0.9410		0.3305
4	0.5265	0.2877	0.3305	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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1. ANALYSIS OF EGGS LAID
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for EL

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	140.7011
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3	- CONTROL	2.717	-8.560	13.993
TRT3	- TRT2	4.183	-7.093	15.460
TRT3	- TRT1	4.500	-6.593	15.593
CONTROL	- TRT3	-2.717	-13.993	8.560
CONTROL	- TRT2	1.467	-9.990	12.923
CONTROL	- TRT1	1.783	-9.493	13.060
TRT2	- TRT3	-4.183	-15.460	7.093
TRT2	- CONTROL	-1.467	-12.923	9.990
TRT2	- TRT1	0.317	-10.960	11.593
TRT1	- TRT3	-4.500	-15.593	6.593
TRT1	- CONTROL	-1.783	-13.060	9.493
TRT1	- TRT2	-0.317	-11.593	10.960

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1. ANALYSIS OF EGGS LAID
****

The GLM Procedure

Dunnett's One-tailed t Tests for EL

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	140.7011
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3	- CONTROL	2.717	-Infinity	11.681
TRT2	- CONTROL	-1.467	-Infinity	7.641
TRT1	- CONTROL	-1.783	-Infinity	7.181

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         2. ANALYSIS OF EGGS CRACKED
         ***************************

              The GLM Procedure

           Class Level Information

Class          Levels    Values

LEVEL               4    CONTROL TRT1 TRT2 TRT3


         Number of observations     64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
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    2. ANALYSIS OF EGGS CRACKED
    ***************************

         The GLM Procedure

     Type I Estimable Functions

                          -Coefficients-
Effect                    LEVEL

Intercept                 0

LEVEL      CONTROL        L2
LEVEL      TRT1           L3
LEVEL      TRT2           L4
LEVEL      TRT3           -L2-L3-L4
```

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2. ANALYSIS OF EGGS CRACKED
****

The GLM Procedure

Dependent Variable: EC

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	4.00537634	1.33512545	1.32
Error	58	58.83333333	1.01436782	
Corrected Total	61	62.83870968		

Source	Pr > F
Model	0.2778
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	EC Mean
0.063741	130.0913	1.007158	0.774194

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	4.00537634	1.33512545	1.32

Source	Pr > F
LEVEL	0.2778

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2. ANALYSIS OF EGGS CRACKED

****

The GLM Procedure
Least Squares Means

LEVEL	EC LSMEAN	LSMEAN Number
CONTROL	0.33333333	1
TRT1	0.87500000	2
TRT2	1.00000000	3
TRT3	0.87500000	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: EC

i/j	1	2	3	4
1		0.1400	0.0750	0.1400
2	0.1400		0.7311	1.0000
3	0.0750	0.7311		0.7311
4	0.1400	1.0000	0.7311	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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2. ANALYSIS OF EGGS CRACKED
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for EC

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	1.014368
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2	- TRT1	0.1250	-0.8325	1.0825
TRT2	- TRT3	0.1250	-0.8325	1.0825
TRT2	- CONTROL	0.6667	-0.3061	1.6394
TRT1	- TRT2	-0.1250	-1.0825	0.8325
TRT1	- TRT3	0.0000	-0.9419	0.9419
TRT1	- CONTROL	0.5417	-0.4158	1.4991
TRT3	- TRT2	-0.1250	-1.0825	0.8325
TRT3	- TRT1	0.0000	-0.9419	0.9419
TRT3	- CONTROL	0.5417	-0.4158	1.4991
CONTROL	- TRT2	-0.6667	-1.6394	0.3061
CONTROL	- TRT1	-0.5417	-1.4991	0.4158
CONTROL	- TRT3	-0.5417	-1.4991	0.4158

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2. ANALYSIS OF EGGS CRACKED
****

The GLM Procedure

Dunnett's One-tailed t Tests for EC

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	1.014368
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2	- CONTROL	0.6667	-0.1066	Infinity
TRT1	- CONTROL	0.5417	-0.2195	Infinity
TRT3	- CONTROL	0.5417	-0.2195	Infinity

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3. ANALYSIS OF EGGS SET
****

The GLM Procedure

Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations 64

NOTE: Due to missing values, only 62 observations can be used in this analysis.

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3. ANALYSIS OF EGGS SET
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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3. ANALYSIS OF EGGS SET

The GLM Procedure

Dependent Variable: ES

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	201.305511	67.101837	0.58
Error	58	6654.904167	114.739727	
Corrected Total	61	6856.209677		

Source	Pr > F
Model	0.6274
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	ES Mean
0.029361	23.86357	10.71166	44.88710

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	201.3055108	67.1018369	0.58

Source	Pr > F
LEVEL	0.6274

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3. ANALYSIS OF EGGS SET
****

The GLM Procedure
Least Squares Means

LEVEL	ES LSMEAN	LSMEAN Number
CONTROL	45.5333333	1
TRT1	43.3125000	2
TRT2	43.1333333	3
TRT3	47.5000000	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: ES

i/j	1	2	3	4
1		0.5663	0.5419	0.6114
2	0.5663		0.9630	0.2734
3	0.5419	0.9630		0.2613
4	0.6114	0.2734	0.2613	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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3. ANALYSIS OF EGGS SET
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for ES

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	114.7397
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3 - CONTROL	1.967	-8.216	12.150
TRT3 - TRT1	4.188	-5.830	14.205
TRT3 - TRT2	4.367	-5.816	14.550
CONTROL - TRT3	-1.967	-12.150	8.216
CONTROL - TRT1	2.221	-7.962	12.404
CONTROL - TRT2	2.400	-7.946	12.746
TRT1 - TRT3	-4.188	-14.205	5.830
TRT1 - CONTROL	-2.221	-12.404	7.962
TRT1 - TRT2	0.179	-10.004	10.362
TRT2 - TRT3	-4.367	-14.550	5.816
TRT2 - CONTROL	-2.400	-12.746	7.946
TRT2 - TRT1	-0.179	-10.362	10.004

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3. ANALYSIS OF EGGS SET
****

The GLM Procedure

Dunnett's One-tailed t Tests for ES

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	114.7397
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3	- CONTROL	1.967	-Infinity	10.062
TRT1	- CONTROL	-2.221	-Infinity	5.874
TRT2	- CONTROL	-2.400	-Infinity	5.825

```
                                42634002     18:17 Monday, June 25, 2001
                    4. ANALYSIS OF VIABLE EMBRYOS
                    ****************************

                          The GLM Procedure

                       Class Level Information

             Class          Levels    Values

             LEVEL               4    CONTROL TRT1 TRT2 TRT3


                        Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

42634002 18:17 Monday, June 25, 2001
4. ANALYSIS OF VIABLE EMBRYOS
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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4. ANALYSIS OF VIABLE EMBRYOS
****

The GLM Procedure

Dependent Variable: VE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	230.330242	76.776747	0.60
Error	58	7370.137500	127.071336	
Corrected Total	61	7600.467742		

Source	Pr > F
Model	0.6149
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	VE Mean
0.030305	26.60452	11.27259	42.37097

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	230.3302419	76.7767473	0.60

Source	Pr > F
LEVEL	0.6149

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4. ANALYSIS OF VIABLE EMBRYOS
****

The GLM Procedure
Least Squares Means

LEVEL	VE LSMEAN	LSMEAN Number
CONTROL	41.4000000	1
TRT1	41.7500000	2
TRT2	40.6000000	3
TRT3	45.5625000	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: VE

i/j	1	2	3	4
1		0.9315	0.8466	0.3085
2	0.9315		0.7775	0.3427
3	0.8466	0.7775		0.2256
4	0.3085	0.3427	0.2256	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

42634002 18:17 Monday, June 25, 2001
4. ANALYSIS OF VIABLE EMBRYOS
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for VE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	127.0713
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3 - TRT1	3.813	-6.729	14.354
TRT3 - CONTROL	4.163	-6.554	14.879
TRT3 - TRT2	4.963	-5.754	15.679
TRT1 - TRT3	-3.813	-14.354	6.729
TRT1 - CONTROL	0.350	-10.366	11.066
TRT1 - TRT2	1.150	-9.566	11.866
CONTROL - TRT3	-4.163	-14.879	6.554
CONTROL - TRT1	-0.350	-11.066	10.366
CONTROL - TRT2	0.800	-10.088	11.688
TRT2 - TRT3	-4.963	-15.679	5.754
TRT2 - TRT1	-1.150	-11.866	9.566
TRT2 - CONTROL	-0.800	-11.688	10.088

42634002 18:17 Monday, June 25, 2001
4. ANALYSIS OF VIABLE EMBRYOS
****

The GLM Procedure

Dunnett's One-tailed t Tests for VE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	127.0713
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3 - CONTROL	4.163	-Infinity	12.681
TRT1 - CONTROL	0.350	-Infinity	8.869
TRT2 - CONTROL	-0.800	-Infinity	7.855

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5. ANALYSIS OF LIVE 3-WEEK EMBRYOS
****

The GLM Procedure

Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations 64

NOTE: Due to missing values, only 62 observations can be used in this analysis.

```
                42634002      18:17 Monday, June 25, 2001
 5. ANALYSIS OF LIVE 3-WEEK EMBRYOS
 **********************************

          The GLM Procedure

      Type I Estimable Functions

                          -Coefficients-
 Effect                   LEVEL

 Intercept                0

 LEVEL       CONTROL      L2
 LEVEL       TRT1         L3
 LEVEL       TRT2         L4
 LEVEL       TRT3         -L2-L3-L4
```

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5. ANALYSIS OF LIVE 3-WEEK EMBRYOS
****

The GLM Procedure

Dependent Variable: LE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	212.188172	70.729391	0.56
Error	58	7356.666667	126.839080	
Corrected Total	61	7568.854839		

Source	Pr > F
Model	0.6451
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	LE Mean
0.028034	26.84589	11.26229	41.95161

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	212.1881720	70.7293907	0.56

Source	Pr > F
LEVEL	0.6451

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5. ANALYSIS OF LIVE 3-WEEK EMBRYOS
****

The GLM Procedure
Least Squares Means

LEVEL	LE LSMEAN	LSMEAN Number
CONTROL	40.8666667	1
TRT1	41.5000000	2
TRT2	40.2666667	3
TRT3	45.0000000	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: LE

i/j	1	2	3	4
1		0.8762	0.8845	0.3114
2	0.8762		0.7617	0.3830
3	0.8845	0.7617		0.2470
4	0.3114	0.3830	0.2470	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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5. ANALYSIS OF LIVE 3-WEEK EMBRYOS
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for LE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	126.8391
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3 - TRT1	3.500	-7.032	14.032
TRT3 - CONTROL	4.133	-6.573	14.840
TRT3 - TRT2	4.733	-5.973	15.440
TRT1 - TRT3	-3.500	-14.032	7.032
TRT1 - CONTROL	0.633	-10.073	11.340
TRT1 - TRT2	1.233	-9.473	11.940
CONTROL - TRT3	-4.133	-14.840	6.573
CONTROL - TRT1	-0.633	-11.340	10.073
CONTROL - TRT2	0.600	-10.278	11.478
TRT2 - TRT3	-4.733	-15.440	5.973
TRT2 - TRT1	-1.233	-11.940	9.473
TRT2 - CONTROL	-0.600	-11.478	10.278

42634002 18:17 Monday, June 25, 2001
5. ANALYSIS OF LIVE 3-WEEK EMBRYOS
****

The GLM Procedure

Dunnett's One-tailed t Tests for LE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	126.8391
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3	- CONTROL	4.133	-Infinity	12.644
TRT1	- CONTROL	0.633	-Infinity	9.144
TRT2	- CONTROL	-0.600	-Infinity	8.047

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                    42634002     18:17 Monday, June 25, 2001
          6. ANALYSIS OF NORMAL HATCHLINGS
          *******************************

                The GLM Procedure

             Class Level Information

Class         Levels    Values

LEVEL              4    CONTROL TRT1 TRT2 TRT3

           Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

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                42634002     18:17 Monday, June 25, 2001
  6. ANALYSIS OF NORMAL HATCHLINGS
  ********************************

        The GLM Procedure

     Type I Estimable Functions

                        -Coefficients-
Effect                  LEVEL

Intercept               0

LEVEL      CONTROL      L2
LEVEL      TRT1         L3
LEVEL      TRT2         L4
LEVEL      TRT3         -L2-L3-L4
```

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6. ANALYSIS OF NORMAL HATCHLINGS
****

The GLM Procedure

Dependent Variable: NH

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	215.816801	71.938934	0.53
Error	58	7822.054167	134.863003	
Corrected Total	61	8037.870968		

Source	Pr > F
Model	0.6612
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	NH Mean
0.026850	32.49139	11.61305	35.74194

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	215.8168011	71.9389337	0.53

Source	Pr > F
LEVEL	0.6612

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6. ANALYSIS OF NORMAL HATCHLINGS
****

The GLM Procedure
Least Squares Means

LEVEL	NH LSMEAN	LSMEAN Number
CONTROL	34.9333333	1
TRT1	36.1875000	2
TRT2	33.2666667	3
TRT3	38.3750000	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: NH

i/j	1	2	3	4
1		0.7649	0.6957	0.4130
2	0.7649		0.4868	0.5962
3	0.6957	0.4868		0.2259
4	0.4130	0.5962	0.2259	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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6. ANALYSIS OF NORMAL HATCHLINGS
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for NH

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	134.863
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison			Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3	-	TRT1	2.188	-8.673	13.048
TRT3	-	CONTROL	3.442	-7.598	14.482
TRT3	-	TRT2	5.108	-5.932	16.148
TRT1	-	TRT3	-2.188	-13.048	8.673
TRT1	-	CONTROL	1.254	-9.786	12.294
TRT1	-	TRT2	2.921	-8.119	13.961
CONTROL	-	TRT3	-3.442	-14.482	7.598
CONTROL	-	TRT1	-1.254	-12.294	9.786
CONTROL	-	TRT2	1.667	-9.550	12.883
TRT2	-	TRT3	-5.108	-16.148	5.932
TRT2	-	TRT1	-2.921	-13.961	8.119
TRT2	-	CONTROL	-1.667	-12.883	9.550

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6. ANALYSIS OF NORMAL HATCHLINGS

The GLM Procedure

Dunnett's One-tailed t Tests for NH

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	134.863
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3	- CONTROL	3.442	-Infinity	12.218
TRT1	- CONTROL	1.254	-Infinity	10.030
TRT2	- CONTROL	-1.667	-Infinity	7.250

```
                    42634002     18:17 Monday, June 25, 2001
          7. ANALYSIS OF 14-DAY-OLD SURVIVORS
          ***********************************

                    The GLM Procedure

                  Class Level Information

          Class          Levels    Values

          LEVEL               4    CONTROL TRT1 TRT2 TRT3


                 Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
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                42634002      18:17 Monday, June 25, 2001
7. ANALYSIS OF 14-DAY-OLD SURVIVORS
**********************************

          The GLM Procedure

     Type I Estimable Functions

                          -Coefficients-
Effect                    LEVEL

Intercept                 0

LEVEL       CONTRCL       L2
LEVEL       TRT1          L3
LEVEL       TRT2          L4
LEVEL       TRT3          -L2-L3-L4
```

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7. ANALYSIS OF 14-DAY-OLD SURVIVORS
****

The GLM Procedure

Dependent Variable: HS

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	159.542204	53.180735	0.41
Error	58	7481.941667	128.998994	
Corrected Total	61	7641.483871		

Source	Pr > F
Model	0.7448
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	HS Mean
0.020878	32.93648	11.35777	34.48387

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	159.5422043	53.1807348	0.41

Source	Pr > F
LEVEL	0.7448

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7. ANALYSIS OF 14-DAY-OLD SURVIVORS
****

The GLM Procedure
Least Squares Means

LEVEL	HS LSMEAN	LSMEAN Number
CONTROL	33.6666667	1
TRT1	34.8125000	2
TRT2	32.4666667	3
TRT3	36.8125000	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: HS

i/j	1	2	3	4
1		0.7799	0.7733	0.4440
2	0.7799		0.5677	0.6203
3	0.7733	0.5677		0.2914
4	0.4440	0.6203	0.2914	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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7. ANALYSIS OF 14-DAY-OLD SURVIVORS
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for HS

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	128.999
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3 - TRT1	2.000	-8.622	12.622
TRT3 - CONTROL	3.146	-7.651	13.943
TRT3 - TRT2	4.346	-6.451	15.143
TRT1 - TRT3	-2.000	-12.622	8.622
TRT1 - CONTROL	1.146	-9.651	11.943
TRT1 - TRT2	2.346	-8.451	13.143
CONTROL - TRT3	-3.146	-13.943	7.651
CONTROL - TRT1	-1.146	-11.943	9.651
CONTROL - TRT2	1.200	-9.770	12.170
TRT2 - TRT3	-4.346	-15.143	6.451
TRT2 - TRT1	-2.346	-13.143	8.451
TRT2 - CONTROL	-1.200	-12.170	9.770

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7. ANALYSIS OF 14-DAY-OLD SURVIVORS
****

The GLM Procedure

Dunnett's One-tailed t Tests for HS

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	128.999
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT3 - CONTROL	3.146	-Infinity	11.729
TRT1 - CONTROL	1.146	-Infinity	9.729
TRT2 - CONTROL	-1.200	-Infinity	7.521

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8. ANALYSIS OF EGGS SET/EGGS LAID
****

The GLM Procedure

Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations 64

NOTE: Due to missing values, only 62 observations can be used in this analysis.

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                42634002      18:17 Monday, June 25, 2001
8. ANALYSIS OF EGGS SET/EGGS LAID
*********************************

          The GLM Procedure

      Type I Estimable Functions

                          -Coefficients-
Effect                    LEVEL

Intercept                 0

LEVEL       CONTROL       L2
LEVEL       TRT1          L3
LEVEL       TRT2          L4
LEVEL       TRT3          -L2-L3-L4
```

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8. ANALYSIS OF EGGS SET/EGGS LAID
****

The GLM Procedure

Dependent Variable: RESPONSE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	44.0506385	14.6835462	1.31
Error	58	649.4432454	11.1972973	
Corrected Total	61	693.4938839		

Source	Pr > F
Model	0.2794
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	RESPONSE Mean
0.063520	4.710257	3.346236	71.04148

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	44.05063849	14.68354616	1.31

Source	Pr > F
LEVEL	0.2794

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8. ANALYSIS OF EGGS SET/EGGS LAID
****

The GLM Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	LSMEAN Number
CONTROL	71.7320541	1
TRT1	71.8082679	2
TRT2	69.6970767	3
TRT3	70.8876684	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: RESPONSE

i/j	1	2	3	4
1		0.9497	0.1012	0.4854
2	0.9497		0.0845	0.4396
3	0.1012	0.0845		0.3263
4	0.4854	0.4396	0.3263	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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8. ANALYSIS OF EGGS SET/EGGS LAID
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for RESPONSE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	11.1973
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1 - CONTROL	0.076	-3.105	3.257
TRT1 - TRT3	0.921	-2.209	4.050
TRT1 - TRT2	2.111	-1.070	5.292
CONTROL - TRT1	-0.076	-3.257	3.105
CONTROL - TRT3	0.844	-2.337	4.025
CONTROL - TRT2	2.035	-1.197	5.267
TRT3 - TRT1	-0.921	-4.050	2.209
TRT3 - CONTROL	-0.844	-4.025	2.337
TRT3 - TRT2	1.191	-1.990	4.372
TRT2 - TRT1	-2.111	-5.292	1.070
TRT2 - CONTROL	-2.035	-5.267	1.197
TRT2 - TRT3	-1.191	-4.372	1.990

42634002 18:17 Monday, June 25, 2001
8. ANALYSIS OF EGGS SET/EGGS LAID
****

The GLM Procedure

Dunnett's One-tailed t Tests for RESPONSE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	11.1973
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1	- CONTROL	0.076	-Infinity	2.605
TRT3	- CONTROL	-0.844	-Infinity	1.684
TRT2	- CONTROL	-2.035	-Infinity	0.534

```
                    42634002     18:17 Monday, June 25, 2001
          9. ANALYSIS OF VIABLE EMBRYOS/EGGS SETS
          ***************************************

                      The GLM Procedure

                  Class Level Information

          Class          Levels    Values

          LEVEL               4    CONTROL TRT1 TRT2 TRT3

                   Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

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9. ANALYSIS OF VIABLE EMBRYOS/EGGS SETS
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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9. ANALYSIS OF VIABLE EMBRYOS/EGGS SETS
****

The GLM Procedure

Dependent Variable: RESPONSE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	385.404300	128.468100	1.23
Error	58	6049.497534	104.301682	
Corrected Total	61	6434.901833		

Source	Pr > F
Model	0.3064
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	RESPONSE Mean
0.059893	12.91888	10.21282	79.05345

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	385.4042995	128.4680998	1.23

Source	Pr > F
LEVEL	0.3064

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9. ANALYSIS OF VIABLE EMBRYOS/EGGS SETS

The GLM Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	LSMEAN Number
CONTROL	76.4691144	1
TRT1	82.6123191	2
TRT2	76.8940423	3
TRT3	79.9418482	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: RESPONSE

i/j	1	2	3	4
1		0.0996	0.9097	0.3480
2	0.0996		0.1247	0.4625
3	0.9097	0.1247		0.4097
4	0.3480	0.4625	0.4097	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

42634002 18:17 Monday, June 25, 2001
9. ANALYSIS OF VIABLE EMBRYOS/EGGS SETS
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for RESPONSE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	104.3017
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1 - TRT3	2.670	-6.880	12.221
TRT1 - TRT2	5.718	-3.991	15.427
TRT1 - CONTROL	6.143	-3.566	15.852
TRT3 - TRT1	-2.670	-12.221	6.880
TRT3 - TRT2	3.048	-6.661	12.757
TRT3 - CONTROL	3.473	-6.236	13.182
TRT2 - TRT1	-5.718	-15.427	3.991
TRT2 - TRT3	-3.048	-12.757	6.661
TRT2 - CONTROL	0.425	-9.439	10.289
CONTROL - TRT1	-6.143	-15.852	3.566
CONTROL - TRT3	-3.473	-13.182	6.236
CONTROL - TRT2	-0.425	-10.289	9.439

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9. ANALYSIS OF VIABLE EMBRYOS/EGGS SETS
****

The GLM Procedure

Dunnett's One-tailed t Tests for RESPONSE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	104.3017
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1	- CONTROL	6.143	-Infinity	13.861
TRT3	- CONTROL	3.473	-Infinity	11.191
TRT2	- CONTROL	0.425	-Infinity	8.266

```
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      10. ANALYSIS OF LIVE 3-WEEK EMBRYOS/VIABLE EMBRYOS
      ************************************************

                     The GLM Procedure

                  Class Level Information

       Class         Levels    Values

       LEVEL              4    CONTROL TRT1 TRT2 TRT3


                 Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

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10. ANALYSIS OF LIVE 3-WEEK EMBRYOS/VIABLE EMBRYOS
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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10. ANALYSIS OF LIVE 3-WEEK EMBRYOS/VIABLE EMBRYOS

****

The GLM Procedure

Dependent Variable: RESPONSE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	41.202403	13.734134	0.55
Error	58	1444.082205	24.897969	
Corrected Total	61	1485.284608		

Source	Pr > F
Model	0.6491
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	RESPONSE Mean
0.027740	5.734757	4.989786	87.00956

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	41.20240284	13.73413428	0.55

Source	Pr > F
LEVEL	0.6491

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10. ANALYSIS OF LIVE 3-WEEK EMBRYOS/VIABLE EMBRYOS
****

The GLM Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	LSMEAN Number
CONTROL	86.4839814	1
TRT1	88.1230970	2
TRT2	87.3841119	3
TRT3	86.0376051	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: RESPONSE

i/j	1	2	3	4
1		0.3645	0.6232	0.8043
2	0.3645		0.6818	0.2420
3	0.6232	0.6818		0.4558
4	0.8043	0.2420	0.4558	.

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

42634002 18:17 Monday, June 25, 2001
10. ANALYSIS OF LIVE 3-WEEK EMBRYOS/VIABLE EMBRYOS
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for RESPONSE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	24.89797
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1 - TRT2	0.739	-4.005	5.483
TRT1 - CONTROL	1.639	-3.104	6.383
TRT1 - TRT3	2.085	-2.581	6.752
TRT2 - TRT1	-0.739	-5.483	4.005
TRT2 - CONTROL	0.900	-3.919	5.720
TRT2 - TRT3	1.347	-3.397	6.090
CONTROL - TRT1	-1.639	-6.383	3.104
CONTROL - TRT2	-0.900	-5.720	3.919
CONTROL - TRT3	0.446	-4.297	5.190
TRT3 - TRT1	-2.085	-6.752	2.581
TRT3 - TRT2	-1.347	-6.090	3.397
TRT3 - CONTROL	-0.446	-5.190	4.297

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10. ANALYSIS OF LIVE 3-WEEK EMBRYOS/VIABLE EMBRYOS
****

The GLM Procedure

Dunnett's One-tailed t Tests for RESPONSE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	24.89797
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1 - CONTROL	1.639	-Infinity	5.410
TRT2 - CONTROL	0.900	-Infinity	4.731
TRT3 - CONTROL	-0.446	-Infinity	3.324

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      11. ANALYSIS OF NORMAL HATCHLINGS/3-WEEK LIVE EMBRYOS
      ****************************************************

                        The GLM Procedure

                    Class Level Information

         Class          Levels    Values

         LEVEL               4    CONTROL TRT1 TRT2 TRT3


                   Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

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11. ANALYSIS OF NORMAL HATCHLINGS/3-WEEK LIVE EMBRYOS
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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11. ANALYSIS OF NORMAL HATCHLINGS/3-WEEK LIVE EMBRYOS
****

The GLM Procedure

Dependent Variable: RESPONSE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	279.576925	93.192308	0.76
Error	58	7107.911977	122.550207	
Corrected Total	61	7387.488902		

Source	Pr > F
Model	0.5209
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	RESPONSE Mean
0.037845	15.90834	11.07024	69.58764

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	279.5769251	93.1923084	0.76

Source	Pr > F
LEVEL	0.5209

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11. ANALYSIS OF NORMAL HATCHLINGS/3-WEEK LIVE EMBRYOS
****

The GLM Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	LSMEAN Number
CONTROL	71.3200851	1
TRT1	72.0469635	2
TRT2	67.4271802	3
TRT3	67.5295723	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: RESPONSE

i/j	1	2	3	4
1		0.8557	0.3395	0.3447
2	0.8557		0.2503	0.2532
3	0.3395	0.2503		0.9796
4	0.3447	0.2532	0.9796	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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11. ANALYSIS OF NORMAL HATCHLINGS/3-WEEK LIVE EMBRYOS

The GLM Procedure

Tukey's Studentized Range (HSD) Test for RESPONSE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	122.5502
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1 - CONTROL	0.727	-9.797	11.251
TRT1 - TRT3	4.517	-5.835	14.870
TRT1 - TRT2	4.620	-5.904	15.144
CONTROL - TRT1	-0.727	-11.251	9.797
CONTROL - TRT3	3.791	-6.733	14.314
CONTROL - TRT2	3.893	-6.799	14.585
TRT3 - TRT1	-4.517	-14.870	5.835
TRT3 - CONTROL	-3.791	-14.314	6.733
TRT3 - TRT2	0.102	-10.421	10.626
TRT2 - TRT1	-4.620	-15.144	5.904
TRT2 - CONTROL	-3.893	-14.585	6.799
TRT2 - TRT3	-0.102	-10.626	10.421

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11. ANALYSIS OF NORMAL HATCHLINGS/3-WEEK LIVE EMBRYOS
****

The GLM Procedure

Dunnett's One-tailed t Tests for RESPONSE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	122.5502
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1	- CONTROL	0.727	-Infinity	9.093
TRT3	- CONTROL	-3.791	-Infinity	4.575
TRT2	- CONTROL	-3.893	-Infinity	4.607

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        12. ANALYSIS OF NORMAL HATCHLINGS/EGGS LAID
        *******************************************

                     The GLM Procedure

                  Class Level Information

      Class          Levels    Values

      LEVEL               4    CONTROL TRT1 TRT2 TRT3


                Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

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12. ANALYSIS OF NORMAL HATCHLINGS/EGGS LAID
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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12. ANALYSIS OF NORMAL HATCHLINGS/EGGS LAID
****

The GLM Procedure

Dependent Variable: RESPONSE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	416.202564	138.734188	1.45
Error	58	5555.206531	95.779423	
Corrected Total	61	5971.409095		

Source	Pr > F
Model	0.2381
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	RESPONSE Mean
0.069699	16.86022	9.786696	58.04608

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	416.2025640	138.7341880	1.45

Source	Pr > F
LEVEL	0.2381

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12. ANALYSIS OF NORMAL HATCHLINGS/EGGS LAID
****

The GLM Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	LSMEAN Number
CONTROL	56.7887917	1
TRT1	62.1307292	2
TRT2	55.1605242	3
TRT3	57.8453431	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: RESPONSE

i/j	1	2	3	4
1		0.1343	0.6504	0.7650
2	0.1343		0.0523	0.2205
3	0.6504	0.0523		0.4484
4	0.7650	0.2205	0.4484	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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12. ANALYSIS OF NORMAL HATCHLINGS/EGGS LAID
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for RESPONSE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	95.77942
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1 - TRT3	4.285	-4.867	13.438
TRT1 - CONTROL	5.342	-3.962	14.646
TRT1 - TRT2	6.970	-2.333	16.274
TRT3 - TRT1	-4.285	-13.438	4.867
TRT3 - CONTROL	1.057	-8.247	10.360
TRT3 - TRT2	2.685	-6.619	11.989
CONTROL - TRT1	-5.342	-14.646	3.962
CONTROL - TRT3	-1.057	-10.360	8.247
CONTROL - TRT2	1.628	-7.824	11.081
TRT2 - TRT1	-6.970	-16.274	2.333
TRT2 - TRT3	-2.685	-11.989	6.619
TRT2 - CONTROL	-1.628	-11.081	7.824

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12. ANALYSIS OF NORMAL HATCHLINGS/EGGS LAID
****

The GLM Procedure

Dunnett's One-tailed t Tests for RESPONSE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	95.77942
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1	- CONTROL	5.342	-Infinity	12.738
TRT3	- CONTROL	1.057	-Infinity	8.453
TRT2	- CONTROL	-1.628	-Infinity	5.886

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13. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/NORMAL HATCHLINGS
****

The GLM Procedure

Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations 64

NOTE: Due to missing values, only 62 observations can be used in this analysis.

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13. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/NORMAL HATCHLINGS
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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13. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/NORMAL HATCHLINGS

****

The GLM Procedure

Dependent Variable: RESPONSE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	117.943591	39.314530	0.86
Error	58	2665.270921	45.952947	
Corrected Total	61	2783.214511		

Source	Pr > F
Model	0.4694
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	RESPONSE Mean
0.042377	8.318875	6.778860	81.48770

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	117.9435906	39.3145302	0.86

Source	Pr > F
LEVEL	0.4694

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13. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/NORMAL HATCHLINGS

****

The GLM Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	LSMEAN Number
CONTROL	81.6876516	1
TRT1	80.8756767	2
TRT2	83.6511137	3
TRT3	79.8840842	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: RESPONSE

i/j	1	2	3	4
1		0.7401	0.4309	0.4621
2	0.7401		0.2593	0.6806
3	0.4309	0.2593		0.1275
4	0.4621	0.6806	0.1275	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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13. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/NORMAL HATCHLINGS
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for RESPONSE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	45.95295
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2	- CONTROL	1.963	-4.584	8.511
TRT2	- TRT1	2.775	-3.669	9.220
TRT2	- TRT3	3.767	-2.677	10.211
CONTROL	- TRT2	-1.963	-8.511	4.584
CONTROL	- TRT1	0.812	-5.632	7.256
CONTROL	- TRT3	1.804	-4.641	8.248
TRT1	- TRT2	-2.775	-9.220	3.669
TRT1	- CONTROL	-0.812	-7.256	5.632
TRT1	- TRT3	0.992	-5.348	7.331
TRT3	- TRT2	-3.767	-10.211	2.677
TRT3	- CONTROL	-1.804	-8.248	4.641
TRT3	- TRT1	-0.992	-7.331	5.348

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13. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/NORMAL HATCHLINGS
****

The GLM Procedure

Dunnett's One-tailed t Tests for RESPONSE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	45.95295
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2	- CONTROL	1.963	-Infinity	7.168
TRT1	- CONTROL	-0.812	-Infinity	4.311
TRT3	- CONTROL	-1.804	-Infinity	3.319

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14. ANALYSIS OF EGGS NOT CRACKED/EGGS LAID
****

The GLM Procedure

Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations 64

NOTE: Due to missing values, only 62 observations can be used in this analysis.

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14. ANALYSIS OF EGGS NOT CRACKED/EGGS LAID
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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14. ANALYSIS OF EGGS NOT CRACKED/EGGS LAID
****

The GLM Procedure

Dependent Variable: RESPONSE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	187.635659	62.545220	2.62
Error	58	1384.488590	23.870493	
Corrected Total	61	1572.124249		

Source	Pr > F
Model	0.0593
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	RESPONSE Mean
0.119352	5.725354	4.885744	85.33522

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	187.6356591	62.5452197	2.62

Source	Pr > F
LEVEL	0.0593

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14. ANALYSIS OF EGGS NOT CRACKED/EGGS LAID
****

The GLM Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	LSMEAN Number
CONTROL	88.0389738	1
TRT1	84.7628287	2
TRT2	83.1355268	3
TRT3	85.4350728	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: RESPONSE

i/j	1	2	3	4
1		0.0671	0.0080	0.1435
2	0.0671		0.3579	0.6986
3	0.0080	0.3579		0.1955
4	0.1435	0.6986	0.1955	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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14. ANALYSIS OF EGGS NOT CRACKED/EGGS LAID
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for RESPONSE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	23.87049
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
CONTROL - TRT3	2.604	-2.041	7.249	
CONTROL - TRT1	3.276	-1.368	7.921	
CONTROL - TRT2	4.903	0.185	9.622	***
TRT3 - CONTROL	-2.604	-7.249	2.041	
TRT3 - TRT1	0.672	-3.897	5.241	
TRT3 - TRT2	2.300	-2.345	6.944	
TRT1 - CONTROL	-3.276	-7.921	1.368	
TRT1 - TRT3	-0.672	-5.241	3.897	
TRT1 - TRT2	1.627	-3.017	6.272	
TRT2 - CONTROL	-4.903	-9.622	-0.185	***
TRT2 - TRT3	-2.300	-6.944	2.345	
TRT2 - TRT1	-1.627	-6.272	3.017	

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14. ANALYSIS OF EGGS NOT CRACKED/EGGS LAID
****

The GLM Procedure

Dunnett's One-tailed t Tests for RESPONSE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	23.87049
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits		
TRT3	- CONTROL	-2.604	-Infinity	1.088	
TRT1	- CONTROL	-3.276	-Infinity	0.416	
TRT2	- CONTROL	-4.903	-Infinity	-1.152	***

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          15. ANALYSIS OF NORMAL HATCHLINGS/EGGS SET
          ******************************************

                      The GLM Procedure

                   Class Level Information

          Class          Levels    Values

          LEVEL               4    CONTROL TRT1 TRT2 TRT3


                    Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

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15. ANALYSIS OF NORMAL HATCHLINGS/EGGS SET
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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15. ANALYSIS OF NORMAL HATCHLINGS/EGGS SET
****

The GLM Procedure

Dependent Variable: RESPONSE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	588.840268	196.280089	1.39
Error	58	8186.960544	141.154492	
Corrected Total	61	8775.800812		

Source	Pr > F
Model	0.2548
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	RESPONSE Mean
0.067098	18.34580	11.88085	64.76058

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	588.8402679	196.2800893	1.39

Source	Pr > F
LEVEL	0.2548

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15. ANALYSIS OF NORMAL HATCHLINGS/EGGS SET
****

The GLM Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	LSMEAN Number
CONTROL	63.5789122	1
TRT1	69.7298316	2
TRT2	61.4603163	3
TRT3	63.9931291	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: RESPONSE

i/j	1	2	3	4
1		0.1551	0.6271	0.9231
2	0.1551		0.0577	0.1773
3	0.6271	0.0577		0.5554
4	0.9231	0.1773	0.5554	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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15. ANALYSIS OF NORMAL HATCHLINGS/EGGS SET
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for RESPONSE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	141.1545
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1 - TRT3	5.737	-5.374	16.848
TRT1 - CONTROL	6.151	-5.144	17.445
TRT1 - TRT2	8.270	-3.025	19.564
TRT3 - TRT1	-5.737	-16.848	5.374
TRT3 - CONTROL	0.414	-10.880	11.709
TRT3 - TRT2	2.533	-8.762	13.827
CONTROL - TRT1	-6.151	-17.445	5.144
CONTROL - TRT3	-0.414	-11.709	10.880
CONTROL - TRT2	2.119	-9.357	13.594
TRT2 - TRT1	-8.270	-19.564	3.025
TRT2 - TRT3	-2.533	-13.827	8.762
TRT2 - CONTROL	-2.119	-13.594	9.357

42634002 18:17 Monday, June 25, 2001
15. ANALYSIS OF NORMAL HATCHLINGS/EGGS SET
****

The GLM Procedure

Dunnett's One-tailed t Tests for RESPONSE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	141.1545
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1	- CONTROL	6.151	-Infinity	15.129
TRT3	- CONTROL	0.414	-Infinity	9.393
TRT2	- CONTROL	-2.119	-Infinity	7.004

```
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        16. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/EGGS SET
        ***************************************************

                        The GLM Procedure

                     Class Level Information

          Class         Levels    Values

          LEVEL              4    CONTROL TRT1 TRT2 TRT3

                    Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

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16. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/EGGS SET
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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16. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/EGGS SET
****

The GLM Procedure

Dependent Variable: RESPONSE

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	394.569445	131.523148	1.11
Error	58	6876.686995	118.563569	
Corrected Total	61	7271.256440		

Source	Pr > F
Model	0.3528
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	RESPONSE Mean
0.054264	17.48651	10.88869	62.26907

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	394.5694449	131.5231483	1.11

Source	Pr > F
LEVEL	0.3528

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16. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/EGGS SET
****

The GLM Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	LSMEAN Number
CONTROL	60.6774328	1
TRT1	66.4828224	2
TRT2	60.2405286	3
TRT3	61.4492468	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: RESPONSE

i/j	1	2	3	4
1		0.1434	0.9129	0.8443
2	0.1434		0.1161	0.1962
3	0.9129	0.1161		0.7585
4	0.8443	0.1962	0.7585	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

42634002 18:17 Mcnday, June 25, 2001
16. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/EGGS SET
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for RESPONSE

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	118.5636
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison			Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1	-	TRT3	5.034	-5.149	15.217
TRT1	-	CONTROL	5.805	-4.546	16.157
TRT1	-	TRT2	6.242	-4.109	16.594
TRT3	-	TRT1	-5.034	-15.217	5.149
TRT3	-	CONTROL	0.772	-9.579	11.123
TRT3	-	TRT2	1.209	-9.143	11.560
CONTROL	-	TRT1	-5.805	-16.157	4.546
CONTROL	-	TRT3	-0.772	-11.123	9.579
CONTROL	-	TRT2	0.437	-10.080	10.954
TRT2	-	TRT1	-6.242	-16.594	4.109
TRT2	-	TRT3	-1.209	-11.560	9.143
TRT2	-	CONTROL	-0.437	-10.954	10.080

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16. ANALYSIS OF 14-DAY HATCHLING SURVIVORS/EGGS SET

****

The GLM Procedure

Dunnett's One-tailed t Tests for RESPONSE

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	118.5636
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1	- CONTROL	5.805	-Infinity	14.034
TRT3	- CONTROL	0.772	-Infinity	9.001
TRT2	- CONTROL	-0.437	-Infinity	7.924

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17. ANALYSIS OF EGGSHELL THICKNESS
****

The GLM Procedure

Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations 64

NOTE: Due to missing values, only 61 observations can be used in this analysis.

```
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 17. ANALYSIS OF EGGSHELL THICKNESS
 *********************************

         The GLM Procedure

     Type I Estimable Functions

                          -Coefficients-
 Effect                   LEVEL

 Intercept                0

 LEVEL      CONTROL       L2
 LEVEL      TRT1          L3
 LEVEL      TRT2          L4
 LEVEL      TRT3          -L2-L3-L4
```

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17. ANALYSIS OF EGGSHELL THICKNESS
****

The GLM Procedure

Dependent Variable: THICK

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	0.00190788	0.00063596	1.67
Error	57	0.02174137	0.00038143	
Corrected Total	60	0.02364925		

Source	Pr > F
Model	0.1842
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	THICK Mean
0.080674	5.026965	0.019530	0.388508

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	0.00190788	0.00063596	1.67

Source	Pr > F
LEVEL	0.1842

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17. ANALYSIS OF EGGSHELL THICKNESS
****

The GLM Procedure
Least Squares Means

LEVEL	THICK LSMEAN	LSMEAN Number
CONTROL	0.38740000	1
TRT1	0.38033333	2
TRT2	0.39600000	3
TRT3	0.39018750	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: THICK

i/j	1	2	3	4
1		0.3259	0.2328	0.6928
2	0.3259		0.0321	0.1658
3	0.2328	0.0321		0.4111
4	0.6928	0.1658	0.4111	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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17. ANALYSIS OF EGGSHELL THICKNESS
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for THICK

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	57
Error Mean Square	0.000381
Critical Value of Studentized Range	3.74268

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2	- TRT3	0.005812	-0.012763	0.024388
TRT2	- CONTROL	0.008600	-0.010273	0.027473
TRT2	- TRT1	0.015667	-0.003206	0.034540
TRT3	- TRT2	-0.005812	-0.024388	0.012763
TRT3	- CONTROL	0.002787	-0.015788	0.021363
TRT3	- TRT1	0.009854	-0.008722	0.028430
CONTROL	- TRT2	-0.008600	-0.027473	0.010273
CONTROL	- TRT3	-0.002787	-0.021363	0.015788
CONTROL	- TRT1	0.007067	-0.011806	0.025940
TRT1	- TRT2	-0.015667	-0.034540	0.003206
TRT1	- TRT3	-0.009854	-0.028430	0.008722
TRT1	- CONTROL	-0.007067	-0.025940	0.011806

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17. ANALYSIS OF EGGSHELL THICKNESS
****

The GLM Procedure

Dunnett's One-tailed t Tests for THICK

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	57
Error Mean Square	0.000381
Critical Value of Dunnett's t	2.10485

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2 - CONTROL	0.008600	-Infinity	0.023611
TRT3 - CONTROL	0.002787	-Infinity	0.017562
TRT1 - CONTROL	-0.007067	-Infinity	0.007944

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18. ANALYSIS OF HATCHLING WEIGHT
****

The GLM Procedure

Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations 64

NOTE: Due to missing values, only 62 observations can be used in this analysis.

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18. ANALYSIS OF HATCHLING WEIGHT
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTROL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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18. ANALYSIS OF HATCHLING WEIGHT
****

The GLM Procedure

Dependent Variable: HATWT

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	3.9715054	1.3238351	0.23
Error	58	332.8833333	5.7393678	
Corrected Total	61	336.8548387		

Source	Pr > F
Model	0.8747
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	HATWT Mean
0.011790	6.483337	2.395698	36.95161

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	3.97150538	1.32383513	0.23

Source	Pr > F
LEVEL	0.8747

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18. ANALYSIS OF HATCHLING WEIGHT
****

The GLM Procedure
Least Squares Means

LEVEL	HATWT LSMEAN	LSMEAN Number
CONTROL	36.8000000	1
TRT1	37.2500000	2
TRT2	37.1333333	3
TRT3	36.6250000	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: HATWT

i/j	1	2	3	4
1		0.6032	0.7046	0.8397
2	0.6032		0.8927	0.4636
3	0.7046	0.8927		0.5572
4	0.8397	0.4636	0.5572	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

42634002 18:17 Monday, June 25, 2001
18. ANALYSIS OF HATCHLING WEIGHT
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for HATWT

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	5.739368
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1 - TRT2	0.1167	-2.1608	2.3941
TRT1 - CONTROL	0.4500	-1.8275	2.7275
TRT1 - TRT3	0.6250	-1.6154	2.8654
TRT2 - TRT1	-0.1167	-2.3941	2.1608
TRT2 - CONTROL	0.3333	-1.9806	2.6472
TRT2 - TRT3	0.5083	-1.7691	2.7858
CONTROL - TRT1	-0.4500	-2.7275	1.8275
CONTROL - TRT2	-0.3333	-2.6472	1.9806
CONTROL - TRT3	0.1750	-2.1025	2.4525
TRT3 - TRT1	-0.6250	-2.8654	1.6154
TRT3 - TRT2	-0.5083	-2.7858	1.7691
TRT3 - CONTROL	-0.1750	-2.4525	2.1025

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18. ANALYSIS OF HATCHLING WEIGHT
****

The GLM Procedure

Dunnett's One-tailed t Tests for HATWT

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	5.739368
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1	- CONTROL	0.4500	-Infinity	2.2605
TRT2	- CONTROL	0.3333	-Infinity	2.1728
TRT3	- CONTROL	-0.1750	-Infinity	1.6355

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19. ANALYSIS OF 14-DAY SURVIVOR WEIGHT
****

The GLM Procedure

Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations 64

NOTE: Due to missing values, only 62 observations can be used in this analysis.

```
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19. ANALYSIS OF 14-DAY SURVIVOR WEIGHT
************************************

          The GLM Procedure

     Type I Estimable Functions

                          -Coefficients-
 Effect                   LEVEL

 Intercept                0

 LEVEL      CONTROL       L2
 LEVEL      TRT1          L3
 LEVEL      TRT2          L4
 LEVEL      TRT3          -L2-L3-L4
```

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19. ANALYSIS OF 14-DAY SURVIVOR WEIGHT
****

The GLM Procedure

Dependent Variable: SURVWT

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	1755.42527	585.14176	0.59
Error	58	57421.81667	990.03132	
Corrected Total	61	59177.24194		

Source	Pr > F
Model	0.6234
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	SURVWT Mean
0.029664	11.41829	31.46476	275.5645

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	1755.425269	585.141756	0.59

Source	Pr > F
LEVEL	0.6234

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19. ANALYSIS OF 14-DAY SURVIVOR WEIGHT
****

The GLM Procedure
Least Squares Means

LEVEL	SURVWT LSMEAN	LSMEAN Number
CONTROL	272.666667	1
TRT1	277.125000	2
TRT2	283.533333	3
TRT3	269.250000	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: SURVWT

i/j	1	2	3	4
1		0.6948	0.3482	0.7636
2	0.6948		0.5731	0.4818
3	0.3482	0.5731		0.2116
4	0.7636	0.4818	0.2116	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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19. ANALYSIS OF 14-DAY SURVIVOR WEIGHT
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for SURVWT

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	990.0313
Critical Value of Studentized Range	3.74075

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2 - TRT1	6.41	-23.50	36.32
TRT2 - CONTROL	10.87	-19.52	41.26
TRT2 - TRT3	14.28	-15.63	44.20
TRT1 - TRT2	-6.41	-36.32	23.50
TRT1 - CONTROL	4.46	-25.45	34.37
TRT1 - TRT3	7.88	-21.55	37.30
CONTROL - TRT2	-10.87	-41.26	19.52
CONTROL - TRT1	-4.46	-34.37	25.45
CONTROL - TRT3	3.42	-26.50	33.33
TRT3 - TRT2	-14.28	-44.20	15.63
TRT3 - TRT1	-7.88	-37.30	21.55
TRT3 - CONTROL	-3.42	-33.33	26.50

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19. ANALYSIS OF 14-DAY SURVIVOR WEIGHT

The GLM Procedure

Dunnett's One-tailed t Tests for SURVWT

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	58
Error Mean Square	990.0313
Critical Value of Dunnett's t	2.10273

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2	- CONTROL	10.87	-Infinity	35.03
TRT1	- CONTROL	4.46	-Infinity	28.24
TRT3	- CONTROL	-3.42	-Infinity	20.36

```
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          20. ANALYSIS OF FOOD CONSUMPTION
          ********************************

                The GLM Procedure

             Class Level Information

Class         Levels    Values

LEVEL              4    CONTRCL TRT1 TRT2 TRT3

          Number of observations    64
```

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20. ANALYSIS OF FOOD CONSUMPTION
****

The GLM Procedure

Type I Estimable Functions

Effect		-Coefficients- LEVEL
Intercept		0
LEVEL	CONTRCL	L2
LEVEL	TRT1	L3
LEVEL	TRT2	L4
LEVEL	TRT3	-L2-L3-L4

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20. ANALYSIS OF FOOD CONSUMPTION
****

The GLM Procedure

Dependent Variable: FOOD

Source	DF	Sum of Squares	Mean Square	F Value
Model	3	483.85393	161.28464	0.28
Error	60	34860.16856	581.00281	
Corrected Total	63	35344.02249		

Source	Pr > F
Model	0.8413
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	FOOD Mean
0.013690	15.42233	24.10400	156.2928

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	483.8539312	161.2846437	0.28

Source	Pr > F
LEVEL	0.8413

42634002 18:17 Monday, June 25, 2001
20. ANALYSIS OF FOOD CONSUMPTION
****

The GLM Procedure
Least Squares Means

LEVEL	FOOD LSMEAN	LSMEAN Number
CONTROL	153.138750	1
TRT1	159.609375	2
TRT2	154.057500	3
TRT3	158.365625	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: FOOD

i/j	1	2	3	4
1		0.4507	0.9145	0.5420
2	0.4507		0.5172	0.8845
3	0.9145	0.5172		0.6150
4	0.5420	0.8845	0.6150	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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20. ANALYSIS OF FOOD CONSUMPTION
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for FOOD

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	60
Error Mean Square	581.0028
Critical Value of Studentized Range	3.73709
Minimum Significant Difference	22.52

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1 - TRT3	1.244	-21.276	23.763
TRT1 - TRT2	5.552	-16.968	28.072
TRT1 - CONTROL	6.471	-16.049	28.990
TRT3 - TRT1	-1.244	-23.763	21.276
TRT3 - TRT2	4.308	-18.212	26.828
TRT3 - CONTROL	5.227	-17.293	27.747
TRT2 - TRT1	-5.552	-28.072	16.968
TRT2 - TRT3	-4.308	-26.828	18.212
TRT2 - CONTROL	0.919	-21.601	23.438
CONTROL - TRT1	-6.471	-28.990	16.049
CONTROL - TRT3	-5.227	-27.747	17.293
CONTROL - TRT2	-0.919	-23.438	21.601

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20. ANALYSIS OF FOOD CONSUMPTION
****

The GLM Procedure

Dunnett's One-tailed t Tests for FOOD

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	60
Error Mean Square	581.0028
Critical Value of Dunnett's t	2.10392
Minimum Significant Difference	17.93

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT1	- CONTROL	6.471	-Infinity	24.400
TRT3	- CONTROL	5.227	-Infinity	23.157
TRT2	- CONTROL	0.919	-Infinity	18.848

```
                    42634002     18:17 Monday, June 25, 2001
         21. COVARIATE ANALYSIS OF MALE BODY WEIGHT
         ****************************************

                      The GLM Procedure

                   Class Level Information

      Class          Levels    Values

      LEVEL               4    CONTROL TRT1 TRT2 TRT3


                 Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
```

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21. COVARIATE ANALYSIS OF MALE BODY WEIGHT
****

The GLM Procedure

Dependent Variable: POSTM

Source	DF	Sum of Squares	Mean Square	F Value
Model	4	415460.6348	103865.1587	14.72
Error	57	402230.0749	7056.6680	
Corrected Total	61	817690.7097		

Source	Pr > F
Model	<.0001
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	POSTM Mean
0.508090	6.626942	84.00398	1267.613

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	12654.7555	4218.2518	0.60
PREM	1	402805.8793	402805.8793	57.08

Source	Pr > F
LEVEL	0.6191
PREM	<.0001

Source	DF	Type III SS	Mean Square	F Value
LEVEL	3	13436.4210	4478.8070	0.63
PREM	1	402805.8793	402805.8793	57.08

Source	Pr > F
LEVEL	0.5957
PREM	<.0001

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****

The GLM Procedure
Least Squares Means

LEVEL	POSTM LSMEAN	Standard Error	Pr > |t|	LSMEAN Number
CONTROL	1242.64020	21.69718	<.0001	1
TRT1	1274.91147	21.03889	<.0001	2
TRT2	1269.66578	21.82020	<.0001	3
TRT3	1281.80167	21.05479	<.0001	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: POSTM

i/j	1	2	3	4
1		0.2905	0.3828	0.2009
2	0.2905		0.8637	0.8174
3	0.3828	0.8637		0.6916
4	0.2009	0.8174	0.6916	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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21. COVARIATE ANALYSIS OF MALE BODY WEIGHT
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for POSTM

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	57
Error Mean Square	7056.668
Critical Value of Studentized Range	3.74268

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2 - TRT3	17.23	-62.67	97.13
TRT2 - TRT1	22.29	-57.61	102.19
TRT2 - CONTROL	40.73	-40.44	121.91
TRT3 - TRT2	-17.23	-97.13	62.67
TRT3 - TRT1	5.06	-73.54	83.66
TRT3 - CONTROL	23.50	-56.40	103.40
TRT1 - TRT2	-22.29	-102.19	57.61
TRT1 - TRT3	-5.06	-83.66	73.54
TRT1 - CONTROL	18.44	-61.46	98.34
CONTROL - TRT2	-40.73	-121.91	40.44
CONTROL - TRT3	-23.50	-103.40	56.40
CONTROL - TRT1	-18.44	-98.34	61.46

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21. COVARIATE ANALYSIS OF MALE BODY WEIGHT
****

The GLM Procedure

Dunnett's One-tailed t Tests for POSTM

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	57
Error Mean Square	7056.668
Critical Value of Dunnett's t	2.10350

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2 - CONTROL	40.73	-Infinity	105.26
TRT3 - CONTROL	23.50	-Infinity	87.01
TRT1 - CONTROL	18.44	-Infinity	81.95

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        22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT
        ********************************************

                       The GLM Procedure

                    Class Level Information

        Class         Levels    Values

        LEVEL              4    CONTRCL TRT1 TRT2 TRT3


                    Number of observations    64

NOTE: Due to missing values, only 62 observations can be used in this
      analysis.
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22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT
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The GLM Procedure

Dependent Variable: POSTF

Source	DF	Sum of Squares	Mean Square	F Value
Model	4	234754.2413	58688.5603	10.31
Error	57	324561.6458	5694.0640	
Corrected Total	61	559315.8871		

Source	Pr > F
Model	<.0001
Error	
Corrected Total	

R-Square	Coeff Var	Root MSE	POSTF Mean
0.419717	6.101834	75.45902	1236.661

Source	DF	Type I SS	Mean Square	F Value
LEVEL	3	6116.7829	2038.9276	0.36
PREF	1	228637.4584	228637.4584	40.15

Source	Pr > F
LEVEL	0.7835
PREF	<.0001

Source	DF	Type III SS	Mean Square	F Value
LEVEL	3	17753.1726	5917.7242	1.04
PREF	1	228637.4584	228637.4584	40.15

Source	Pr > F
LEVEL	0.3822
PREF	<.0001

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22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT
****

The GLM Procedure
Least Squares Means

LEVEL	POSTF LSMEAN	Standard Error	Pr > |t|	LSMEAN Number
CONTROL	1212.06948	19.56725	<.0001	1
TRT1	1229.20886	18.89086	<.0001	2
TRT2	1256.27994	19.49551	<.0001	3
TRT3	1248.77605	18.97536	<.0001	4

Least Squares Means for effect LEVEL
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: POSTF

i/j	1	2	3	4
1		0.5301	0.1156	0.1856
2	0.5301		0.3233	0.4692
3	0.1156	0.3233		0.7833
4	0.1856	0.4692	0.7833	

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT
****

The GLM Procedure

Tukey's Studentized Range (HSD) Test for POSTF

NOTE: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	57
Error Mean Square	5694.064
Critical Value of Studentized Range	3.74268

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2 - TRT3	16.12	-55.65	87.89
TRT2 - TRT1	16.43	-55.34	88.21
TRT2 - CONTROL	28.40	-44.52	101.32
TRT3 - TRT2	-16.12	-87.89	55.65
TRT3 - TRT1	0.31	-70.29	70.92
TRT3 - CONTROL	12.28	-59.49	84.05
TRT1 - TRT2	-16.43	-88.21	55.34
TRT1 - TRT3	-0.31	-70.92	70.29
TRT1 - CONTROL	11.97	-59.81	83.74
CONTROL - TRT2	-28.40	-101.32	44.52
CONTROL - TRT3	-12.28	-84.05	59.49
CONTROL - TRT1	-11.97	-83.74	59.81

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22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT
****

The GLM Procedure

Dunnett's One-tailed t Tests for POSTF

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	57
Error Mean Square	5694.064
Critical Value of Dunnett's t	2.10350

Comparisons significant at the 0.05 level are indicated by ***.

LEVEL Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
TRT2	- CONTROL	28.40	-Infinity	86.36
TRT3	- CONTROL	12.28	-Infinity	69.33
TRT1	- CONTROL	11.97	-Infinity	69.01