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Oral Rangefinder Study of T-3146CoC in Pregnant Rabbits

Experiment No.:	0681RB0331
Conducted At:	Safety Evaluation Laboratory Riker Laboratories, Inc. St. Paul, Minnesota
Dosing Period:	July 16, 1981 to September 4, 1981
Study Director:	E. G. Gortner

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Introduction

This oral rangefinder study[a] was conducted to determine the upper dose level of T-3141CoC[b] for a subsequent oral teratology study in rabbits. The study was sponsored by 3M Commercial Chemical Division, St. Paul, Minnesota and was conducted by the Safety Evaluation Laboratory, Riker Laboratories, Inc., St. Paul, Minnesota. The study was conducted in accordance with the Safety Evaluation Laboratory's Standard Operating Procedures for such studies. The storage location for the raw data and a copy of the final report is maintained in the Safety Evaluation Laboratory's record archives.

Methods

Forty-eight sexually mature New Zealand White/Minikin derived female rabbits from Dutchland Laboratories, Inc., were used in the study. Each female was injected with 1 mg of pituitary luteinizing hormone via the ear vein before breeding. The does were then artificially inseminated with 0.5 ml of pooled diluted semen. The day of insemination was designated day 0 of pregnancy.

Eight groups of 6 animals were dosed with T-3141CoC dissolved daily in distilled water at 300, 150, 100, 50, 25 or 10 mg/kg/day. There were two sets of compound administration groups. Concurrent control animals dosed at 0 mg/kg/day T-3141CoC in distilled water were present with both groups. All animals were dosed during days 6 through 18 of gestation by oral intubation with a syringe and rubber catheter using a constant dose volume of 1 ml/kg. The rabbits were housed individually in hanging stainless steel cages with wire mesh floors in a temperature and humidity controlled room. Purina Rabbit Chow and water were available ad libitum. The lights were on a 12 hour light/dark cycle. All animals were observed daily from day 3 of gestation until termination for abnormal clinical signs. Body weights were recorded on days 3, 6, 9, 12, 15, 18 and 29 of gestation and the rabbits were dosed accordingly. All surviving animals were euthanatized on gestational day 29 and each uterus, including its contents, was examined immediately to determine if the animal was pregnant.

Results and Discussion

First Group of Pregnant Rabbits (300, 150, 100 or 0 mg/kg/day T-3141CoC)

The oral administration of T-3141CoC at doses of 300, 150 or 100 mg/kg/day resulted in compound-related deaths. All 300 mg/kg/day rabbits died within the first two days of dosing (Table 1). All 150 mg/kg/day rabbits died within the first four days of dosing. The two surviving 100 mg/kg/day rabbits were terminated on the fifth day of dosing after four rabbits had already died. The compound was very toxic to pregnant rabbits at levels of 100 mg/kg/day and higher. The resulting deaths occurred rapid enough to preclude body weight

[a] Riker Experiment No. 0681RB0331
[b] FC-143

effects, clinical signs and often necropsy findings. All of the dose levels used in the first group of pregnant rabbits were too high to be tolerated during a rabbit teratology study. Therefore, a second group of rabbits was dosed at lower compound levels.

Second Group of Pregnant Rabbits (50, 25, 10 and 0 mg/kg/day T-3141CoC)

The oral administration of T-3141CoC at doses of 50, 25 or 10 mg/kg/day did not result in compound-related deaths. One death in the 0 mg/kg/day group was due to an intubation error. No signs of either abortion or resorption were observed in the study. One 25 and one 0 mg/kg/day rabbit each had necropsy findings of abortion or resorption. A body weight loss occurred in all three compound levels between days six and nine of gestation. The loss in body weight coincided with clinical signs of either no or few stools indicating the rabbits were off feed. The body weight changes of all three compound levels between days six and nine of gestation were significantly different from the 0 mg/kg/day group (Table 2). The compound-treated rabbits recovered from the initial weight loss caused by compound administration and by day 18 of gestation were gaining more body weight than the 0 mg/kg/day group.

Conclusion

The objective of determining an upper dose level for an oral rabbit teratology study was met with the second group of rabbits. The results suggest that the 50 mg/kg/day dose level would be an appropriate high dose in a rabbit teratology study because a toxic effect of body weight loss occurred in the absence of compound-related deaths.

Table 1

Oral Rangefinder Study of T-3141CoC in Rabbits
Death by Gestational Day

Dose Group	Gestational Day 6	7	8	9	10	11	12	13	14	15	29	Number of rabbits that died / Total
0 mg/kg/day	0	0	0	1[a]	0	0	0	0	0	0	0	1/6
300 mg/kg/day	0	6	0	0	0	0	0	0	0	0	0	6/6
150 mg/kg/day	0	0	2	2	2	0	0	0	0	0	0	6/6
100 mg/kg/day	1[b]	1	0	1	1	1	0	0	0	0	0	5/6
0 mg/kg/day	0	1[a]	0	0	0	0	0	0	0	0	0	1/6
50 mg/kg/day	0	0	0	0	0	0	0	0	0	0	0	0/6
25 mg/kg/day	0	0	0	0	0	0	0	0	0	0	0	0/6
10 mg/kg/day	0	0	0	0	0	0	0	0	0	0	0	0/6

[a] Intubation error
[b] Animal broke back and was terminated from study

Table 2

Oral Rangefinder Study of T-3141CoC in Rabbits
Mean Body Weight Gain or Loss

DAY	6	9	12	15	18	29
0 mg/kg/day	28	14	31	58	24	157
STAN. DEV	41.1	25.4	49.6	49.6	34.3	98.4
50 mg/kg/day	47	-68[a]	23	36	55	219
STAN. DEV	18.0	37.4	52.8	89.9	96.9	45.3
25 mg/kg/day	36	-108[a]	-7	60	73	213
STAN. DEV	15.4	106.4	118.1	78.4	47.1	91.5
10 mg/kg/day	54	-31[a]	12	13	37	188
STAN. DEV	23.6	62.6	28.0	72.8	20.5	62.7

[a] Significantly lower than the control (Dunnett's t test $p < 0.05$)

Appendix I

Oral Rangefinder Study of T-3141CoC in Rabbits
Individual Body Weights (g) and Mean Body Weights
With Standard Deviations

DAY	3	6	9	12	15	18	29
0 MG/KG/DAY							
N1B	2147	2355	2396	0	0	0	0	0
N1B	2148	2103	2170	2156	2155	2202	2235	2348
N1B	2149	2177	2127	2180	2278	2309	2319	2362
N1B	2150	2469	2495	2516	2585	2704	2687	2961
N1B	2163	2457	2511	2522	2522	2618	2636	2881
N1B	2164	2174	2205	2204	2191	2187	2263	2371
MEAN	2289	2317	2316	2346	2404	2428	2585
STAN. DEV	158.3	170.8	186.5	195.7	241.2	216.0	308.5

DAY	3	6	9	12	15	18	29
50 MG/KG/DAY							
O1B	2151	1985	2036	1975	2010	1920	1780	2029
O1B	2152	2574	2632	2589	2627	2622	2707	2955
O1B	2153	2595	2643	2501	2527	2560	2684	2893
O1B	2154	2118	2163	2110	2029	2204	2299	2463
O1B	2165	2523	2588	2545	2595	2685	2756	3029
O1B	2166	1878	1891	1821	1889	1901	1993	2162
MEAN	2279	2326	2257	2280	2315	2370	2589
STAN. DEV	322.4	335.5	329.8	337.5	355.2	413.9	431.7

-Appendix I (Concluded)

Oral Rangefinder Study of T-3141CoC in Rabbits
Individual Body Weights (g) and Mean Body Weights
With Standard Deviations

DAY	3	6	9	12	15	18	29
25 MG/KG/DAY							
P1B	2155	1929	1972	1903	1951	2008	2055	2286
P1B	2156	2100	2141	2102	2103	2142	2164	2458
P1B	2157	1725	1753	1715	1681	1707	1816	2037
P1B	2158	2149	2210	1927	1745	1941	1984	2205
P1B	2167	2080	2098	2071	2014	1973	2121	2393
P1B	2168	2900	2926	2727	2901	2982	3051	3087
MEAN	2147	2183	2074	2066	2126	2199	2411
STAN. DEV	399.8	397.8	348.4	439.5	442.7	435.2	362.6

DAY	3	6	9	12	15	18	29
10 MG/KG/DAY							
Q1B	2159	1699	1746	1766	1772	1834	1879	2089
Q1B	2160	2123	2206	2058	2049	1951	1969	2222
Q1B	2161	1804	1825	1841	1844	1887	1938	2153
Q1B	2162	2141	2221	2168	2200	2271	2320	2532
Q1B	2169	2585	2630	2620	2603	2542	2595	2669
Q1B	2170	2088	2135	2117	2175	2233	2237	2400
MEAN	2073	2127	2095	2107	2120	2156	2344
STAN. DEV	310.4	317.7	301.8	298.0	275.1	277.6	228.3

DISTRIBUTION LIST

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