ity following electroshock is genetically determined and may be related to factors which render certain strains susceptible to audiogenic seizures.

Summary. An acute lethal effect from electroshock convulsions has been demonstrated to occur among mice of the DBA, CFW and C57 strains, and to a lesser extent the ICR strains. CF#1 mice were rarely susceptible. Death was ascribed to failure to resume breathing and appeared to be dependent upon occurrence of maximal seizure and independent of intensity of current employed to elicit the seizure. The mechanisms involved were not revealed, but attention was directed to the finding that strains susceptible to post-seizure electroshock death are identical to those which are susceptible to audiogenic seizures.

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Gastrointestinal Absorption of Mg^{28} in Rabbits.* (24604)

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In a previous study a tracer dose of Mg^{28} was administered orally to human beings(1). Less than 10% of the radioactivity was recovered in the urine within 72 hours. Fecal excretion within 120 hours accounted for 59 to 88% of administered dose. The low renal excretion of magnesium was thought to be due to poor gastrointestinal absorption. The following study was undertaken to extend these observations in rabbits more clearly to delineate the metabolism of orally administered magnesium.

Material and methods. Domestic rabbits of mixed breeds were placed in individual metabolism cages and fed a stock diet of compressed pellets. Water was given without restrictions, except as indicated. About 200 μcuries of radioactive magnesium, Mg^{28}, contained in 30 to 35 meq of magnesium, was received weekly as acid solution of $MgCl_2$. This material was neutralized with 1N NaOH and the precipitate dissolved in 1N H_2SO_4. A slightly acid solution of $MgSO_4$ containing 5 meq of Mg in 150 ml of distilled water was fed to each rabbit. Radioactivity assays of tissues, urine and feces were made with a well scintillation counter and a scaler. External body surveys were performed with a directional scintillation counter attached to recording counting ratemeter. At least 10,000 counts were made on each sample. All determinations were corrected for physical decay. *Plan of experiments*. Each group of 6 rabbits was treated slightly differently, as follows: (a) In Exp. I, food and water were withheld for 17 hours. Water containing Mg^{28} was then left in feed pans for 24 hours. After

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TABLE I. Excretion of Mg^{28} in Rabbits Starved 36 Hours, Fed Mg^{28}, and Starved Thereafter.

	Urinary excretion (% ingested dose)					Fecal excretion (% ingested dose)		
				Cumulative				
Rabbit No.	0-24 hr	24-48 hr	48-72 hr	48 hr	72 hr	0-24 hr	24-48 hr	48-72 hr
7	5.08*					.0		
8	2.83	6.60†		9.43		.0	.0	
9	4.24*					3.5		
10	.78	4.82	2.96	5.60	8.56	.0	.0	.0
11	2.94	3.48†		6.42		.0	9.39	
12	6.97	7.06	2.48	14.03	16.51	.0	.0	.0
Mean	3.81	5.49	2.72	8.87	12.54	0.59	2.35	.0

* Killed for tissue analysis at 24 hr. † Killed for tissue analysis at 48 hr.

its removal no food or water were given thereafter. Feces and urine were collected at 24 and 48 hours and analyzed for radioactivity. (b) Exp. II. Six rabbits were starved for 36 hours. Water containing Mg^{28} was then left in feed pans for 24 hours and subsequently removed. The animals were starved thereafter. Urine and feces were collected at 24, 48 and 72 hours. External surveys of animals were performed at 24 and 48 hours. Two animals were killed by air embolism for tissue analysis at 24 and 48 hours. (c) Exp. III. Six animals were starved 48 hours; Mg^{28} was exhibited for 6 hours. The rabbits were then given food and water without restriction. External surveys were conducted at 24 and 48 hours. Pooled urine and feces were collected at 24, 48 and 72 hours.

Results. Exp. I. A mean of 1.3% of the ingested dose was excreted in urine in the first 24 hours; 8.8% during the second 24 hours. Fecal excretion during the first 24 hours was negligible; during the second 24 hour period it averaged 17.6%.

Exp. II. (Table I). The 24 hour urinary excretion of Mg^{28} averaged 3.8%. Only 1 of 6 rabbits had feces containing 3.5% of the ingested dose. External survey of the animals at 24 hours revealed maximal concentration of radioactivity over the midabdomen. Two animals (#7 and 9) were killed by air embolism and the entire gut removed; the remaining carcass contained minimal radioactivity. The caecum and its contents contained 78% of ingested dose; washed caecal tissue contained minimal radioactivity. 97% of ingested radioactivity was recovered in the carcass and the excreta of the one animal so studied (#7).

During 24 to 48 hours, urinary excretion of Mg^{28} in 4 rabbits averaged 5.5%; mean cumulative excretion for the first 48 hours was 8.9%. Only 1 of 4 rabbits had feces containing 9.4%. Maximal concentration of radioactivity was found on external survey over the midabdomen. Two animals (#8 and 11) were killed at 48 hours; most radioactivity was found in the contents of colon. The remaining 2 animals (#10 and 12) revealed an average urinary excretion during 48 to 72 hours of 2.7%. Mean cumulative 72 hour urinary excretion was 12.5%. No feces were excreted by either animal during this period. External survey at 72 hours revealed maximal concentration of radioactivity over the midabdomen.

Exp. III. (Table II). Mean urinary excretion during the first 24 hours was 7.3%; during the second period 3.9%, and from 48 to 72 hours, 1.8%. Mean cumulative renal excretions of radioactivity at 48 and 72 hours were 11.2 and 13.0% respectively. Mean fecal excretion of Mg^{28} at 24, 48 and 72 hours was respectively 46.5, 10.3 and 4.3%. External surveys over these animals at 24 and 48 hours revealed low concentrations of radioactivity over midabdomen, which were only slightly higher than those over the skull, *i.e.* the next highest concentration.

Comments. In most previous studies of gastrointestinal absorption of magnesium in man(2), large doses of Mg, on the order of 160 meq, have been administered; urinary recovery within 24 hours of 43% has been reported(2). Similar results have been reported in normal dogs, rabbits(2) and rats(3). In our study of magnesium metabolism in man (1) in which a more physiologic dose *i.e.* 3 to 10 meq of magnesium labeled with Mg^{28} was

TABLE II. Excretion of Mg^{28} in Rabbits Starved 48 Hours, Fed Mg^{28}, and Given Food and Water Thereafter.

Rabbit No.	Urinary excretion (% ingested dose) 0-24 hr	24-48 hr	48-72 hr	Cumulative 48 hr	Cumulative 72 hr	Fecal excretion (% ingested dose) 0-24 hr	24-48 hr	48-72 hr	Cumulative
13	4.95	3.68	3.27	8.63	11.90	21.05	11.24	11.85	44.14
14	10.18	4.07	2.54	14.25	16.79	43.77	12.85	6.66	63.28
15	6.07	2.46	.73	8.53	9.26	53.85	6.42	1.48	61.75
16	9.25	5.85	2.19	15.10	17.29	48.15	10.44	.74	59.33
17	5.15	2.41	1.03	7.56	8.59	49.12	5.62	1.48	56.22
18	8.04	4.91	1.14	12.95	14.09	63.15	15.26	3.70	82.11
Mean	7.27	3.90	1.82	11.17	12.99	46.52	10.31	4.32	61.14

administered as a single dose orally, a maximum of 6.3% of administered radioactivity was recovered in urine within 24 hours; these findings agreed with those of Pritchard(4). Our results in normal rabbits starved from 17 to 48 hours and given a small amount of magnesium orally are similar to those previously found in human subjects(1). The mean cumulative renal excretion of Mg^{28} during the first 48 hours after exhibition of the isotope in 3 experimental groups was similar, between 10 and 12.5% of ingested quantity, irrespective of length of starvation prior to exhibition of magnesium and regardless of whether food and water were given to animals after administration of Mg^{28}.

Fecal excretion of radioactivity was low when starvation was continued and maximum concentration of radioactivity was localized in the fecal content of caecum and colon. When food was given immediately after ingestion of Mg^{28}, fecal excretion of radioactivity increased markedly, whereas survey studies over the abdomen revealed an inverse decrease in concentration of radioactivity. The fact that duration of retention of Mg^{28} in the caecum and colon did not appreciably affect urinary excretion of radioactivity suggests that absorption of magnesium from the large gut was minimal and, indirectly, that most absorption of magnesium into the body had occurred *via* upper part of gastrointestinal tract.

Summary. Three groups of normal rabbits were starved for 17 to 48 hours prior to feeding of a dilute solution of $MgSO_4$. Mean urinary excretion of radioactivity in 48 hours in the 3 groups ranged between 10 and 12.5%. The high concentration of radioactivity detected in the midabdomen by external survey was traced to fecal content of caecum and colon. Fecal excretion was increased by resumption of feeding after exhibition of Mg^{28}, and concentration of radioactivity over the midabdomen decreased. These results suggest that poor gastrointestinal absorption of magnesium accounts for its low renal excretion. Absorption does not appear to occur from the large intestine.

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