

TABLE I.
Urinary Excretion in Phloridzinized Rats.
Mg./100 gm. rat/day.

		——1st day of fast——					2nd and 3rd day of fast average			
	No. of Animals	Days Post-Oper.	Dextrose	Nitrogen	Ketones	D/N	Dextrose	Nitrogen	Ketones	D/N
Intact	14	—	624	165	76	3.85	478	148	229	3.18
Adrenalectomized	8	4	345	114	23	3.05	178	68	41	2.65
Both Adrenal Medullæ Removed	3	16	730	189	35	3.86	485	164	126	2.98

The failure of the adrenalectomized animals to excrete larger amounts can not be laid to a general debilitating effect of the operation for at the commencement of the experimental period these animals had all gained slightly (aver. 4 gm.) over the pre-operative weight and their rectal temperatures were not below 37°C.; furthermore, as previously shown¹ such rats when fed have normal glycogen stores.

The D/N ratio for the second and third days of fasting is definitely lower in the adrenalectomized animals than in the normal group.

Conclusion. The breakdown of protein to form sugar which occurs on phloridzination of rats is greatly reduced in the absence of the adrenal cortex.

8048 P

Extent of Absorption of Alcohol at Various Intervals After Oral Administration.

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As a result of calculations based on blood alcohol figures obtained after the oral administration of alcohol compared with similar figures following intravenous administration, Haggard and Greenberg¹ have concluded that a period of about 6 hours is required for

¹ Haggard, H. W., and Greenberg, L. A., *J. Pharm. Exp. Ther.*, 1934, **52**, 167.

complete absorption from the gastro-intestinal tract, and that therefore the blood alcohol drop during the first 6 hours following oral administration is not a reliable index of the rate of metabolism of alcohol by the body. On the other hand, Hanzlik and Collins² using intact segments of the intestinal tract, Voltz and Dietrich³ from determinations of residual alcohol in the gastro-intestinal tract, and Mellanby,⁴ Widmark,⁵ and Jungmichel⁶ using the time of appearance of the peak in the blood alcohol curves, all concluded that complete absorption requires much less than 6 hours.

Since the tissues and contents of the stomach and intestines will store some alcohol regardless of the method of administration, the quantity of unabsorbed alcohol in the gastro-intestinal tract at any interval should be represented by the excess above the concentration resulting from parenteral administration. Employing this principle, a series of experiments were run in which fasting dogs received 3 gm. of alcohol per kilo administered by stomach tube, the alcohol being diluted with 3 volumes of water. If vomiting occurred the results were discarded. At various intervals following administration, groups of the dogs were quickly killed by a blow on the head and the entire gastro-intestinal tract analyzed for its alcohol content by a method recently developed by one of us (R.N.H.).⁷ Another group of dogs received the same dosage of alcohol by intravenous administration in the form of a 12% solution in saline. The intravenous administration occupied one hour and at the end of the second hour these dogs were killed and their gastro-intestinal tracts analyzed for alcohol. The average concentration of alcohol found in the gastro-intestinal tracts of the intravenous group was subtracted from the corresponding figures for the dogs receiving alcohol orally to give the concentrations of unabsorbed alcohol. Table I shows the results where the interval employed was 2 hours, and indicates that in most cases this interval is sufficient for practically complete absorption. Using this same procedure it was found that the percent of absorption for other time intervals was as follows: One-half hour, 49.6, 69.5, 46.5, 65.1; average, 57.7; one hour, 90.5, 70.1, 96.2, 97.2; average, 88.5; 1½ hours, 93.3, 91.7, 98.5,

² Hanzlik, P. J., and Collins, R. J., *J. Pharm. Exp. Ther.*, 1913, **5**, 185.

³ Voltz, W., and Dietrich, W., *Biochem. Z.*, 1915, **68**, 118.

⁴ Mellanby, British Medical Research Committee, Special Report Series, 1919, **31**, 1.

⁵ Widmark, E. M. P., *Die theoretischen Grundlagen und die praktische Verwendbarkeit der gerichtlich-medizinischen Alkoholbestimmung*, Berlin, 1932.

⁶ Jungmichel, G., *Arch. f. exper. Path. u. Pharmacol.*, 1933, **173**, 388.

⁷ Harger, R. N., *J. Lab. and Clin. Med.*, 1935, **20**, 746.

TABLE I.
Comparison of Results after Oral and Intravenous Administration of Alcohol
Showing Alcohol Remaining in Gastro-Intestinal Tract.
Dose, 3 gm. per kg.; time, 2 hours.

	—Intravenous—		—Oral—			
	Dog 20	Dog 22	Dog 4	Dog 17	Dog 18	Dog 19
Wt. (kg.)	6.4	12.0	5.0	10.2	8.9	5.9
Alcohol administered (gm.)	19.2	36.0	15.0	30.6	26.7	17.7
Wt. of:						
Stomach contents (gm.)	4	8	146	31	156	13
" tissue "	78	125	69	120	144	96
† Gut, upper half "	141	184	324*	234	210	164
† " lower " "	114	219		135	175	146
Conc. of alcohol:						
Stomach contents (mg./gm.)	3.53	3.34	5.56	8.04	15.70	7.52
" tissue "	2.78	2.59	3.09	3.70	7.26	3.20
† Gut, upper half "	2.97	2.99	2.51*	3.13	3.28	3.18
† " lower " "	2.91	2.98		2.59	2.65	3.27
Blood	3.72	3.82	3.37	3.20	4.14	3.85
‡ Unabsorbed alcohol:						
Stomach contents (gm.)			0.38	0.14	1.92	0.06
" tissue "			0.05	0.12	0.66	0.05
Gut, upper half "				0.04	0.06	0.03
" lower " "				—0.05	—0.05	0.05
Total unabsorbed "			0.43	0.25	2.59	0.19
% unabsorbed			2.8	0.8	9.7	1.0
% absorbed			97.2	99.2	90.3	99.0

† Including contents.

* Total gut and contents analyzed together.

‡ Weight of organ or contents X (concentration found minus average concentration from intravenous administration.)

90.0; average, 93.4. These figures do not support the conclusions of Haggard and Greenberg, whose calculations for absorption are: One-half hour, 48.8%; one hour, 67.5%; 1½ hours, 75.7%; and 2 hours, 83.7%.⁸

8049 C

Lipoid and Hemorrhagic Changes in Adrenal Cortex Following Traumatic Shock.*

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It has been shown that if profound and fatal shock is to be obtained in the intact dog by traumatization, the severity of tissue

⁸ Haggard, H. W., and Greenberg, L. A., *loc. cit.*, Fig. 2, Curve B.

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