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Effect of Electrically Induced Convulsions on Rate of Alcohol Metabolism in Man.

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It is well established that the rate of metabolism of alcohol, as assessed from its rate of disappearance from the blood stream, is peculiarly resistant to change in a given individual. However, certain substances, notably insulin,[1] some amino acids,[2] and pyruvic acid[3] have been shown to exert an appreciable acceleration of alcohol metabolism, the increase in rate ranging upwards to 50%. Because of the considerable metabolic changes incidental to electrically-induced convulsions,[4] it was felt that the effect of this procedure on the rate of alcohol metabolism warranted investigation.

To this end, the rate of alcohol metabolism in 6 patients suffering from functional mental disease was studied prior to and immediately after institution of treatment with electric shock. The dose of alcohol was 1.5 cc per kg of body weight, administered intravenously as a 20% solution in normal saline, a period of one hour being required for the injection into a cubital vein. Two hours were then allowed to elapse to insure equilibration of the alcohol between the blood and tissues. Samples of blood were then taken at hourly intervals and their alcohol content determined by the method of Newman and Abramson.[5]

The above procedure was followed in all cases before shock treatment was instituted, and constituted the control observation. From the blood alcohol values so determined the rate of disappearance of alcohol from the blood over any hourly period could be computed, and these values for the first hour and the average for the first 2 hours after the period allowed for equilibration are set forth in Table I.

On a subsequent occasion the identical procedure was repeated, except that at the end of the period of equilibration, and immediately after securing the first blood specimen, a generalized convulsion was induced in the customary manner by passage of 60-cycle alternating current between 2 electrodes placed one on each side of the head in the temporal region. The values determined for rate of disappearance of alcohol from the blood were computed as for the controls, and

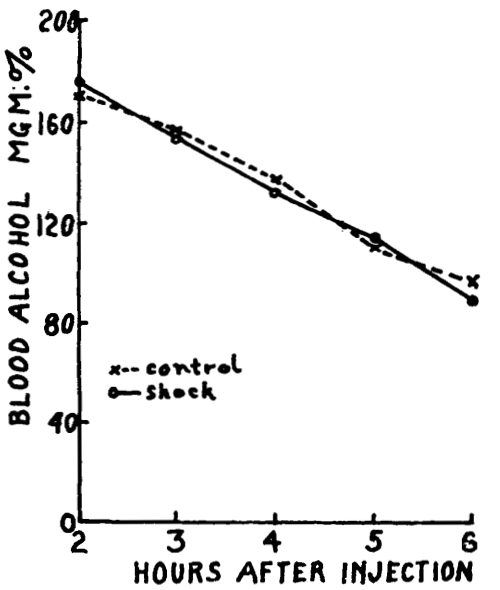

FIG. 1.

Rate of decline of blood alcohol concentration in control and after electrically induced convulsion. The shock was administered 2 hours after the completion of the injection.

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2 Eggleton, M. G., *J. Physiol.*, 1940, **98**, 239.

3 Westerfeld, W., Stotz, E., and Berg, R. L., *J. Biol. Chem.*, 1942, **144**, 657.

4 Lowenbach, H., and Greenhill, M. H., *J. Nerv. and Ment. Dis.*, 1947, **105**, 343.

5 Newman, H. W., and Abramson, M., *J. Pharm. and Exp. Therap.*, 1942, **74**, 369.

TABLE I.
Rate of Decline of Blood Alcohol Concentration in mg per 100 cc per Hour, With and Without Convulsion.

Subj.	First hr			First 2 hr		
	Control	Shock	Change	Control	Shock	Change
Sch.	27	12	—15	23	18	—5
Rag.	12	22	+10	16	22	+6
Doa.	20	27	+ 7	21	23	+2
Mc.	15	19	+ 4	13	16	+3
Cro.	18	23	+ 5	23	24	+1
Mos.	28	22	— 6	20	18	—2
Mean change			+ 0.9			+0.9
Stand. dev.			8.8			3.6

appear in Table I. Fig. 1 is a graphic representation of the rate of fall of blood alcohol concentration in one patient with and without convulsion.

Examination of Table I shows that the average rate of decline of blood alcohol concentration was slightly greater after electric shock than when no convulsion was induced. However, it also shows that these differences are very small in comparison with the standard deviation, and thus are certainly not of statistical significance. Ziskind,[6] working with rabbits, has found a similar lack of effect of shock on rate of fall of blood alcohol concentration.

For fear that we might be missing some precipitate drop of short duration occurring immediately after the convulsion, in several of the cases a blood sample was secured 15 minutes and 30 minutes after shock. These revealed no more evidence of acceleration than did the samples taken at longer intervals.

We conclude that electrically-induced convulsions are not effective in significantly influencing the rate of alcohol metabolism in man.

[6] Ziskind, E., personal communication, 1947.

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Antibody Response of Human Beings to Centrifuged, Lyophilized Japanese B Encephalitis Vaccine.*

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Since 1945, more than 350,000 people[1] have been inoculated with Japanese B encephalitis vaccine prepared in the U.S.A.[2] Since 1942, a number of studies have been carried out on the antibody response of human beings to various dosages and preparations, in an attempt to determine the proper dose in human beings particularly in relation to the potency of the vaccine as determined by assay in mice. Studies carried out without such reference to the quantitative determination in mice of the antigenic potency of the vaccine used for the human beings provide no useful information for comparative purposes, since vaccines prepared and stored in

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[1] Sabin, A. B., *J. A. M. A.*, 1947, **133**, 281.

[2] Sabin, A. B., Duffy, C. E., Warren, J., Ward, R., Peck, J. L., and Ruchman, I., *J. A. M. A.*, 1943, **122**, 477.