

bacteriophage-solution, 3 or 25%, withstood the injection of live staphylococci. Horses have also been immunized with staphylococcal bacteriophage-toxoid for the production of a combined antiserum.

The procedure outlined may with minor changes be utilized with other microorganisms for the preparation of bacteriophage-toxoid, especially with those organisms that yield endo- as well as exotoxin and which may be lysed by bacteriophage. Thus it should be possible to obtain more effective antigens both for active immunization of human beings and for the production of more potent antibodies in the horse or in other animals.

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Determination of Ethyl Alcohol in Saliva.

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The concentration of alcohol in the blood and cerebrospinal fluid of man has for many years been accepted as an index of the state of his intoxication. There is often, however, difficulty in obtaining blood or cerebrospinal fluid from individuals under the influence of alcohol; and it is therefore more advisable to use, when possible, a more accessible and equally trustworthy index.

Friedmann and Brook¹ have recently shown that saliva also contains ethyl alcohol. We have performed a series of determinations on this fluid to see whether or not the concentration of EtOH found in it has some simple relationship to that found in a corresponding blood sample. The methods (macro and micro) used in this study have been described;² we should like to point out that in the following cases the results of the two methods agreed within $\pm 3\%$.

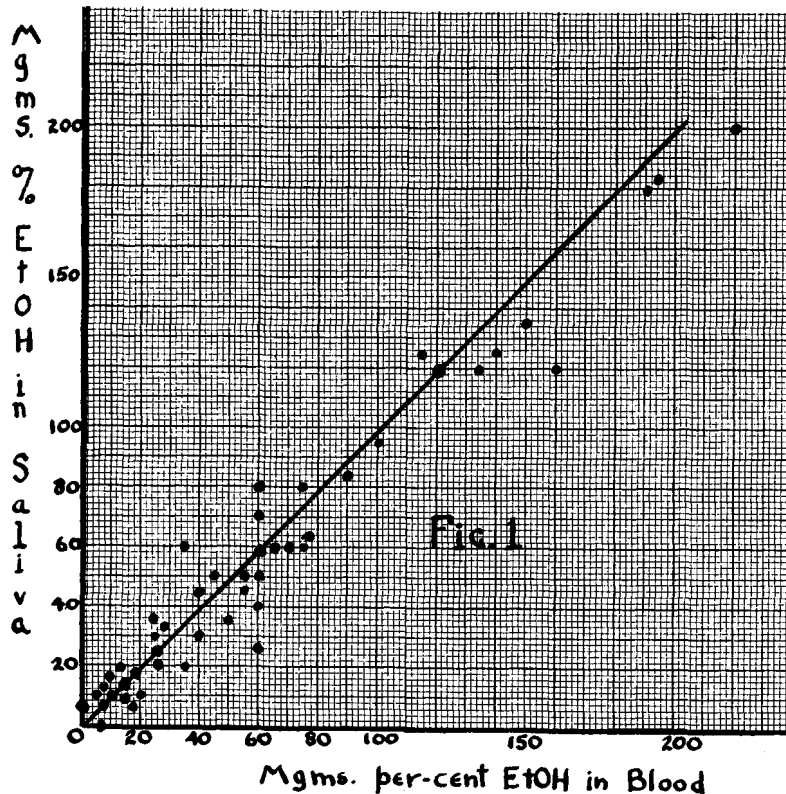
In 30 cases of normal individuals the saliva EtOH concentration was 0 mg. %, while the blood alcohol values of this group were from 0 to 7 mg. %.

Similar determinations in 50 cases of individuals in various states of intoxication showed satisfactory correlation of the EtOH concentrations in the saliva specimens with those in the corresponding

¹ Friedmann, T., and Brook, T., *Proc. Am. Soc. Biol. Chem.*, 1936, **30**, xxxvii; *J. Biol. Chem.*, 114.

² Abels, J. C., *PROC. SOC. EXP. BIOL. AND MED.*, 1936, **34**, 4.

bloods. The results of these experiments are perhaps best indicated in Fig. 1. There is an average deviation between the 2 of



± 10 mg. % EtOH; however, when an attempt is made to associate the blood and saliva alcohol concentrations with four arbitrary degrees of intoxication,² the following table can be set up:

TABLE I.

No. Cases	Symptom Group	— Blood Group —				— Saliva Group —			
		I	II	III	IV	I	II	III	IV
25	I	23	2	0	0	24	1	0	0
13	II	1	12	0	0	3	10	0	0
10	III	0	0	9	1	0	1	9	0
2	IV	0	0	0	2	0	0	1	1

Blood and saliva Group I correspond to 0-50 mg. % EtOH; Group II to 50-90 mg. %; Group III to 90-185 mg. %; and Group IV to more than 185 mg. %.

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