

centration of alkaloid solution. An ethyl chloride nerve-block (Gebauer's ethyl chloride) was employed between the veratrin container and the muscle.

If the nerve-block be applied before the nerve is immersed in veratrin solution, direct stimulation of the muscle over a period of 45 minutes results in normal contractions. If, after the nerve has been immersed in veratrin and the muscle twitchings have begun, the nerve-block is now applied, the writing lever returns at once to the base line. Direct stimulation of the gastrocnemius at this time and at intervals over a period of one hour elicits only normal contractions. In the above experiments the nerve-block was known to be complete, since mechanical stimulation of the nerve did not result in contraction of the muscle.

The results obtained show that the characteristic reaction of the gastrocnemius, as a result of the immersion of the sciatic nerve in a veratrin solution, is inhibited by an ethyl chloride nerve-block. For this reason it must be concluded that there is no actual transmission by capillarity of the alkaloid to the muscle by the nerve fiber. And therefore rapidity of transmission or length of nerve does not play a part in the wide range of latent period. This evidence also confirms the interpretation of former observations, namely, that the drug has an excitatory action only on that portion of the medullated nerve fiber which is actually immersed in solution.

165 (2688)

The effect of surface tension on the growth of *Lactobacillus bulgaricus* and *Lactobacillus acidophilus*.

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The close similarity, both morphologically and culturally, between *Lactobacillus bulgaricus* and *Lactobacillus acidophilus*, makes differentiation between these two important members of the aciduric group of bacteria difficult. Their similarity is so

close as to have led some investigators^{1, 2} to conclude from earlier work that they were identical. A differentiation based on the fermentation of maltose,³ and maltose, saccharose and levulose,⁴ is admittedly more or less variable. Unpublished work done in these laboratories on sugar fermentations of these organisms likewise gave variable results.

It would seem, then, that a differentiation of these two types of organisms based on sugar fermentations is not absolutely infallible, and a method of distinguishing between these two closely related organisms is most desirable.

A review of the voluminous literature on the implantation of aciduric bacteria in the intestinal tract seems to justify the conclusion that *Lactobacillus bulgaricus* cannot be implanted in the intestinal tract, while implantation of *Lactobacillus acidophilus* is more or less easily accomplished. That the bile salts may play some part in this natural selection suggested itself, and as they are surface depressants, separation on this basis was attempted. Fifteen strains of *Lactobacillus bulgaricus* and fifteen strains of *Lactobacillus acidophilus* gathered from authentic sources were employed in this work. Sodium ricinolate and sodium taurocholate were used as surface tension depressants in a medium favorable for growth of all strains. All of our strains of *Lactobacillus acidophilus* grew very well in a medium of a surface tension as low as 36 dynes, while *Lactobacillus bulgaricus* in the same medium depressed to a surface tension of forty dynes, failed to show growth after seven days' incubation at 37° C. A surface tension of forty dynes represents the extreme lower limit for *Lactobacillus bulgaricus* as most of our strains were inhibited above this value.

This, then, offers a means of differentiating *Lactobacillus bulgaricus* from *Lactobacillus acidophilus*, which separated, without exception, all of the strains employed in this work.

That surface tension may be a factor in the implantation of these organisms seems plausible.

¹ Rodella, *Centralbl. f. Bacteriol. Abt. I. O.*, 1901, **xxix**, 717.

² Heinemann and Hefferen, *J. Inf. Dis.*, 1909, **vi**, 304.

³ Rahe, *J. Inf. Dis.*, 1914, **xv**, 141.

⁴ Kulp and Rettger, *J. Bact.*, 1924, **ix**, 357.