

view of these facts it seems that the liver may be the source of the specific factor in the roe.

In the course of these experiments it was found that the antirachitic potency of the liver of the cod is in inverse ratio to its content of oil. Much to our surprise tests of the ether extract of livers, very small and poor in fat, showed them to be exceptionally potent—far exceeding in potency any oil which has been heretofore reported. The details of these tests will be published elsewhere.

Following the plan carried out in connection with an investigation of the antirachitic content of the egg of the hen and of the newly hatched chick, a biologic test was made of the fry. It was found that the fry of the cod, as well as of the smelt, was practically devoid of this factor which evidently had been used up in the course of the development of the larvae. Furthermore, the specific factor was not noted in trout 2 months old, although the liver of the adult fish was potent when as little as 0.1 gm. daily was fed.

It is believed that the antirachitic factor, or so-called vitamin D, is of essential importance in the development of the young fish as well as of the young chick. Whether this is to be interpreted as indicating a dual functional activity of this nutritional factor, or as due to the presence of an intimately associated factor, must be left for further study to determine.

3992

A Hemolytic Substance in Pneumococcus Culture Broth.

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In the course of previous studies,^{1, 2} it was found that type I pneumococcus culture broth contained a substance which resembled the hemotoxin described by Cole^{3, 4} and later by Avery and Neill.⁵ Unlike the substance described by Cole, which was contained within the cells and was only set free by their dissolution, the hemolytic

¹ Sickles, G. M., *J. Infect. Dis.*, 1927, **xl**, 369.

² Wadsworth, A. B., and Sickles, G. M., *J. Immunol.*, 1927, **xiv**, 321.

³ Cole, R., *J. Exp. Med.*, 1912, **xvi**, 644.

⁴ Cole, R., *J. Exp. Med.*, 1914, **xx**, 346.

⁵ Avery, O. T., and Neill, J. M., *J. Exp. Med.*, 1924, **xxxix**, 745.

substance in the culture broth appeared, in some cases, as early as 4 hours after incubation was begun. The titer of the lytic substance, as indicated by the amount of culture broth required to produce an appreciable amount of hemolysis of 1 cc. of 1% washed sheep cells, was usually greatest after from 16 to 24 hours' incubation.

Culture broth of a group-IV pneumococcus strain, comparatively avirulent in its present form but capable of having its virulence raised by animal passage, and of a completely avirulent, atypical pneumococcus strain, No. 189, isolated from a horse which died during immunization with the standard type-I strain, No. 5, also contained the hemolytic substance.

The hemolytic substance in the culture broth, like that of Cole, is thermolabile and is destroyed by heating for 30 minutes at 55° C. Its activity is diminished by standing at cold room temperature and also, in a much shorter time, at 37° C.

Red cells, stroma, and leucocytes absorb the substance from the culture broth. The substance is also absorbed from the culture broth by shaking with animal charcoal and alumina. Shaking alone, however, greatly reduced the lytic power of the culture broth.

Normal horse serum has an inhibitory effect on the hemolytic power of the substance, while pneumococcus immune serum has a much more marked effect, which is apparently species rather than type specific.

3993

Comparative Study of Certain Aciduric Organisms of Intestinal and Dental Origin.

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Therapeutic studies of certain intestinal disorders have increasingly directed attention toward a bacterial rôle played in the intestinal tract by naturally inhabiting types of organisms. This field has been advanced particularly through the work of Rettger and Cheplin¹ and the administration of *B. acidophilus* milk. These observations have in the main been supported.

Unfortunately this intestinal organism, *B. acidophilus*, has recently been confused with somewhat similar organisms which are associated with and may bear some relation to dental caries. The

¹ Rettger, L. F., and Cheplin, H. A., *Arch. Int. Med.*, 1922, xxix, 357.