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Are There Bacterial-Protein Hybrids?

BECKY B. VEBLEN. (Introduced by W. H. Manwaring.)

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Fourth generation of subcultures of *B. typhosus, S. viridans,* and certain other microorganisms grown in 10% horse serum (Ringer's solution) are agglutinated in dilutions of 1:20 to 1:160 by anti-horse rabbit precipitin, controls cultures (nutrient broth) showing no agglutination.

With eighth to twelfth generation subcultures of the same micro-organisms, definite agglutination takes place with 1:1000 anti-horse rabbit precipitin. The susceptibility of eighth to twelfth generation subcultures to precipitin-agglutination is not materially reduced by repeated washings with Ringer's solution. No agglutination of these subcultures takes place with any heterologous precipitin thus far tested (*e. g.,* anti-egg rabbit precipitin).

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Effects of Anterior Pituitary Extract Upon an Hypophysectomized Puppy.

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Gigantism has been produced by Evans and Long[1] by the injections of an anterior pituitary extract in immature rats. The same result was obtained by Putnam, Teel and Benedict[2, 3] when the extract was administered to a bulldog. Normal growth was induced by injections of this fluid in hypophysectomized rats although there was no evident repair of the thyroid, suprarenals or gonads.[4] Putnam, Teel and Benedict[2] state that "in hypophysectomized dogs and

[1] Evans, H. M., and Long, J. A., *Anat. Rec.*, 1921, xxi, 62.

[2] Putnam, T. J., Teel, H. M., and Benedict, E. B., *Am. J. Physiol.*, 1928, lxxxiv, 157.

[3] Putnam, T. J., Benedict, E. B., and Teel, H. M., *Arch. Surg.*, 1929, xviii, 1708.

[4] Smith, P. E., *J. Am. Med. Assn.*, 1927, lxxxviii, 158.

rats restoration of growth has been produced in preliminary experiments."

The effect of the anterior pituitary extract upon a hypophysectomized puppy has been studied over a period of 2½ months. A sterile bovine extract of the anterior lobe, the preparation of which is given elsewhere,[5] was kindly furnished by Dr. H. M. Evans of the University of California. This extract has been found active for the growth hormone when administered to rats.

By means of the intracranial approach of Dandy and Reichert[6] a total hypophysectomy was performed on an 8 weeks old female puppy. That a total extirpation was accomplished was indicated when the animal remained infantile and failed to grow over a period of 4 weeks. During this period the increase in length of both the femur and tibia, measured by skiagrams, was 6 mm. and of the skull 2 mm., while in the litter mate control the femur and tibia had lengthened 33 mm. and the skull 12 mm. The weight of the operated puppy increased 32 gm. while the control gained 88 gm.

Daily intraperitoneal injections (25 cc.) of the anterior pituitary extract were given during the following 2½ months. At the end of this period the operated puppy although quite thin appeared in size the same as the control. During these 10 weeks the length of the femur and tibia of the control increased 53 mm. and of the skull 10 mm., while the treated hypophysectomized puppy showed a gain of 70 mm. in the length of the femur and tibia and 24 mm. in length of skull.

The weight curve of the treated puppy paralleled that of the control in spite of the fact that the animal suffered from diarrhoea and vomited after each injection. The treated puppy gained 164 gm. and the control 222 gm. during that period.

After 4 weeks of treatment permanent teeth appeared and replaced the milk teeth in the following month. At the end of the period of 2½ months permanent teeth were just appearing in the control.

No appreciable change has been noted to date in the appearance of the coat of hair or of the external genitalia.

[5] Evans, H. M., Cornish, R. E., and Simpson, PROC. SOC. EXP. BIOL. AND MED., 1929, xxvii, 101.

[6] Dandy, W. E., and Reichert, F. L., *Bull. Johns Hopkins Hosp.*, 1925, xxxvii, 1.