capsulatum as well as single strains of *Phialophora verrucosa* and *Trichophyton mentagrophytes* appeared to be increased in the presence of streptomycin. The stimulatory effect was noted as early as 48 hours with *S. schenckii* while similar results were obtained with the other organisms in periods varying from 1-3 weeks. The stimulatory effect was proportional to the concentration of streptomycin up to 2.5 mg per ml, at which level maximum growth was obtained. This effect was noted only with young actively growing cultures and not with old stored suspensions. Plate 1 depicts photographically the results obtained in representative tests.

Since streptomycin is known to be more effective at an alkaline pH, similar studies were made with *S. schenckii* and *C. immitis* in media adjusted to 4.0, 6.0, and 8.0, respectively. Although the amount of growth in the control tubes was considerably less at pH 8.0 than in the acid range, the same stimulatory effect in the presence of streptomycin noted above was observed at all 3 levels.

Summary. Streptomycin incorporated into a synthetic liquid medium enhanced the growth of laboratory strains of *S. schenckii, C. immitis, P. verrucosa, T. mentagrophytes,* and *H. capsulatum* which had not been previously exposed to this antibiotic.

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Phosphoprotein Phosphatase in Rat Young, Embryos, and Placentas.

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Phosphoproteins appear to exist uniquely in food sources for the embryo and young (*e.g.*, casein in milk, vitellin in egg yolk, ichthulin in fish eggs). A clue to the significance of this fact was seen in the observation by Harris[1] that frog eggs contained an enzyme, designated phosphoprotein phosphatase, which released inorganic phosphorus from phospho-proteins without preliminary proteolysis. This was confirmed by Feinstein and Volk,[2] who further showed such an enzyme present also in various mammalian tissues.

The present report presents data regarding the activity of this enzyme in rat placentas, embryos, and young, all of various ages.

Methods. Dated conceptions were obtained by following vaginal smears and introducing the female to the male during an overnight period during estrus. At the desired time after conception, the pregnant female was sacrificed, and the embryos and placentas were removed, separated by rough dissection, quickly frozen in an ether-dry ice mixture, and stored under deep freeze until convenient for assay. Several placentas from each female were pooled for assay, as were 14- and 16-day embryos. Young rats were sacrificed by immersion in the freezing mixture and stored under deep freeze.

For assay, placentas and embryos were homogenized in a glass homogenizer; young rats were blended in a Waring blendor. Further details of the assay and analytical methods have been described.[2]

Results. Fig. 1 presents the phosphoprotein phosphatase activity of whole placentas, embryos, and young rats, all of varying ages.

Fig. 2 presents the activity of this enzyme per gram of tissue and per mg of protein, in

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1 Harris, D. L., *J. Biol. Chem.*, 1946, **165**, 541.

2 Feinstein, R. N., and Volk, M. E., *J. Biol. Chem.*, in press.

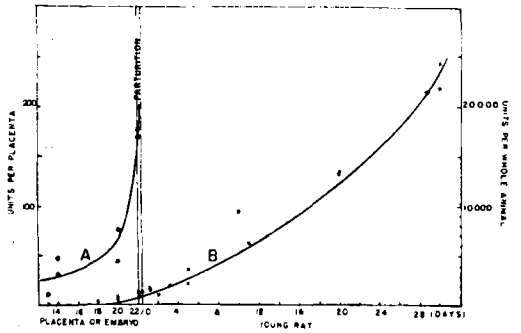

FIG. 1.

Age of (A) placenta and (B) whole animal, vs. total phosphoprotein phosphatase activity.

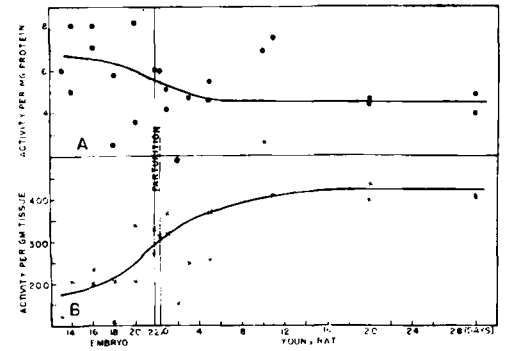

FIG. 2.

Age of animal vs. phosphoprotein phosphatase activity (A) per mg of protein and (B) per gram of body weight.

relation to the age of the embryo or young rat. Curve A, concerning activity per mg of protein, has too high a degree of scattering in the early points to warrant positive views as to the exact shape of the curve. The excessive scattering is believed due to unsatisfactory protein determinations, since the method used, that of Robinson and Hogden,[3] yielded unclear color solutions in some cases.

Fig. 3 relates placental age to enzyme activity per g tissue and per mg protein. The comment of the preceding paragraph, regarding the protein determination, is also relevant here.

Discussion. The results, particularly those of Curve B, Fig. 2, are approximately those to be expected from teleological considerations. The activity in the embryo is seen to rise, slowly at first, then more rapidly as parturition is reached. Thus the newborn

[3] Robinson, H. W., and Hogden, C. G., *J. Biol. Chem.*, 1940, **135**, 707, 727.

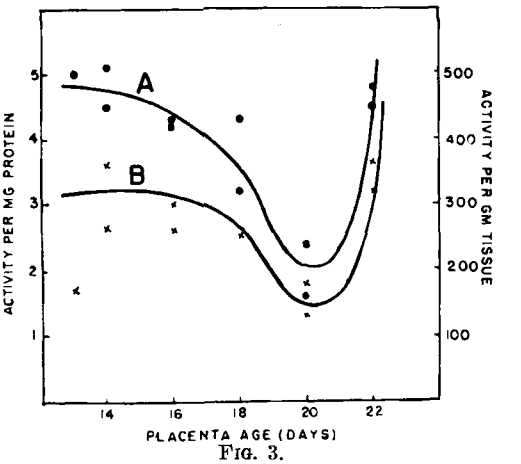

FIG. 3.

Age of placenta vs. phosphoprotin phosphatase activity (A) per gram of tissue and (B) per mg of protein.

animal, suddenly provided with phosphoprotein (casein) as a basic food source, is simultaneously equipped to utilize it. As the animal continually increases his casein intake, the enzyme activity continues to rise. At approximately 12 days of age, the enzyme activity reaches a constant level, which is unaffected by weaning.

Summary. 1. A study has been made of the level of phosphoprotein phosphatase activity in placentas, whole embryos, and whole young growing rats of various ages.

2. The total phosphoprotein phosphatase activity of the placenta and of the embryo and young rats continually rises. The activity was followed in placenta and embryo from thirteen days post-conception to parturition, and in young rats to 28 days of age.

3. The activity per gram of body weight rises slowly in early embryos, rapidly in the period immediately preceding and following parturition, and remains essentially constant during the age period of 12 to 28 days.

4. The activity per gram of placenta decreases from the 14th to the 20th day after conception, then rises again just before parturition. The preliminary decrease is due to the rate of weight gain of the placenta being greater than the rate of gain of total placenta phosphoprotein phosphatase; the reversal of direction of the curve is due to continued enzyme increase while the placenta gains essentially no further weight.