standard errors in Table 1. Partial purification of desoxypentose nucleic acid may include a variable amount of some phosphate contaminant of high specific activity, which would account for the variability of several orders of magnitude found in earlier studies.

The presence of mammary carcinoma transplants significantly alters the turnover of desoxypentose nucleic acid in the liver, spleen and kidneys of mice. Work now in progress indicates that the same effect occurs in Slonaker rats bearing transplants of lymphosarcoma and in pregnant rats and mice. It is suggested that the presence of a rapidly dividing tissue mass may influence the rate of cell division (as evidenced by the nucleic acid turnover rate) in the other body tissues.

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Presence of a Phosphatase in the Human Aortic Wall

Esben Kirk and E. Praetorius

Division of Gerontology, Washington University School of Medicine, St. Louis

Previous failure to demonstrate a phosphatase in the human arterial wall has been a subject of some importance in the discussion of the pathogenesis of arterial calcification. A perusal of the literature shows that phosphatase activity of arterial tissue has been examined only at an alkaline reaction. For this reason a more extensive investigation covering a wider pH range was considered of interest. As the result of such studies on human aortic tissue a definite phosphatase activity with an optimum at pH 5.7–5.8 was demonstrated.

Human aortas obtained at autopsy were carefully wiped free of blood, and the adventitia and external part of the media were stripped off. The intima and residual part of the media were then cut into small pieces, and the tissue was finely ground with glass-distilled water in a Pyrex grinder. The tissue suspension was centrifuged and the supernatant siphoned off. The supernatant solution used in the experiments contained about 3 mg of protein per ml.

For the study of the phosphatase activity, citric acid sodium hydroxide (pH 3.1–7.0) and veronal sodium carbonate (pH 7.55–10.1) buffers of 0.1 molar concentration were prepared. Analytical reagents and glass-distilled water were employed in the preparation, and the pH was checked in a Coleman pH-meter. For each pH level studied, two samples, two controls, and two blanks were run at 37° C. Each sample and control tube contained 5 ml of buffer solution and 0.3 ml of supernatant solution (enzyme) whereas the blanks contained 5 ml of the buffer and 0.3 ml of water. Disodium phenylphosphate (15 mg) in aqueous solution was added at the onset of the experiments. The enzyme activity was stopped by the addition of 2.5 ml of 25% trichloroacetic acid. In the case of the controls the substrate was added after the addition of trichloroacetic acid.

The samples and controls were subsequently filtered. For color development 4 ml of the filtrates and of the blanks was pipetted off, after which 3.2 ml of 0.62 *N* sodium hydroxide, 0.8 ml of Folin and Ciocalteus' reagent, and 2 ml of 20% sodium carbonate were added. The blue color was compared in a Duboseq colorimeter with that of a phenol standard. The enzyme activity was calculated by subtracting the color value of the controls from that of the samples.

Results of studies on phosphatase activity at various pH levels are given in Fig. 1, which shows a maximum

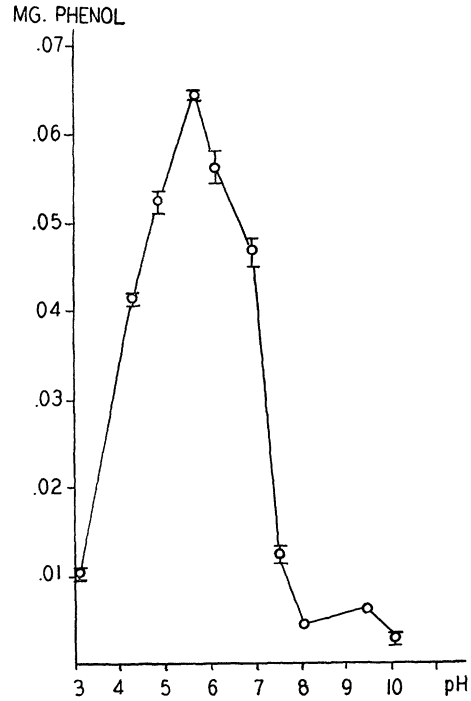

FIG. 1. The cleavage of disodium phenylphosphate at various pH levels by the supernatant of a suspension of human aortic tissue. Protein in sample, 0.9 mg; substrate in sample, 15 mg; reaction time, 30 min; temperature 37° C.

at pH 5.7–5.8. In addition to the major peak, a small peak at about pH 9.5 will be noted. This small elevation probably represents activity caused by traces of alkaline serum phosphatase, since the activity at this pH range was found to be increased by addition of magnesium chloride.

In further experiments conducted at the optimal pH (5.75), a fair proportionality was observed between the amount of supernatant fluid used (0.2, 0.75, and 1.5 mg of protein, 20-min reaction period) and the phosphatase activity, and between reaction time and cleavage of the substrate.

A comparison at pH 5.7 of the activity of aliquot samples of the original aortic suspension and of the supernatant fluid obtained after centrifugation showed a higher phosphatase activity per volume in the supernatant.