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STUDIES ON REGULATION OF ALDOLASE

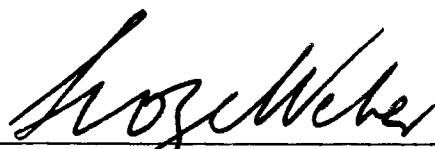
By

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Submitted to the faculty of the Graduate School
in partial fulfillment of the requirements
for the degree of Master of Science in
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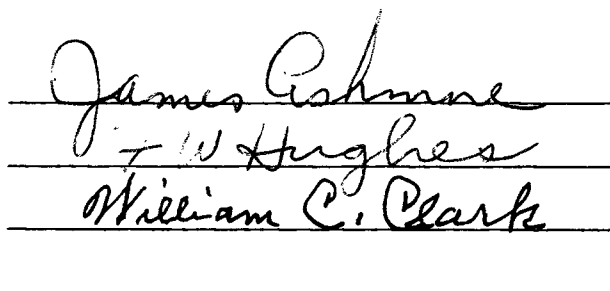
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1. An exact and rapid assay for aldolase activity in rat liver, adipose tissue and tumors was established. The method was a spectrophotometric one adapted from other investigators. Proportionality with enzyme amount, stability and pH effects were worked out for liver aldolase. Michaelis constants were determined for liver **and** adipose tissue and found to be $2.4 \times 10^{-5}M$ and $5.1 \times 10^{-5}M$ respectively.
2. The adipose tissue aldolase activity was of about 2% of that of liver although the K_m 's were remarkably similar. On this basis, aldolase in the adipose tissue appeared to be essentially the same enzyme as in the liver, but there was much less of it present.
3. Cortisone injected in vivo induced enzyme synthesis of various gluconeogenic enzymes; aldolase was one of the enzymes so induced.
4. Actinomycin administered 30 minutes prior to cortisone inhibited the steroid-induced synthesis of aldolase. Since the action of actinomycin was to inhibit DNA-directed synthesis of RNA, it suggested that the effect of cortisone and triamcinolone was de novo synthesis of aldolase.
5. The in vitro addition of actinomycin to the aldolase assay system had no effect on the enzyme activity.
6. Triamcinolone, a fluorinated steroid, was capable of inducing aldolase synthesis for five days after a single injection.
7. The study of aldolase activity in a number of Morris hepatomas indicated that aldolase should be included in the group of parameters that showed no correlation with the growth rate of hepatomas.