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Allosteric properties of phosphofructokinase from the epithelial cells of thermally injured rat small intestine.

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Abstract

1. The allosteric properties of phosphofructokinase from the epithelial cells of thermally injured rat small intestine were studied and compared with those properties of the normal rats. 2. The fructose 6-phosphate saturation curve of mucosal phosphofructokinase from thermally injured rats (3 days post injury, 33% of body surface area) displayed cooperatively; the ratio of the activity observed at pH 7.0 in the presence of 0.5 mM fructose 6-phosphate and 2.5 mM-ATP to the optimal activity at pH 8.0, $v_{0.5/V}$, was 0.42 +/- 0.02 in the normal rats and 0.22 +/- 0.03 in the injured rats. 3. The enzyme from thermally injured rats was very sensitive to inhibition by ATP as compared to that from normal rats. 4. The enzyme from thermally injured rats was inhibited by citrate and phosphocreatine in a synergistic manner with ATP. 5. Activation under nearly cellular conditions was produced by ADP, AMP and glucose-1,6-biphosphate. 6. In general, the mucosal enzyme of thermally injured rats was more susceptible to inhibition or activation by various metabolites than the enzyme of the normal rats. 7. These results may suggest that mucosal phosphofructokinase of thermally injured rats may not be subject to the same control mechanism as the normal rats in vivo due to changes in the concentrations of fructose-2,6-biphosphate