

## INTESTINAL DIGESTION OF CARBOHYDRATES AND GLUCOSE ABSORPTION DEPEND ON THE DOSE AND DURATION OF GLUCOCORTICOID ADMINISTRATION

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Abstract

**Statement of the Problem:** Carbohydrates, particularly glucose, play a key role in energy metabolism. Despite the importance of intestinal carbohydrate digestion and glucose absorption for health, the impact of glucocorticoids (endogenous or exogenous released during stress) on these processes has been poorly documented. The purpose of this study is to examine on rats the effect of corticosterone on activities of intestinal carbohydrases, glucose absorption and levels of the glucose transporters SGLT1 and GLUT2 in the apical membrane of the enterocytes, depending on dose of the hormone and on the duration of its administration. **Methodology & Theoretical Orientation:** The rats were daily administered corticosterone (4 and 12 mg/kg) or solvent of the hormone (control). Five hours or three weeks after administration of the substances, activities of the intestinal enzymes were determined. Glucose absorption was regularly assessed using the test, based on measurements of the rate of free consumption of concentrated glucose solution by fasted rats. Levels of glucose transporters SGLT1 and GLUT2 in the apical membrane of the enterocytes were determined using immunocytochemistry and confocal microscopy. **Findings:** Corticosterone administration has enhanced absorption of glucose in the small intestine. The effect has depended on dose of the hormone, but not on duration of its administration.

At 12 mg/kg, there was an increase in activities of glucoamylase and maltase in the intestinal mucosa and in the level of transporter GLUT2 (but not SGLT1) in the apical membrane of the enterocytes. **Conclusion & Significance:** The state of hydrolytic and transport systems of the small intestine depends on the dose and the duration of administration of glucocorticoids. The data obtained are important for assessment of functional status of the small intestine after the short and long injections of glucocorticoids at various doses in clinic or in the case of stress of varying severity and duration.

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