

CARTAS AL EDITOR

Intestinal Disaccharidase Activities in Growing Rats as Affected by Sex

Intestinal enzymatic activities are modified by many elements such as diet (5, 6) diabetes (10) or hormonal factors (3).

Since previous reports have indicated that the activity of enzymes may be altered by hormonal status (8, 10), the aim of this study was to evaluate whether sex can modify the kinetic activities of two disaccharidases: the α -glucosidase (EC 3.2.1.20) and sucrose α -glucosidase (EC 3.2.1.48) in the proximal small intestine.

Male and female Wistar rats (200-250 g) were killed by decapitation after a 24 h fast. Then, the proximal segment (15-20 cm) from the small intestine was washed with ice-cold 0.9 % ClNa and opened longitudinally. The mucosa was scraped off with a glass microscope slide and homogenized in a Potter-Elvehjem homogenizer with 0.1 M sodium phosphate buffer (pH = 6). The final volume (4 ml) of the homogenate was centrifuged at 4,000 rpm for 10 min at 4°C in a SORVALL centrifuge.

The supernatant was used for the estimation of enzyme activities by the DALQUIST method (2) as modified by SIDONS (9). One unit of disaccharidase activity is defined as the amount that hydrolyzes 1 μ mole of disaccharide in 30 min

at 37°C. The protein content of the homogenates was assayed by the method of LOWRY *et al.* (7). The data were statistically evaluated by the Student's *t* test.

Our results point out that the saccharidase activity is not significantly altered by sex at the concentrations of sucrose assayed (0.005, 0.01, 0.02, 0.04, 0.08 and 0.16 mM). However, maltase activity is significantly sex-dependent, where the male animals show an increased ability to degrade maltose as compared with female rats (fig. 1).

Kinetic studies, carried out according to the Lineweaver-Burk plot for maltase (fig. 1), indicate that V_{max} is significantly different in male ($V_{max} = 19.96 \mu\text{mol glucose/mg protein 30 min incubation}$) and female ($V_{max} = 12.82 \mu\text{mol glucose/mg protein/30 min incubation}$) while that K_m does not change ($K_m = 0.0014 \text{ M}$) in both cases.

This communication provides further evidence about the activities of different intestinal enzymes as affected by sex and confirms the data reported by other authors (1, 4, 10, 11) following non kinetics approaches.

It can be concluded, therefore, that sex may modify the disaccharidase activity

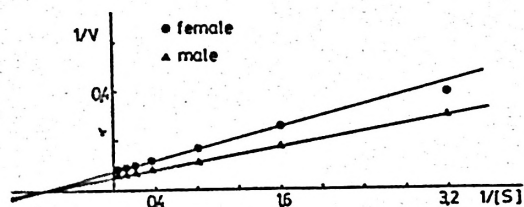


Fig. 1. Lineweaver-Burk plots of the activity of maltase in 11 female and in 12 male. Both sex had different V_{max} and the same K_t . Lines were determined by least-square analysis of the data. Male and female maltose activity was significantly different ($p < 0.001$) for every concentration assayed.

selectively (maltase activity is significantly altered while the saccharidase activity is not influenced) and should be considered when studying the intestinal enzymatic activity under different conditions.

Key words: Intestinal disaccharidase.

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