

ENZYMATIC INVERSION OF CANE MOLASSES AND THE NUTRITIVE VALUE FOR GROWING PIGS
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Many studies have been conducted indicating that molasses may be successfully used to replace a portion of the cereal grain diets for pigs (Henke, 1933; Iwanaga et al., 1959; Brooks and Iwanaga, 1967). However, the procedure has found little commercial application possibly because of the severe diarrhea caused by levels in excess of 30%.

Velázquez et al. (1969) indicated that certain minerals in cane molasses may be the primary cause of the laxative effect or there is the possibility of insufficient intestinal sucrase activity to hydrolyse completely the relatively large amounts of sucrose on cane molasses. Ly and Velázquez (1970) found incomplete digestion of sucrose leading to increased fermentation in the colon and hence, a reduced fecal dry matter (DM) content.

An experiment was conducted in order to know the intestinal sucrase activity in pigs fed high levels of cane molasses and inverted cane molasses through enzymatic inversion with a invertasa commercial. Thirty -- pigs (20 barrows and 10 gilts) Yorkshire x Landrace, with initial average weight of 50 kg, were employed in the following treatments: soybean meal diets supplemented with sorghum (T), 40% of normal cane molasses (NM), 40% normal sucrose (NS), 40% of inverted molasses (IM) and 40% inverted sucrose (IS). Pigs were randomly assigned to treatments and had two replicates and three animals per replicate. Water and feed were supplied ad libitum. The experiment lasted 30 days.

Data of weight gains, feed consumption, feed conversion and intestinal sucrase were collected. Five pigs (barrows) were killed every 10 days and intestinal sucrase, was determined by the method of Dahlqvist (1961).

Average daily weight gains were: 619 g; 609 g; 760 g; 207 g and 599 g; daily feed consumption: 2.40 kg; 2.85 kg; 2.90 kg; 1.9 kg and 2.6 kg; and feed conversion: 3.88; 4.68; 3.81; 9.18 and 4.34, for treatments T, NM, NS, IM and IS, respectively. There were significant differences among treatments ($P < .05$). A significant decrease in weight gain, feed consumption and feed conversion was observed in pigs fed IM. Liquid feces were observed in pigs fed normal or inverted molasses diets.

The activity of intestinal sucrase was lower ($P < .05$) in pigs fed normal or inverted cane molasses. Data obtained in this experiment indicated that enzymatic inversion of cane molasses does not improve the nutritive value neither decrease the humidity in feces of animals fed high levels of cane molasses.

Selected references: Brooks, C.C. and I.I. Iwanaga, 1967, J. Anim. Sci., 26:741; Dahlqvist A., 1961, Biochem. J., 78:282; Henke, L.A., 1933, Hawaii Agric. Exp. Sta. Bull. No. 69; Iwanaga, I.I., K.K. Otagaki, E. Coble and O. Wayman, 1959, J. Anim. Sci., 18:1172, Abs.; Ly J. y M. Velázquez, 1970, Rev. Cub. Cienc. Agric., 4:201; Velázquez, M., J. Ly and T.R. Preston, 1969, J. Anim. Sci., 29:578.