

## THE EFFECT OF LACTOSE INTOLERANCE ON IRON ABSORPTION

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It has been suggested that increased intestinal transit such as occurs in lactose intolerance, may result in the sub-optimal absorption of the nutrients in the meal (Dahlqvist and Lindquist, 1971). The absorption of iron, which is known to be affected by increased motility (Schade *et al.*, 1969) has been investigated in lactase deficient and sufficient rats using radioactive isotopes.

In the first experiment, iron absorption was determined from solutions containing either lactose or glucose and galactose in 8 rats aged 12 weeks who had been fed since weaning either a commercial pellet diet, or a synthetic diet containing 30% lactose, with the aim of obtaining two groups of rats with low and high levels of lactase respectively.

In a second experiment, iron absorption was determined from solutions containing lactose and from water only in 10 rats aged 17 weeks who had received a synthetic diet containing high levels of either sucrose or lactose since weaning.

The test dose contained 20µg FeSO<sub>4</sub> and 0.5µ C<sup>59</sup>Fe in 2ml volume of water which also contained either 0.5g lactose or 0.25g glucose and 0.25g galactose or no carbohydrate. Whole body counts were made immediately after intubation, and again 7 days later to determine percent iron absorbed from the test dose. The rats were then sacrificed, and jejunal disaccharidases measured.

In the first experiment the 4 rats with low lactase activity (mean 1.8 ± 0.2 units/g wet mucosa) absorbed significantly less ( $p < 0.05$ ) iron from lactose solutions than the 4 rats with high lactase activity (mean 3.5 ± 0.3 units/g) (mean absorption 56.9 ± 9.9% compared with 81.6 ± 1.3% respectively). Absorption of iron from glucose-galactose solutions was similar in both groups.

In the second experiment, 5 rats with low lactase activity (mean 1.6 ± 0.3 units/g) absorbed only half as much iron from lactose solutions as the 5 rats with high lactase activity (mean 2.75 ± 0.22 units/g) but the difference was not statistically different (mean absorption 13.2 ± 2.9% compared with 26.4 ± 7.2% respectively). Iron absorption from water was similar in both groups.

Further experiments are in progress to confirm the trend seen here. The results suggest that lactose malabsorption may reduce iron absorption in rats by up to 30-50%. If we can extrapolate to humans, lactose malabsorption may be one of the factors contributing to the development of iron deficiency anemia in malnourished children.

DAHLQVIST, A., and LINDQUIST, B. (1971). *Acta paediat. Scand.* 60:488.

SCHADE, S.G., FELSHER, B.F., and CONRAD, M.E. (1969). *P.S.E.B.M.* 130:757.

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