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Hypercarotenaemia in Wistar rats and ICR mice and correlation to humans

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Abstract

Hypercarotenaemia can occur at any age but it is more commonly seen in infants and young children due to the excessive intake of carotenoid bearing food. The objective of this study was to induce hypercarotenaemia and trace the fate of excess carotenoids in Wistar rats and ICR mice.

Wistar rats (n=20) and ICR mice (n=28) were used. Rats and mice were divided into two groups (Test and Control). The controls were fed with standard rat/mice pellets while test group was fed with freeze-dried carrot incorporated standard rat/mice feed with boiled carrot. After a month and 2.5 months, blood was drawn for analyses of carotenoids and metabolites and after 2.5 months liver, adipose and digesta of rats were collected. Faeces were freeze dried and then analyzed for carotenoids of metabolites (RP-HPLC). Serum, adipose, liver and bile of test and control mice were also analyzed as above.

Wistar rats and ICR mice fed on excess carrot and papaw did not show outward signs of hypercarotenaemia. Their serum, adipose tissue, liver, digesta (in the case of rats) and bile (in the case of mice) did not show detectable amounts of carotenoids or their metabolites. However the faeces of both rat and mice had high levels of α and β carotenes. This indicates that one method of control of hypercarotenaemia may be at the level of absorption.

Key words: Hypercarotenaemia, Induction of, Wistar rats and ICR mice, papaw, carrot diet