

Effect of Low and High Glycaemic Index Diets on Developing the Risk of Metabolic Syndrome in Rats

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Several observational studies have shown that the chronic consumption of high glycaemic index diet is associated with an increased risk of developing metabolic syndrome. This study was performed to identify the direct influences on the lipid profile and the adipose tissue deposition and the subsequent development of the risk of metabolic syndrome in rats by feeding diets of low glycaemic index (LGI) and high glycaemic index (HGI). Fifty rat weanlings (three weeks old) were equally divided into two groups and fed on either low glycaemic index diet based on high amylose, or isocaloric high glycaemic index diet for 12 weeks. Postprandial blood and tissue samples were collected at the end of the 12 weeks of feeding. The total white adipose tissue weights of the HGI fed rats (24.74 ± 0.53 g/rat) were significantly higher than the LGI fed rats (15.37 ± 0.36 g/rat). The HGI fed rats had higher postprandial leptin concentrations (1.86 ± 0.17 ng/ml) than LGI fed rats (1.34 ± 0.12 ng/ml). The postprandial insulin, and postprandial insulin glucose ratio were higher in the HGI fed rats (7.06 ± 0.90 ng/ml and 0.67 ± 0.01 ng/mlxmM) compared to the LGI fed rats (3.91 ± 0.4 ng/ml and 0.44 ± 0.01 ng/mlxmM). Triglycerides of the HGI fed rats showed higher values (1.56 ± 0.10 mM) than the LGI fed rats (1.07 ± 0.08 mM). The results indicated that LGI feeding was beneficial in preventing the conditions enhancing the cardio vascular disease whereas long-term feeding of HGI diet may increase the risk of developing metabolic syndrome in rats.

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