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EFFECT OF DIETARY FAT ON BLOOD LIPIDS ENERGY INTAKE AND BLOOD CHOLESTEROL CONCENTRATION OF GUINEA PIGS CONSUMING DIETS OF DIFFERENT FAT COMPOSITION

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Hyperlipidaemia is one of the major health problems in the Sri Lankan population. Blood lipids, especially cholesterol, vary in response to dietary fat intake; the saturated and unsaturated fatty acid levels in the diet playing a significant role in altering the serum lipid profiles. Therefore, it is of great importance to maintain serum lipids, mostly cholesterol, within a favorable range, since it has a direct effect on the development of ischaemic disease.

Metabolism of lipids in the Guinea pigs, especially that of cholesterol, closely resemble that in man, majority of cholesterol been transported in the low density lipoprotein (LDL) fraction. Therefore, Guinea pig was chosen as a model to study effect of saturated and unsaturated fatty acids on cholesterol metabolism in man. Control and test diets, compatible with the dietary requirements of guinea pigs were formulated using wheat flour, textured soya protein, defatted poonac, paddy husk, vitamin & mineral premix, mineral supplement and refined coconut oil as the major source of dietary fat. However, since the control diets and the test contained 6% and 15% lipid respectively, it was not practical to make them isocaloric. Therefore, this study was carried out to assess the food/energy consumption of Guinea pigs, fed with non-isocaloric diets.

Two groups of male Hartly Guinea pigs, five in each, a control and a test group, were each fed diets containing 355 kcal/ 100g dry matter & 396 kcal/ 100g dry matters respectively for one month. Animals were provided with similar facilities. Food intake was recorded every day. Body weights were recorded at the beginning and the end of the experiment. After a period of 1 month animals were fasted overnight for 14 h and bled by cardiac puncture. Blood was centrifuged, allowed to clot and serum separated within 2 h. Serum was analyzed for cholesterol using the enzyme based Randox Kit method. The results obtained are represented as mean \pm standard deviation and the variation between the control and the test groups were studied using the t- test and the *p* values obtained are given below.

	<u>Control</u>	<u>Test</u>	<u>p values</u>
Food consumed/Day (g)	34.69 \pm 1.797	31.38 \pm 1.356	0.013
Energy intake/Day (kcal)	123.13 \pm 6.384	124.26 \pm 5.372	0.75
Weight gain (g)	63.20 \pm 7.59	58.80 \pm 7.69	0.390
Total cholesterol (mg/dl)	54.46 \pm 8.484	107.28 \pm 14.29	0.0004

The above results indicate that although the energy density and the food intake in the two groups were different, both groups have consumed a similar amount of energy resulting in similar body weight gains. However, it shows that the consumption of a higher level of fat in diet leads to a significant increase in the total cholesterol level.