

PDF - EFFECT OF SUPPLEMENTATION OF PLANTAIN FLOUR WITH OKARA AND DETARIUM MICROCARPUM FLOUR AS DIETARY FIBER SOURCES ON BLOOD GLUCOSE AND SERUM CHOLESTEROL - researchcub.infoABSTRACT

Flours were produced from unripe plantain fruit, okara, and Detarium microcarpum and analysed for selected properties. Plantain flours were supplemented with 5% levels of Detarium microcarpum and okara flours as dietary fiber sources and the effect on blood glucose and serum cholesterol levels of albino rats evaluated using bioassay. Plantain flour showed the highest ( $p < 0.05$ ) content of sugar (10.59%) compared to Detarium microcarpum (6.89%) and okara (4.29%) while Detarium microcarpum exhibited the highest ( $p < 0.05$ ) level of dietary fiber (78.6%) followed by okara (24.4%) and Plantain (6.6%). Plantain flour had the highest ( $p < 0.05$ ) value of amylose (12.50%) and starch (25.391%) compared to Detarium microcarpum with 0.14% of amylose and 0.54% of starch and okara with 0.38% of amylose and 0.39% of starch. There was no significant difference ( $p > 0.05$ ) in zinc level in the three flours [(plantain (50mg/100g), Detarium microcarpum (50mg/100g) and okara (48.28mg/100g)]. Plantain had the highest level ( $p < 0.05$ ) of vitamin A (1272.72IU), followed

by Detarium microcarpum (690.90IU) and then okara (618.18IU). Plantain had the highest level ( $P < 0.05$ ) of vitamin C (1.65%), followed by okara (1.37%) and then Detarium microcarpum (0.55%). Diet formulated with plantain flour supplemented with 5% Detarium microcarpum flour reduced blood glucose level from 356mg/dl (which was recorded 2 days after induction of alloxan solution) to 113mg/dl (which was recorded at the end of the three weeks study) and this translated to 68.26% reduction while diet formulated with plantain flour supplemented with 5% okara flour reduced blood glucose level from 539mg/dl (which was recorded 2 days after induction with alloxan solution) to 116mg/dl (recorded at the end of the three weeks study) which was about 78.48% reduction. Diabetic rats fed plantain diet supplemented with 5% Detarium microcarpum flour had lower ( $P < 0.05$ ) total cholesterol (1.31mmol/l), low density lipoprotein (LDL) cholesterol (0.31mmol/l) and high density lipoprotein (HDL) cholesterol (0.93mmol/l) than total cholesterol (1.60mmol/l), LDL (0.33mmol/l), and HDL (1.24mmol/l) of non-diabetic rats fed control diet. Also, the total cholesterol (1.47mmol/l), LDL cholesterol (0.33mmol/l) and HDL cholesterol (1.09mmol/l) of diabetic rats fed plantain diet supplemented with 5% okara flour were lower ( $p < 0.05$ ) than the total cholesterol (1.60mmol/l), LDL cholesterol (0.33mmol/l) and HDL cholesterol (1.24mmol/l) found in non-diabetic rats fed control diets.

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