
Moringa leaf powder/soy bean flour blend alleviates the consequences of low protein feeding in rats

Ifeyinwa Asogwa*^{†1} and Jane Ani*²

¹Kezu Consultancy Services Nsukka Nigeria – Kezu Consultancy Services, University of Nigeria, Nsukka, Enugu State, Nigeria

²University of Nigeria, Nsukka (UNN) – Dept of Food Science and Technology, University of Nigeria, Nsukka, Nigeria

Abstract

The potential of moringa leaf powder/soy bean flour blend in reducing the consequences of low protein feeding in rats was studied. Five groups of rats containing five rats per group were fed for 28 days. Rats in group 1 (SOY) were fed a low protein diet (LPD) containing 28% soy bean flour. Rats in groups 2 (MOSOA) and 3 (MOSOB) were fed LPDs supplemented with 28% and 14% MOSO respectively. Animals in groups 4 (DEF) consumed unsupplemented LPD and animals in group 5 (NORM) were fed diet containing 20% casein. There were significant ($p < 0.05$) differences among the groups in feed intake and body weight gain (BWG). NORM consumed the most diet (343.96 g) while DEF ate the least (219.68 g). There was no difference in the feed intake (332.20g to 310.82 g) of the groups fed supplemented diets. NORM had the highest BWG (39.15 g) while DEF had the lowest BWG (-3.01 g). There was no difference ($p > 0.05$) between MOSOA (21.71 g) and MOSOB (21.14 g) in BWG. There were significant ($p < 0.05$) differences among the groups in the haematological parameters. No significant changes due to diet were noticed in PCV (34.80 % - 35.20 %) and Hb (10.94 g/dl – 12.06 g/dl) among the rat groups fed the supplemented diets. However, these groups showed significant depletion in PCV and Hb when compared with DEF (40% and 13.96 g/dl) and NORM (40 % and 13.24 g/dl). Plasma protein analysis revealed significant ($p < 0.05$) differences among the groups in total plasma protein and plasma albumin. DEF had the least total plasma protein and plasma albumin of 4.42 g/dl and 0.65 g/dl respectively. The total plasma protein and plasma albumin among NORM, SOY and MOSOA did not differ ($p > 0.05$) and they ranged from 6.08 g/dl for MOSOA to 5.41 g/dl for MOSOB and 2.50 g/dl for SOY to 2.24 g/dl for MOSOA respectively. There was no significant ($p > 0.05$) in the plasma globulin levels (3.82 g/dl to 3.00 g/dl) among the rat groups. Relative organ weight of the groups varied significantly ($p < 0.05$) among the groups. DEF had significantly ($P < 0.05$) lower relative liver (3.84 %) and spleen (0.37 %) weight than the other rat groups. The liver and spleen weights of the other groups ranged from 4.13 for SOY to 4.47 for NORM and 0.56 for SOY and 0.73 for MOSOA respectively. The kidney weight of DEF (1.54%) was significantly ($p < 0.05$) higher than in other groups., It could therefore be concluded that supplementing low protein diet with moringa leaf powder/soy bean flour up to 28% is able to a significantly reduce the consequences of low protein feeding in rat

*Speaker

[†]Corresponding author: ifyasogwa@gmail.com