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Feeding growing chickens on an extruded kidney bean (Phaseolus vulgaris)/ soya-bean blend diet has no effect on muscle protein metabolism

Florencio Marzo[1], Carmen Contin[1], Jaione Barrenetxe[1], Elena Urdaneta[1], Agustin Brenes[2] and Santiago Santidrian[3]

[1] Lab. of Animal Physiology and Nutrition, Public University of Navarra, Ed. Los Olivos-Campus Arrosadia s/n, Pamplona, 31006, Spain,
[2] CSIC, Instituto del Frío, Madrid, 28040, Spain,
[3] School of Medicine, University of Navarra, Irunlarrea s/n, Pamplona, 31008, Spain

ABSTRACT

Extrusion process is able to diminish the antinutritional factors of legumes. A feeding experiment with broiler chicks (0 to 21d of age) has been conducted to determine the effect of extruded kidney bean (EKB) on gastrocnemius (GM) muscle composition and metabolism. Animals were divided in two dietary groups (n=10): C: control (soya-bean), and EKB (10% extruded kidney bean + 90% soya-bean) as the sole source of protein. Diets were isoenergetic and isoproteic (22%). Body weight changes and food intake were daily recorded. Total protein, DNA and RNA contents and composition of the myofibrillar and sarcoplasmic nitrogenous fractions have been measured in GM muscle. Feeding growing animal on a diet elaborated with EKB has no effect on muscle protein metabolism. No significant differences were found in total protein or DNA and RNA contents, neither in the nitrogenous fractions composition in EKB group as compared to C group. In the same way no differences were observed between both experimental groups in RNA/protein or RNA/DNA ratios (protein synthesis capacity, PSC). This implies that PSC was not altered by feeding growing chickens on an EKB diet. These findings suggest that inactivation or reduction by extrusion process of the main antinutritional factors contained in raw kidney bean (lectins) may account for the effects reported in this work.

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