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Effect of Enhancing Low Protein and Sodium Diets with Cardamom on Experimental Rats with Chronic Renal Failure

Dalia Mohamed Talatt Abdel-khalik
Home Economics Dept., Faculty of Specific Education, Fayoum University, Egypt.

Abstract

This study aimed to investigate the effect of enhancing low protein and sodium diets with cardamom on experimental rats with chronic renal failure. Forty-eight male albino rats weighing 190 ± 10g were used in this study, these rats were fed on a basal diet for one week for acclimatization and then were divided into two main groups, the first main group (n=6) fed on a basal diet throughout the experiment and was used as the control negative group, while the second main group (42 rats) fed on a basal diet BD containing 2 % W/W L- arginine (arginine diet AD) for 4 weeks to induce chronic renal failure, and then were divided into seven subgroups (n = 6 rats in each group) as the following. *Subgroup (1):* fed on (arginine diet AD) and used as a positive control group. *Subgroup (2):* fed on a low sodium arginine diet. *Subgroups (3):* fed on a low protein and sodium arginine diet. *Subgroups (4 and 5):* fed on an arginine diet "AD" containing 5 and 10% cardamom, respectively. *Subgroup (6 and 7):* fed on low protein and sodium diets containing 5 and 10% cardamom, in addition to 2% W.W. L arginine respectively. During the experimental period, rats were weighed weekly, and feed intake was recorded daily. At the end of the experimental period (4 weeks), rats were sacrificed and the blood sample was collected from each rat, and was then separated the serum to determine kidney functions, lipid profile, liver enzymes, protein status, glucose, potassium and sodium. The results of this study revealed that serum concentrations of uric acid, urea nitrogen, creatinine, cholesterol, triglycerides, low density lipoprotein–cholesterol LDL-c, very low density lipoprotein–cholesterol VLDL-c, aspartate aminotransferase AST, alanine aminotransferase ALT, alkaline phosphatase ALP, glucose, and potassium were significantly elevated, while serum (high density lipoprotein-cholesterol, protein, albumin, globulin and sodium) in addition to feed intake and body weight gain% were decreased significantly by using L arginine administration in the diet (control positive), as compared the control negative. Treating chronic renal failure groups with low protein and sodium diets containing

5% and 10% cardamom improved all of these above parameters, especially when using low protein and sodium diets containing 10% cardamom. From these results, it could be concluded that low protein and sodium diets containing cardamom are very important to improve the adverse effects that result from chronic kidney failure in rats.

Keywords: low protein diet, low sodium diet, cardamom, rats, chronic renal failure.