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Therapeutic effect of formulated dietary supplement 'RENAC' on selected chronic renal failure subjects

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The present investigation was carried out in two phases to know the supplementary effect of formulated dietary supplement 'RENAC'(Renal Natural Care) on nutritional status of 25 selected Chronic Renal Failure (CRF) patients (30-60 years of age) undergoing the hemodialysis. In phase I 'RENAC' food was formulated with locally available cereals, fruits, vegetables and coconut palm jaggery and analyzed for it acceptability and nutrient content such as energy, protein, sodium, potassium and iron. In phase II the organoleptically accepted and nutritionally analyzed formulated 'RENAC' food was supplemented to the selected CRF patients for 90 days at a level of 15g day^{-1} and the therapeutic effect of 'RENAC' food was analyzed through serum/blood/urine parameters. Results of the present study revealed that the formulated 'RENAC' food contains 2.7 g kg^{-1}of protein, 0.536 g kg^{-1} of sodium and 1.550 g kg^{-1} of potassium and organoleptically accepted with mean organoleptic score of 65.9±15.5. Biochemical profile after supplementation indicated an increase in serum calcium (2.68±0.77 mg dl^{-1}) and a decrease in serum creatinine (0.8±0.1 mg dl^{-1}), serum potassium (0.28±0.03 mmol l^{-1}) serum sodium (4.2±0.8 mmol l^{-1}) and urinary protein (1.1 g day^{-1}) levels which was found to be statistically significant. There was no significant change in serum protein and blood hemoglobin level after supplementation. Thus the present study concluded that the formulated 'RENAC' food will reduce load to the damaged kidney and promote good quality of life to CRF patients.

Key words : RENAC food, Chronic Renal Failure patients, Dietary supplement, Organoleptic evaluation, Hemodialysis, biochemical profile and Body Mass Index

INTRODUCTION

Chronic Renal Failure is the irreversible loss of excretory capacity of the kidney, which occurs over an extended period of time from months to years. Chronic renal failure can occur in anyone with an illness or an injury that affects the kidneys. It is more likely to affect people who are middle-aged and older (Zeman, 1991). About 67,000 people die each year as a result of kidney failure. Kidney disease is more common among Hispanic, African, American, Asian or Pacific Islander and Native American people (Yu, 2003). The common causes leading to renal failure are glomerulonephritis (24.1%), intestinal nephritis (17.3%), diabetes mellitus (12%), Reno vascular disease (10.3%), cystic disease (8.3%) and chronic renal failure of unknown etiology comprises 14.8%. The remainder of cases is secondary to multi system disease such as erythematosis and rare congenital disorders (Brunner *et al.*, 1989). In North America diabetes mellitus is the commonest known cause of renal failure (30%) followed by hypertension (26%) and glomerulonephritis (14%). Cardiovascular disease is the major cause of the death in end stage renal disease. Using painkilling medications for a longer period of time may also damage the kidneys and cause Chronic Renal Failure (CRF) (Walker, 1997). CRF is a distinct self sustaining process not necessarily treated to the original cause and it's amenable to nutritional influences (Mchell, 1999). Several dietary factors have related to kidney failure. The consumption of large amount of protein by patients with glomerulonephritis may promote their progression of renal insufficiency (Rahman and Smith, 1998). Patients with advanced CRF are at increased risk for depletion of nutrients. These include calcium (Kopple, 1981), iron (Lawson *et al.*,1971), zinc (Krochler and Irgolic, 1997), vitamin B_6, vitamin C and folic acid (Chazot and Kopple, 1997), 1, 25 dihydroxy cholecalciferol (Brickman *et al.*, 1974) and carnitine (Belleingluea *et al.*, 1983 and Fox *et al.*, 2004). A wasting syndrome occurs in uremic patients due to inadequate dietary protein and energy intake, altered protein metabolism and the endocrine abnormalities associated with renal failure. In addition dialysis patients lose nutrients into the dialysate, further contributing to wasting. Proper nutrition may help to

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