Effects of particle size, soaking, sprouting and boiling on phosphorus-protein ratio values in serum phosphorus control among haemodialysis patients

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Abstract

A low phosphorus diet may compromised protein intake among haemodialysis. This study examined the effect of different food treatment methods for improving phosphorus-protein ratio (PPR) values in legumes. The Standard Official Methods of Analysis (AOAC) was used to determine dry matter, phosphorus and protein content of twenty-two varieties of legumes after treatment. Food treatment methods included sprouting, soaking and boiling. Samples were soaked as whole or splits legumes for 12 hours and 24 hours; then boiled until thoroughly cooked. Beans, peas, lentils and oil-seed pulse samples were studied. Soaking legumes for both twelve and twenty-four hours followed by boiling resulted in significant reduction in PPR value of ≤12 mg of phosphorus /gram of protein in slightly more than a third (n=22) of the samples. Splitting and then soaking legume samples for both twelve and twenty-four hours followed by boiling had a significant reduction of PPR value to ≤12 in half of the legume samples. Sprouting followed by boiling significantly reduced PPR value to ≤12 in a third (n=22) of the samples. None of the treatment reduced PPR values to ≤12 in red pigeon peas, garden peas and chick peas. Oil-seed pulse (white and red groundnuts) had PPR values of ≤12 ; with soy having the lowest PPR value = 5.5. Boiling soaked splitted legumes had the greatest effect on PPR values reduction in most of the legumes. Treated legumes forms suitable sources of protein for haemodialysis patients without risk of hyperphosphatemia.

Key words: Soaking, splitting, boiling, sprouting, phosphorus-protein ratio, serum phosphorus, legumes, haemodialysis