

Effect of Germination on Nutritional Values of Isolates from Two Varieties (DAS and BS) of Under-Utilized Nigerian Cultivated Solojo Cowpea (*Vigna Unguiculata* L. Walp)

Authors : Henry O. Chibudike, Olubamike A. Adeyoju, Bolanle O. Oluwole, Kayode O. Adebawale, Bamidele I. Olu-Owolabi and Chinedum E. Chibudike

Abstract : Studies on the Mineral Content of Solojo Flour and Protein Isolates from the two varieties (DAS and BS) of Nigeria cultivated solojo cowpeas were conducted to determine their nutritional value. These inorganic elements or minerals were classified into 3 categories: the ultra-trace minerals, which are the third category; the microelements, also known as the trace minerals, in the second category; while the first category is the macro elements, also known as major minerals. Some of the macro-elements are Ca, P, Na and Cl; the second category, micro-elements include iron, copper, cobalt, potassium, magnesium, iodine, zinc, manganese, molybdenum, F, Cr, Se and S. Results show that the proportion of Sodium (Na) which is ingested into the body in the form of NaCl through food intake maintenance of body pH and to retain water ranged from 728.97 to 253.37 ppm (72.90 to 25.34 mg/100 g); 715.24 to 235.45 ppm; 735.28 to 270.37 ppm; 726.59 to 264.35ppm, for FFDAS, FFBS, DAS and BS respectively with all values of the germinated samples all bellow the control. While FFDAS iron content ranged from 4.25 to 13.50 mg/100 g; FFBS ranged from 3.15 to 12.56 mg/100 g; DAS ranged from 3.81 to 12.90 mg/100g; BS ranged from 3.42 to 9.40 mg/100 g. The values of the germinated flours were all greater than the ungerminated flour. Iron helps to transport oxygen round the body and also helps in red blood cells building and to convert food into needed energy by the body. While Manganese an element that is needed in micro quantity but necessary to convert food into energy, is also crucial for healthy bone and cartilage creation. Results also show that zinc quantity increased as germination proceeded, and the values ranged from 38.80 ppm to 230.00 ppm (3.880 mg/100 g to 23.00 mg/100 g; 0.003880% to 0.0230%); 40.84 to 250.01 ppm; 32.85 to 93.41 ppm; 37.07 to 115.00 ppm, for FFDAS, FFBS, DAS and BS respectively. The Ca content improved significantly ($p < 0.05$) with sprouting; the value extended from 250.56 ppm to 760.03 ppm (25.056 to 76.00 mg/100g or 0.0251 to 0.0760 %); 400.40 to 998.22 ppm; 116.87 to 195.69 ppm; 113.48 to 220.75 ppm, for FFDAS, FFBS, DAS and BS respectively. Zinc element although needed at the micro level in the body, is essential for a strong immune system to keep the body in good health. It is also crucial for the maintenance of a healthy sense of taste and odor, while Calcium is critical for strong bones and teeth, blood coagulation, and muscle tightening and relaxation. Magnesium is needed to build enzymes and antioxidants and also for healthy bones, while Potassium is needed to maintain water balance, muscle movement, and nerve impulses. It functions in conjunction with Na to regulate blood pressure.

Keywords : Solojo cowpea, underutilized legumes, protein isolates, BS, DAS, ungerminated

Conference Title : ICAFSTN 2024 : International Conference on Agricultural Food Science, Technology and Nutrition

Conference Location : Toronto, Canada

Conference Dates : September 19-20, 2024