Implications of Dehusking and Aqueous Soaking on Anti-nutrients, Phytochemical Screening and Antioxidants Properties of Jack Beans (Canavalia Ensiformis L. DC)

Authors : Oseni Margaret Oladunni, Ogundele Joan Olayinka, Olusanya Olalekan Samuel, Akinniyi Modupe Olakintan

Abstract : The world's growing population is pushing humans to look for alternative food sources among underutilised or wild plants. One of these food sources has been identified as Canavalia enisiformis, or jack beans. The only issue with using jack beans is that they contain anti-nutrient chemicals, which must be removed or diminished in order for them to be fit for human consumption. The objective of this study is to determine the nutritional and industrial utility of Canavalia enisiformis by analysing the anti-nutrient, phytochemical, and antioxidant composition of raw whole seed and soaking dehusked seeds using established procedures. Phytate (23.48±0.24, 15.24±0.41 and 14.83±0.00), oxalate (4.32±0.09, 3.96±0.09 and 2.88±0.09), tannins (22.77±0.73, 18.68±0.03 and 17.50±0.46), and lectins (6.67±0.04, 6.20±0.01 and 6.42±0.07) exhibited the highest anti-nutrient values in raw whole seed and, at the very least, in dehusked, soaked seeds. The samples were subjected to phytochemical screening, which detected the presence of cardiac glycosides as well as anthraquinones, alkaloids, tannins, saponins, steroids, flavonoids, terpenoids, phlobatannins, and flavonoids. Due to the reduction in phytochemical contents quantified as a result of dehusking and soaking, phenolbatannins and anthraquinones were not found in the samples. The research findings also demonstrated elevated concentrations of several plausible phytochemical components with potential medical value, with the raw whole seed exhibiting the greatest capacity to scavenge free radicals. Accordingly, the study's findings validate the seed's therapeutic applications and imply that it might be an inexpensive source of antioxidants for humans and animals alike.

Keywords : dehusking, soaking, anti-nutrients, antioxidants, jack bean
Conference Title : ICC 2024 : International Conference on Chemistry
Conference Location : London, United Kingdom
Conference Dates : May 23-24, 2024

Open Science Index, Chemical and Materials Engineering Vol:18, No:05, 2024 publications.waset.org/abstracts/185443.pdf