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Effect of Drying Methods on the Nutritional and Antinutritional Content of African Nightshade (Solanum sp.)

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Abstract

African nightshade (ANS) is one of the luminary food plants, considered a cheap and potential dietary source for micronutrients and bioactive compounds. The study evaluated the effects of drying techniques on nutritional (minerals & vitamin C) and antinutritional (oxalates & phytate) contents of ANS (*Solanum scabrum* (SS) and Solanum villosum(SV)). The study employed three methods for drying; indirect solar drying (ISD), mixed solar drying (MSD), and open sun drying (OSD). Pre-treatment done was blanching (85 °C, 2 min) with and without 3 % NaCl; others were un-blanched for control purposes. From the results, vitamin C retention in OSD was 12.08 % in SS, and 12.28 % in SV; MSD (13.12 % SS and 17.79 % SV), and ISD was 14.76 % SS and 19.2 % in SV). A considerable amount of minerals was retained, specifically; calcium retention were as follows; OSD (84.76 % SS, 93.54 % SV); MSD (83.12 % SS, 91.29 % SV); ISD (92.60 % SS, 96.57 % SV). For iron the percentage retained were; OSD (59.31 % SS, 49.77 % SV), MSD (52.29 % SS, 50.94 % SV) and ISD (77.88 % SS, 71.56 % SV); while for Zn, the significance percent were; OSD (43.64 % SS, 74.53 % SV), MSD (59.23 % SS, 86.32 % SV) and ISD (86.94 % SS, 90.09 % SV). On the other hand, the drying methods significantly reduced the oxalate and phytate content. The results showed an ISD to be the best method for retaining vitamin C, minerals and reducing antinutrients than other methods. On treatment, the blanching led to less retention of micronutrients and more reduction of antinutrients in ANS. Therefore, ISD can be a good method in preserve ANS while retaining nutrients and reducing antinutrients.

Keywords: African nightshade, antinutrients , drying methods, minerals, Solanum spp., vitamin C

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