Effects of drying technologies on the nutrition and anti-nutritional factors of African nightshades (*Solanum nigrum* complex) species in Tanzania

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Abstract

The African nightshades (ANS) (Solanum nigrum complex) is one of the luminary food plants from the genus Solanum in the Solanaceae family. In Tanzania, ANS is called Mnavu in (Swahili). These ANS are cheap and potential dietary sources for micronutrients and bioactive compounds. The study aimed at assessing the effects of various drying techniques (open sun, direct and indirect solar drying) on nutritional and anti-nutritional contents of S. scabrum and S. villosum. The techniques are expected to reduce postharvest losses, improve shelf life and ensuring availability of ANS throughout the year. Non-blanching, blanching at 85 °C for 2 minutes with NaCl and without NaCl was conducted. The nutritional content has significant differences (p< 0.05) in all the dried samples for the three drying methods. The nutrients retention was; vitamin C (3.69% to 12.73%), Ca (65.46% to 96.57%), Fe (34.96% to 77.88), Mg (23.84% to 80.72%), and Zn (38.02% to 97.64%) for all methods for the species studied. The anti-nutritional factors percent removed were as follows; oxalate (4.66% to 35.24%) and phytate (51.72% to 85.42%), respectively. The open sun and indirect solar drying were found to be the best methods in nutritional retention and removal of the anti-nutritional factors (oxalate and phytate). Likewise, Non-blanched samples resulted in significant retention of micronutrients, while blanched samples proved to be the best in reducing of an anti-nutritional factors. Hence, the dried SS and SV can be consumed as side dishes for improvement of health and suffice for food security.