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Effect of Stripping Methods on the Oxidative Stability of Three Unconventional Oils

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Abstract Stripped and non-stripped oils from Sclerocarya birrea [marula oil (SCO)], Aspongopus viduatus [melon bug oil (MBO)] and Agonoscelis pubescens [sorghum bug oil (SBO)], traditionally used for nutritional applications in Sudan, were investigated for their fatty acid and tocopherol composition, and their oxidative stability. Three stripping methods were used, phenolic compounds extraction, silicic acid column, and aluminum oxide column. The stripping methods did not affect the fatty acid composition. Non-stripped SCO, MBO and SBO contained oleic, palmitic, stearic and linoleic acids, which were not significantly (P\0.05) different than stripped SCO, MBO and SBO. The stripping methods' effect on the tocopherol composition of the studied oils, the total amount of tocopherol in non-stripped oils decreased by extraction of phenolic compounds, mean that part of the tocopherols was extracted with the phenolic compounds. No traces of tocopherols were found in oils stripped using silicic and aluminum columns and the tocopherols were eliminated during the stripping processes. The stability of SCO, MBO and SBO oils was 43, 38 and 5.1 h, respectively, this stability decreased by 22.0, 37.6 and 23.5%, respectively after extraction of phenolic compounds. This stability decreased by 96.9, 98.2 and 90.2% respectively, when stripped using the aluminium column and decreased by 92.6, 96.1 and 86.3% when stripped by the silicic column. It is possible to assume that the tocopherols and phenolic compounds play a more active role in the oxidative stability of the oils than the fatty acid composition and phytosterols.