

Annona squamosa and *Catunaregam nilotica* Seeds, the Effect of the Extraction Method on the Oil Composition

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Abstract *Annona squamosa* and *Catunaregam nilotica* seeds and oils were characterized for their approximate analysis and physico-chemical properties. The oil and protein contents were 26.8, 17.5 and 40.0, 22.2%, in *A. squamosa* and *C. nilotica* seeds, respectively. The oils were extracted using cold extraction (CE) and Soxhlet extraction (SE) methods. Fatty acids and tocopherols were determined by GC–MS and HPLC, respectively. Generally the physico-chemical properties and fatty acids were not significantly ($P \leq 0.05$) affected by the extraction methods. The major fatty acids of *A. squamosa* oil extracted by CE and SE were oleic 49.2 and 50.5%, linoleic 22.3 and 22.7%, palmitic 15.6 and 15.2%, and stearic 10.6 and 9.3%, respectively. While the major fatty acids in *C. nilotica* oil extracted by CE and SE were oleic 10.5, and 10.4%, linoleic 63.1 and 63.4%, palmitic 9.7 and 9.8% and stearic 5.1 and 5.4%, respectively. The tocopherol content of CE and SE extracted oils from *A. squamosa* amounted to 16.6 and 15.5 and from *C. nilotica* amounted to 110.5 and 107.7 mg/100 g oil, respectively, with delta-tocopherol as the predominant tocopherol in

A. squamosa oil, and beta-tocopherol in *C. nilotica* oil. The total amount of amino acids was found to be 7.266 and 14.202 g/100 g protein, in seeds of *A. squamosa* and *C. nilotica*, respectively.

Keywords Amino acids · *Annona squamosa* · *Catunaregam nilotica* · Extraction method · Fatty acids · Physicochemical properties · Seed oil · Tocopherol

Introduction

Fats and oils are recognized as essential nutrients in both human and animal diets [1]. The Sudan is a large producer of conventional oilseeds such as cotton seed, sesame, ground nut and sunflower. Recently, researchers have started to be greatly concerned about identifying new oil sources from a large number of vegetables, fruits, and wild plants commonly grown in the Sudan [2]. Two of these wild plants are *Catunaregam nilotica* and *Annona squamosa*. *C. nilotica* belonging to the family Rubiaceae and known locally in Sudan as kerkir. *C. nilotica* is widespread in Central and East Africa as well as in