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## Phytochemical studies and evaluation of antioxidant activities of the leaves of *Clausena anisata* (Rutacée)

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Synthetic antioxidants although effective, present potential toxicological risks hence, there is need to seek new sources of natural antioxidants to reduce or replace the use of synthetic antioxidants. The aim of our work is to study the antioxidant activity of the essential oil and methanolic extract of the leaves of *Clausena anisata*. The essential oil of the fresh leaves of our plant was extracted by hydrodistillation using a clevenger type apparatus and the chemical composition of this essential oil was determined by gas chromatography (GC). However, the solvent raw extract was obtained by maceration of powder of dry leaves of *Clausena anisata* for 48 hours with methanol, and then left in an oven for about two weeks. Evaluation of the antioxidant activity was carried out by three methods for two extracts: the method for trapping the DPPH(2,2-diphenyl-1-picrylhydrazyl) radical, the method for trapping the ABTS, 2'-azynobis- [3-ethylbenzothiazoline-6-sulfonic acid]) and ferric reducing antioxidant power (FRAP) method. The extraction yield was 0.38%; 2.56%; respectively for the essential oil and extracted with methanol. The chemical composition of the essential oil showed that our plant was rich in E-anethole (60.89%), estragole (18.06%). The phytochemical study of the plant revealed the presence of terpenes, sterols, alkaloids, coumarins, saponosides, and gallic tannins; on the other hand, flavonoids and anthracene derivatives were absent. The antiradical DPPH test revealed the SC50 were 1 g/L; 0.51 g/L; 0.04 g/L respectively for essential oil, methanol extract and for ascorbic acid whereas for the ABTS antiradical test the SC50 was 0.265 g/L, 0.165 g/L and 0.01 g/L for the essential oil, the methanol extract and the ascorbic acid respectively. Regarding the FRAP antioxidant test, HE and crude methanol extract of *Clausena anisata* showed good reductive activities. The results of this study showed that the methanol extract has a better antioxidant activity compared to that of the essential oil. It can then be used as an alternative against synthetic antioxidants.

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