

Ethnobotanical Study, Phytochemical Screening, and Biological Activity of Culinary Spices Commonly Used in Omdurman, Sudan

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Abstract : Spices have long been used as traditional ingredients in the kitchen for seasoning, coloring, aromatic and food preservative properties. Besides, spices are equally used for therapeutic purposes. The objective of this study was to survey and document the medicinal properties of spices commonly used in the Sudanese kitchen for different food preparations. Also, extracts from reported spices were screened for the presence of secondary metabolites as well as their antioxidant and beta-lactamase inhibitory properties. This study was conducted in the Rekabya Quartier in Omdurman, Khartoum State, Sudan. Information was collected by carrying out semi-structured interviews. All informants (30) in the present study were women. Spices were purchased from Attareen shop in Omdurman. Essential oils from spices were extracted by hydrodistillation, and ethanolic extracts by maceration. Phytochemical screening was performed by thin-layer chromatography (TLC). The antioxidant capacity of essential oils and ethanolic extracts was investigated through TLC bioautography. Beta lactamase inhibitory activity was performed by the acidimetric test. Ethnobotany study showed that a total of 16 spices were found to treat 36 ailments belonging to 10 categories. The most frequently claimed medicinal uses were for the digestive system diseases treated by 14 spices and respiratory system diseases treated by 8 spices. Gynecological problems were treated with 4 spices. Dermatological diseases were cured by 5 spices, while infections caused by tapeworms and other microbes causing dysentery were treated by 3 spices. 4 spices were used to treat bad breath, bleeding gum and toothache. Headache, eyes infection, cardiac stimulation and epilepsy were treated with one spice each. Other health problems like fatigue and loss of appetite, and low breast milk production were treated by 1, 3 and 2 spices, respectively. The majority (69%, 11/16) of spices were exported from different countries like India, China, Indonesia, Ethiopia, Egypt and Nigeria, while 31% (5/16) was cultivated in Sudan. Essential oils of all spices were rich in terpenes, while ethanolic extracts contained variable classes of secondary metabolites. Both essential oils and ethanolic extracts of all spices exerted considerable antioxidant activity. Only one extract, *Syzygium aromaticum*, possessed beta-lactamase inhibitory activity. In conclusion, this study could contribute to conserving information on traditional medicinal uses of spices in Sudan. Also, the results demonstrated the potential of some of these spices to exert beneficial antimicrobial and antioxidant effects. Detailed phytochemical and biological assays of these spices are recommended.

Keywords : spices, ethnobotany, antioxidant, betalactamase inhibition

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