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Cymbopogon citratus and *Cymbopogon giganteus* essential oils have cytotoxic effects on tumor cell cultures. Identification of citral as a new putative anti-proliferative molecule

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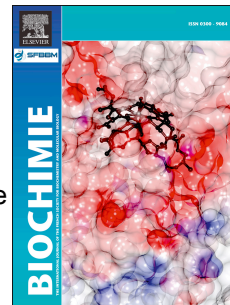
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Abstract

Cymbopogon species are used as traditional remedies in Burkina Faso for treating several diseases. We aimed to study the effects of their essential oils on cancer cell lines. For that purpose, *Cymbopogon citratus* (DC.) Stapf. and *Cymbopogon giganteus* Chiov. were studied for their essential oils after various chemical extractions. Antioxidant, potential anti-inflammatory action (inhibition of lipoxygenase) and cytotoxic activities were also tested on various prostate cancer and glioblastoma cell lines. Thirty-three compounds were identified in the essential oil of *C. giganteus*: Limonene (19.33%), Mentha-1(7),8-dien-2-ol cis (17.34%), Mentha-1(7),8-dien-2-ol trans (13.95%), trans-Mentha-2,8-diene-para-ol 1 (13.91%) and Mentha-2,8-diene-1-ol, cis-para (8.10%) were the most abundant. *C. citratus* essential oil contained 15 compounds and the major ones were geranial/citral A (48.18%) and neral/citral B (34.37%). Essential oil of *C. citratus* showed the highest ability to scavenge DPPH⁺ radicals (approximately 68% at 8mg/mL) while *C. giganteus* exhibited the highest capability to reduce ABTS⁺ (0.59 μ molET/g). The essential oil of *C. citratus* was the most effective on prostate cell lines LNCaP (IC₅₀ = 6.36 μ g/ml) and PC-3 (IC₅₀ = 32.1 μ g/ml), and on glioblastoma cell lines (SF-767 (IC₅₀ = 45.13 μ g/ml) and SF-763 (IC₅₀ = 172.05 μ g/ml). Interestingly, the activity of essential oil of *C. citratus* was statistically equal to that of its major component, citral. Combination of both oils showed antagonist, additive, indifferent and synergistic effects on LNCaP, PC-3, SF-767 and SF-763 cell lines, respectively. In conclusion, plants from the traditional medicine in Burkina Faso could be of interest for identifying new compounds, such as citral, for the treatment of prostate cancer and glioblastoma.

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