OP7. An overview of the biological activities and essential-oil composition of three South African Salvia species

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Essential oils produced by aromatic plants have been used to treat various ailments such as malaria and microbial infections for many years. In South Africa, there are 26 indigenous Salvia species and most of them have been reported for use in the treatment of malaria, tumors, microbial infections. Among those of ethnomedicinal value are S. repens, S. stenophylla and S. runcinata which form a species complex. The current study aimed to profile the essential-oil composition and investigate the bioactivities related to the traditional uses. The essential oil of the three species (S. repens, S. stenophylla and S. runcinata) was isolated by hydrodistillation and the antimalarial, anti-inflammatory, antimicrobial activities and the toxicity profiles were evaluated using the [¹H]hypoxanthine incorporation assay, 5-lipoxygenase assay, minimum inhibitory concentration assay and the MTT colorimetric method, respectively. The essential-oil composition was analyzed using the GC-MS and GC-FID methods. The oil of S. repens was dominated by 1,8-cineole (12.8%), p-cymene (9.5%) and limonene (9.4%), while α-bisabolol (65.0%) and β-caryophyllene (10.5%) were the major constituents of S. runcinata. α-Bisabolol (26.1%) and δ-3-carene (22.6%) were the dominant constituents of S. stenophylla. The anti-inflammatory activity of the three oils (IC₅₀ value) ranged from 22.8 to 49 µg/mL with S. runcinata exhibiting the best activity. The three oils also inhibited the growth of Plasmodium falciparum FCR-3 strain with IC₅₀ values ranging from 1.2-4.1 µg/mL with the oil of S. runcinata showing the best antimalarial activity. The essential oils showed poor antimicrobial activity (MIC value > 32 mg/mL) and were also toxic to normal kidney epithelial cells (IC₅₀ value < 6.6 µg/mL). The essential oils displayed some degree of activity, however, the toxicity exhibited against kidney cells indicated that the oils should be used with caution.

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