

Chemical profiling and antiproliferative effect of essential oils of two *Araucaria* species cultivated in Egypt

Wafaa Moustafa El Kady ,Iryny M. Ayoub

Lecturer of Pharmacognosy

Abstract

Araucaria is a small genus of evergreen coniferous trees, widely used for ornamental and timber purposes.

Araucaria species are rich in essential oils. In this study, the essential oils obtained from the foliage of *Araucaria*

heterophylla (Salisb.) and *Araucaria bidwillii* Hook were analyzed using GC and GC/MS. Cytotoxicity of both

essential oils was assessed on three human cancer cell lines using MTT assay.

Twenty nine compounds were

annotated in *A. heterophylla* essential oil, whereas forty three were identified in *A. bidwillii* accounting for

95.16% and 81.06% of the total volatile oil composition, respectively. α -Pinene (70.85%), D-limonene (4.26%)

and germacrene D (2.99%) represented the major compounds in *A. heterophylla*.

Beyerene (35.65%), transnerolidol

(13.66%) and γ -elemene (6.09%) dominated in *A. bidwillii*. Both oils showed potent cytotoxicity

against all tested cancer cell lines (Hep-G2, MCF-7 and Caco-2) exhibiting IC₅₀ values of 0.70, 3.20 and 1.10 μ g/

ml for *A. heterophylla*; and 1.67, 1.10 and 1.32 μ g/ml for *A. bidwillii*, respectively.

Caspase-3 activation indicated

that the cytotoxicity of *A. bidwillii* essential oil is mediated via caspase-dependent apoptosis. These findings

suggest that the essential oils of *A. heterophylla* and *A. bidwillii* offer promising anticancer drug candidates pertaining

to the synergistic effects of their individual components.

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