

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

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## 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.  $\alpha$ -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  $\gamma$ -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 IC<sub>50</sub> values of 0.70, 3.20 and 1.10  $\mu$ g/

ml for *A. heterophylla*; and 1.67, 1.10 and 1.32  $\mu$ 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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