Antimicrobial Activity and Chemical Analysis of the Essential Oil of Algerian *Juniperus phoenicea*

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Abstract

The essential oils of *Juniperus phoenicea* L. from Algeria were obtained by hydrodistillation and analyzed by GC-FID and GC-MS. Concerning their chemical composition, 74, 61 and 72 volatile compounds were identified from fresh leaves, dried leaves and berries, representing 88.8%, 91.3% and 94.7% of the total composition, respectively. The main monoterpene in the oils of fresh leaves, dried leaves and berries was a-pinene (29.6% / 55.9% / 56.6%), accompanied by lesser amounts of the sesquiterpenes β-caryophyllene (2.6% / 1.6% /1.2%) and germacrene D (2.01% / 1.7% / 1.5%), respectively. Antibacterial activity of *J. phoenicea* essential oils was tested against one Gram-negative and four Gram-positive bacterial strains and the yeast *Candida albicans*, responsible for nosocomial infections. As references, 14 antibiotics and 5 antifungal agents were evaluated. The berry essential oil was ineffective against all but two of the strains tested, whereas the essential oil of dried leaves significantly inhibited all strains but *Pseudomonas aeruginosa*, which turned out to be the most resistant strain overall. However, *Escherichia coli* was the most susceptible to the essential oils tested. The essential oil of dry leaves was highly active against *Candida albicans*, outclassing even the standard antifungal substances. These promising results could substantiate the use of essential oils in the treatment of hospital-acquired infections.

Keywords: Essential Oil, *Juniperus phoenicea, Pseudomonas aeruginosa, Escherichia coli, Candida albicans*