

Antimicrobial and antitumoral potential use of essential oils from *Calamintha nepeta*, *Origanum virens* and *Thymus mastichina* (Alentejo)

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Aromatic plants are appreciated as food flavors, being preserved and consumed by the local population in daily diets, and in Mediterranean Diet. Essential oils (EOs), complex mixtures rich in terpene compounds, have shown several biological properties, mainly as antimicrobials and antioxidants. Alentejo, S.W. of Portugal, is very rich in flavoring autochthones aromatic plants. Therefore, it is important to evaluate their phytotherapeutic potential for their application as food preservatives, nutraceuticals and/or therapeutically products.

For this study were selected autochthonous Lamiaceae plants: *Calamintha nepeta*, *Origanum virens* and *Thymus mastichina* in order to evaluate the chemical composition and antioxidant, antimicrobial and antiproliferative activities of their essential oils.

EOs were extracted by hydrodistillation from aerial parts of flowering plants, and their chemical composition was evaluated by GC-FID. EOs antioxidant potential of was evaluated *in vitro* by radical DPPH, total reducing power and β -carotene linoleic acid methods. Antimicrobial activity was assessed by solid diffusion disk assays and minimal inhibitory concentration. Cell viability was performed by methylthiazol tetrazolium (MTT) assay using MDA-MB-231 breast cancer cells.

Results showed EOs very rich in oxygenated monoterpenes but *O. vulgare* EO showed similar content in oxygenated monoterpenes and monoterpene hydrocarbons. EOs are important antioxidants, with ability to scavenge free radicals, inhibit Fe^{2+} oxidation and protect the lipid substrate oxidation. EOs presented a large antimicrobial spectrum, with high inhibitory activity against Gram-positive and Gram-negative strains Additionally, EOs showed high antiproliferative activity for breast cancer cell line.

Results point out the antioxidant, antimicrobial and antiproliferative potential of EOs of *C. nepeta*, *O. virens* and *T. mastichina* of Alentejo and suggest their potential use as health promoting agents in food and/or pharmaceutical industries.

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