

P293. Antioxidant activity and cholinesterase inhibition studies of four flavoring herbs from Alentejo

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Keywords: essential oil, aromatic plants, antioxidant, Alzheimer's disease, cholinesterase inhibition

Overproduction of free radicals and the oxidative stress are often associate to many chronic pathologies, such as atherosclerosis, cancer, diabetics, rheumatoid arthritis, cardiovascular diseases, myocardial infarction, chronic inflammation, aging and neurodegenerative Alzheimer's and Parkinson's diseases¹. In Alzheimer's disease, the most common form of dementia, the loss of cholinergic neurons leads to the progressive reduction of acetylcholine in the brain, resulting cognitive impairment². Inhibition of the hydrolysis of acetylcholine by blocking acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) has been considered as a potential target in the treatment of Alzheimer's disease. Essential oils and extracts of aromatic plants may have an important role in the oxidative stress protection.

Traditionally, in Alentejo (Portugal), aromatic herbs *Calamintha nepeta*, *Foeniculum vulgare*, *Mentha spicata* and *Thymus mastichina* are often used by local population as condiments in food preparations. In this study, essential oils (EOs) and aqueous extracts (decoction waters) of these flavouring herbs were selected in order to evaluate its antioxidant potential and ability to inhibit AChE and BChE activities.

Antioxidant activities were evaluated by three different mechanisms, free radical DPPH method, β -carotene/linoleic acid system and total reducing power³. The AChE and BChE activities were evaluated by UV-Vis spectrometry and the IC₅₀ was determined (dose that cause 50% of enzyme activity inhibition)⁴.

EOs showed mainly antioxidant ability to protect the lipid substrate while aqueous extracts exhibited high antioxidant activity by the three mechanisms studied. Essential oils and aqueous extracts showed ability to inhibit AChE and BChE enzyme activities.

Results suggest the potential use of EOs and extracts as nutraceutical or pharmaceutical preparations in the prevention of the oxidative stress and degenerative diseases.

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