



Abstract

The Marvellous Oregano Spices [†]

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Abstract: People are using plants with health-boosting properties, such as oregano species, in their daily diet. Nowadays, these plants, characterized as potential functional foods, are being extensively scientifically analyzed. Bearing that in mind, as well as the fact that neurodegenerative diseases such as Alzheimer’s and Parkinson’s are affecting millions of people worldwide, this study was defined to assess the antineurodegenerative, antineuroinflammatory, and neuroprotective potential of *Origanum majorana* (marjoram) and *O. vulgare* (oregano) from Serbia. The plant material was obtained from the Institute for Medicinal Plant Research “Dr. Josif Pančić”, Serbia, and the ethanolic extracts were prepared using classic maceration protocol. The acetylcholinesterase (AChE) and tyrosinase (TYR) inhibition protocols were used to examine antineurodegenerative activity. Microglial (BV2) cells stimulated with LPS were used to evaluate antineuroinflammatory activity in MTT, NBT, and Griess assays, while neuronal (SH-SY5Y) cells were used to determine the neuroprotective activity of the extracts in MTT and Griess assays. The results suggest that oregano extracts are slightly better at inhibiting AChE and TYR (68% vs. 61% at 0.1 mg/mL) than marjoram extracts (53% vs. 59% at 0.1 mg/mL), making them more active than the positive controls (galantamine 41% vs. kojic acid 25% at 0.1 mg/mL). Furthermore, these extracts normalized LPS-stimulated BV2 cells’ viability, while also reducing their production of inflammatory mediators, i.e., reactive oxygen species and nitric oxide, to the level of untreated cells. Additionally, supernatants of LPS-stimulated BV2 cells that were previously treated with these extracts normalized the viability of neurons compared to the control neurons (treated with supernatants of LPS-stimulated BV2 that were not previously treated with the extracts). Both extracts exhibited noticeable antineurodegenerative, antineuroinflammatory, and neuroprotective activities which represent powerful sources of phytochemicals with promising neuroprotective activity, which could be further examined for potential dietary supplement manufacturing.

Keywords: *Origanum majorana*; *Origanum vulgare*; ethanolic extracts; antineurodegenerative activity; antineuroinflammatory activity; neuroprotective activity



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