



ANTI-INFLAMMATORY EFFECTS OF AQUEOUS EXTRACTS OF ROSMARINUS OFFICINALIS AND ORIGANUM VULGARE, ALONE AND IN COMBINATION, IN IN VITRO AND IN VIVO MODELS

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Abstract

Natural products rich in phenolic compounds, such as *Rosmarinus officinalis* (rosemary, ALE) and *Origanum vulgare* (oregano, ORO), have been associated with the modulation of inflammatory pathways. This study evaluated the anti-inflammatory effect of the aqueous extracts (AE) of these species—tested individually (AE-Ale, AE-Oro) and in combination (AE-Ale + AE-Oro)—using a cellular model of inflammation. Murine macrophages (RAW 264.7) were exposed to the extracts at 333, 100, 33.3, and 10 µg/mL. Cytotoxicity was assessed by MTT, and the inflammatory response by nitric oxide (NO) production. The AEs exhibited low cytotoxicity under all conditions, with cell viability $\geq 70\%$ at 100, 33.3, and 10 µg/mL. A significant inhibition of NO was observed at nearly all concentrations: reductions of $\sim 60\%$ at 333, 33.3, and 10 µg/mL and $\sim 66\%$ at 100 µg/mL. The combined extract (AE-Ale + AE-Oro) achieved $\sim 60\%$ inhibition, with an effect comparable to or better than the isolated extracts. Taken together, the results indicate that the combined aqueous extracts of rosemary and oregano reduce NO production with no relevant cytotoxicity, supporting their anti-inflammatory potential and in vitro safety. These findings suggest that combining rosemary and oregano aqueous extracts is a promising and original strategy for controlling acute inflammation.

Keywords:

Rosmarinus officinalis; *Origanum vulgare*; RAW 264.7 macrophages; nitric oxide; inflammation

Reference

ISO 10993-5:2009 – Biological evaluation of medical devices — Part 5: Tests for in vitro cytotoxicity. Geneva: ISO, 2009.

