

ANTIMICROBIAL AND ANTIOXIDANT PROPERTIES OF *ORIGANUM VULGARE* EXTRACTS

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Abstract

Aromatic plants play an important role in discovery and development of new drugs, cosmetics and natural food supplements. Oregano, (*Origanum vulgare*), also called origanum or wild marjoram is an aromatic perennial herb that has both antimicrobial and antioxidant action. In this work, oregano extracts obtained by the means of supercritical fluid extraction (SFE) were examined for their antioxidant and antimicrobial activity.

Wild oregano from Alfred Galke GmbH (Samtgemeinde Bad Grund, Germany) was grounded before use. Extracts were obtained by supercritical fluid extraction (SFE) with CO₂. The antioxidant activities of the extracts were determined using the DPPH method. For determination of antimicrobial activity emulsions were prepared and tested on different microorganisms such as: *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans*. Oregano extract was suspended in Mueller-Hinton agar with emulsifying agent Tween 80. Minimal inhibitory concentration has been determined.

The highest antioxidant activity (85%) was determined for the extract obtained at 250 bar and 60 °C. The results can be reconciled with those from literature, as likewise higher antioxidant activity is achieved for extracts obtained at higher pressure. Oregano extracts exhibited antimicrobial activities against *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans*.

Extracts of *Origanum vulgare* possess compounds with antimicrobial properties as well as antioxidant activity, therefore can be used as a natural preservative ingredient in food and/or pharmaceutical industry. These beneficial properties are the consequence of the secondary plant metabolites. A better knowledge of the mechanism of action and effects of individual compounds would be useful to formulate mixtures of compounds to enhance efficiency.

Key words: *Origanum vulgare*, Antioxidant activity, Antimicrobial activity, Supercritical fluid extraction, Minimum inhibitory concentration.