

Antimicrobial activity of plant essential oils

B. Biavati, R. Piccaglia, M. Marotti

Dep. of Agro-environmental Science and Technology, University of Bologna, Italy

It is estimated that there are 250,000 to 500,000 species of plant on earth. Many natural compounds isolated from plants have been shown to have biological activities and the essential oils from aromatic and medicinal plants are particularly interesting. The prospect of an increased use of natural plant products in food, or pharmaceutical industries may improve the application of new antimicrobial agents that are safe for man and his environment and come from available and renewable sources.

The presentation will concern some investigations on the properties of essential oils obtained by steam distillation of plant material in a Clevenger-type apparatus and characterized by GC/MS. The antimicrobial properties of essential oils were studied against several species of bacteria and yeasts. Test strains were chosen for their diversity and represented a range of different categories, which have an important role in agriculture, food and pharmaceutical industries. MIC's were determined by broth dilution method and antimicrobial properties were tested in the range 200-2000 ppm with intervals of 200 ppm. The growth was evaluated by the amount of cells on the bottom of the microwell, the reduction of pH and the colour variation of bromocresol indicator were considered for fermentative organisms. The tested oils possess antimicrobial properties with different degrees of effectiveness. The results suggest the possibility of developing new and safer types of antimicrobial agents.

The properties of essential oils as potential antioxidants were also investigated.