

Antimicrobial Activity of Rosemary Semivolatile Compounds Obtained Through a New Enzyme Assisted Extraction Technique

Anca-Maria Patrascu

Control Pollution Department, National Research and Development Institute for Industrial Ecology—ECOIND, Drumul Podu Dambovitei 57–73, Sector 6, 060652 Bucharest, Romania

Laura Feodorov

Control Pollution Department, National Research and Development Institute for Industrial Ecology—ECOIND, Drumul Podu Dambovitei 57–73, Sector 6, 060652 Bucharest, Romania

Faculty of Biotechnology, University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Marasti Blvd., district 1, Bucharest, Romania

Daniel Rudaru

Control Pollution Department, National Research and Development Institute for Industrial Ecology—ECOIND, Drumul Podu Dambovitei 57–73, Sector 6, 060652 Bucharest, Romania

Dragos Mihai Radulescu

Control Pollution Department, National Research and Development Institute for Industrial Ecology—ECOIND, Drumul Podu Dambovitei 57–73, Sector 6, 060652 Bucharest, Romania

Alina Roxana Banciu

Control Pollution Department, National Research and Development Institute for Industrial Ecology—ECOIND, Drumul Podu Dambovitei 57–73, Sector 6, 060652 Bucharest, Romania

Mihai Nita-Lazar *

Control Pollution Department, National Research and Development Institute for Industrial Ecology—ECOIND, Drumul Podu Dambovitei 57–73, Sector 6, 060652 Bucharest, Romania

Abstract:

Integrating traditional knowledge of medicinal plants with modern research can lead to innovative discoveries and the protection of cultural heritage so that the research and use of plant extracts can contribute to the conservation of biodiversity and the sustainable use of natural resources. Rosemary (*Rosmarinus officinalis* L.) is known for its rich content of active compounds, which give it various beneficial properties for health and uses in various fields. Numerous research investigations have documented the biological bioactivities of rosemary extracts, including its hepatoprotective, antifungal, insecticidal, antioxidant, and antibacterial properties. The antimicrobial efficiency of rosemary extracts is influenced by the extraction method and the solvents used. The breakdown of cellulose and pectin structures from cell walls and membranes of plants was enhanced by enzymes, which raised the yield of bioactive chemicals extracted and their antibacterial activity. The objectives pursued in this study include the identification of bioactive compounds, the evaluation of antimicrobial efficiency by testing and quantifying the capacities of plant extracts to inhibit the growth of different bacterial strains.

Keywords:

Antibiotics, ecotoxicological impact, bioindicators, tetracyclin.