

Extraction of *Eryngium campestre* (L.) Bioactive Compounds and Their Antimicrobial Activity

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Abstract:

Medicinal plants are the richest biosource of pharmaceutically active compounds for traditional and modern systems of medicine.

Aims of study:

The present study aims to evaluate the antibacterial activity against three gram-positive bacteria (*Bacillus subtilis*, *Staphylococcus aureus*, *Staphylococcus epidermidis*), two gram-negative bacteria (*Escherichia coli*, *Pseudomonas aeruginosa*), and antifungal activity against *Candida albicans* of aqueous and organic extracts of *Eryngium campestre* (L.)

Materials and methods:

The well diffusion method was used to evaluate antibacterial and antifungal activities of aqueous and organic extracts of *E. campestre* (L.). Minimum inhibitory concentration (MIC) and minimum bactericidal-fungicidal concentration (MBC-MFC) were determined by the serial dilution method.

Results:

The aqueous extract showed antibacterial activities using well diffusion method against all gram-positive bacteria with the greatest activity against *Bacillus subtilis*, its inhibition zone diameter was 18 mm {39.1% of the diameter of the inhibition zone (DIZ) of Imipenem}, while *Staphylococcus aureus*, and *Staphylococcus epidermidis*, were 12 mm (26.1%) and 8 mm (25%) respectively. In addition, it showed antibacterial activity against one gram-negative bacteria, *Pseudomonas aeruginosa* with inhibition zone diameter of 6 mm (23.1% of the DIZ of Imipenem). Using serial technique, of the stock concentration (50 mg/ml), the MIC values against all gram-positive bacteria, *B. subtilis*, *S. aureus* and *S. epidermidis* were 0.2 mg/ml, 0.2 mg/ml and 2 mg/ml respectively of *E. campestre* (L.) extract, and the MIC values against *Pseudomonas aeruginosa* and *E. coli* were 2 mg/ml and 20 mg/ml respectively, and against *Candida* was 0.02 mg/ml. There is bactericidal activity against all gram-positive bacteria, one gram-negative bacteria (*Pseudomonas aeruginosa*) and against *Candida*, all at MBC of 20 mg/ml of the stock concentration (50 mg/ml), but no bactericidal effect of *E. campestre* (L.) extract against *E. coli*.

The organic extract showed almost the same antibacterial activity of aqueous extract except in that it had no activity against *Pseudomonas aeruginosa*, as well as it had antibacterial activity

against *Escherichia coli* with inhibition zone diameter of 12 mm (33.3% of the DIZ of Imipenem).