

Comparative analysis of antibacterial and antioxidant activity of *Coriandrum sativum*, *Mentha piperita* and *Spinacia oleracea*

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The present study was carried out to evaluate the antibacterial and antioxidant activity of the crude ethanolic and acetone extracts of *Mentha piperita*, *Spinacia oleracea* and *Coriandrum sativum*. The agar well diffusion assay and MIC test were carried out against four strains of bacterial species, viz., *Staphylococcus aureus*, *E. coli*, *Bacillus pumulis*, and *Klebsiella pneumonia* to determine the sample's antibacterial activity. The extracts of the plants at a concentration of 50 µl/disc (200 mg/ml) showed minimum to moderate activity against bacteria indicating a broad spectrum activity. Variable concentrations of ethanolic extract of plant samples were effective against various pathogenic bacteria in MIC test. The result indicated the potential usefulness of these plants especially, in treating bacterial infections and justified the need for further investigations and characterization of the bioactive compounds present in the ethanolic and acetone extracts of the plants. On comparing the three plant materials, the chlorophyll content (both Chl A and Chl B) was found to be maximum in *Spinacia oleracea* leaves. The carotene content was found to be maximum in acetone extract of *Mentha piperita* leaves, while minimum in *Coriandrum sativum*. Recently, attention has focused on phytochemicals as new sources of natural antioxidants. Therefore, the ethanolic crude extracts of the plant samples were screened for total phenols, flavonoids, and free radical scavenging activity. Free radical scavenging activity was evaluated using 1, 1-diphenyl-2-picrylhydrazyl (DPPH). Significant differences in DPPH scavenging activity were found between the species investigated, ranging from 12.71 per cent to 68 per cent. The highest radical scavenging activity was observed in *Coriandrum sativum* (68% inhibition), followed by *Mentha piperita* (61.62%) and *Spinacia oleracea* (54.72%). The total phenol content of the investigated species ranged from ±26 to ±75 mg CE/g extract, while flavonoids content ranged from ±22 to ±24 mg CE/g extract. The findings indicated promising antioxidant activity of crude extracts of the above plants and needs further exploration for their effective use in both modern and traditional system of medicines.

Key words : *Mentha piperita*, *Spinacia oleracea*, *Coriandrum sativum*, *Staphylococcus aureus*, *E. coli*, *Bacillus pumulis*, *Klebsiella pneumoniae*, Flavonoids

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