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RESEARCH ARTICLE

Antibacterial and antioxidant activity of medicinal plants

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SUMMARY

In the present study, three plants were screened for potential antibacterial and antioxidant activity.The plants screened were *Rosa indica*, *Azadirachta indica* and *Moringa oleifera* which are traditionally used in India to treat various diseases. In evaluating the antibacterial activity two organic solvents were used *i.e.* acetone and ethanol to extract the antimicrobial components. Antibacterial activity was tested against two Gram positive *i.e. Staphylococcus aureus*, *Bacillus pumulis* and two gram negative *i.e. Klebsiella pneumonia*, *Escherichia coli* bacterial strains. The antibacterial nature of extracts was assessed by agar well diffusion method. The ethanolic extracts of *Rosa indica* petals were found to be most effective against all the pathogens used. The MIC was determined only for ethanolic extracts and found to be ranging between 0.025mg /ml to 33.33mg/ml. In evaluating antioxidant activity, all three plants were screened for total phenols, flavonoids and free radical scavenging activity. Free radical scavenging activity was evaluated using DPPH. Significant differences in DPPH scavenging activity were found between the species investigated ranging from 74.72 per cent to 83.40 per cent. The total phenol content of the investigated species ranged from 74 to 96 mg CE/g extract while flavonoid content ranged from 39 to 52 mg QE/g extract. In addition photosynthetic pigments (Chl A, Chl B, and carotene) were also determined for all three plants under study.

Key Words : Antimicrobial, Antioxidant, Antibacterial, Photosynthetic

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Of the 2,50,000 higher plant species on earth, more than 80,000 are medicinal. India is one of the world's 12 biodiversity centres with the presence of over 45000 different plant species. Of these, about 15000-20000 plants have good medicinal value. However, only 7000-7500 species are used for their medicinal values by traditional communities. It has been estimated that in developed countries such as United States, plant drugs constitute as much as 25 per cent of the total drugs, while in fast developing countries such as China and India, the contribution is as much as 80 per cent. Rose has influenced cultures aesthetically, economically, medically, religiously and spiritually since humankind could smell and appreciate its fragrance. *Moringa oleifera* is the most widely cultivated species of the genus *Moringa*, which is the only genus in the family Moringaceae. In developing countries, *Moringa* has potential to improve nutrition, boost food security, foster rural development, and support sustainable landcare. It may be used as forage for livestock, a micronutrient liquid, a natural anthelmintic and possible adjuvant. *Azadirachta indica* is a tree in the mahogany family Meliaceae. It is one of two species in the genus *Azadirachta*, and is native to India and Pakistan growing in tropical and semi-tropical regions. Its fruits and seeds are the source of neem oil. *Bacillus subtilis*, is a Gram - positive, catalase- positive bacterium. *K. pneumoniae* is a Gram-negative, non-motile, encapsulated, lactose fermenting, facultative anaerobic, rod shaped bacterium found in the normal flora of the mouth, skin, and intestines. *Staphylococcus aureus*, it is a facultative anaerobic Gram-positive coccal bacterium. It is frequently found as part of the normal skin flora on the skin and nasal passages. It is estimated

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