



Phytochemical analysis of leaves of *Coleus aromaticus* Benth and its antibacterial activity against *Staphylococcus aureus*

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Abstract

The expanding bacterial resistance to antibiotics has become a growing concern worldwide. Increasing bacterial resistance limits therapeutic options and hence attention has turned towards plants as alternative therapy against resistant strains. The search for antibiotic resistance modulators in plants represents a new dimension to addressing the problem of antibiotic resistance. Medicinal plants are promising and offer considerable potential for the development of new agents effective against infections currently difficult to treat. Medicinal plants, since time immemorial have been used as a source of medicine in most parts of the world. Leaves of plant *Coleus aromaticus* Benth were taken for herbal drug potential studies belonging to Lamiaceae family. In India, the plant is commonly known as Patharchur. In the present study *Staphylococcus aureus* bacteria was isolated from the sputum samples of T.B. negative patients. Phytochemical analysis of leaves was done in acetone, aqueous, ethanol and methanol solvents. Results showed that, leaves have flavonoids, saponin, phenolic compound, diterpenes and carbohydrates. The antibacterial activity of *Coleus aromaticus* was evaluated against human pathogenic bacteria *Staphylococcus aureus* by well diffusion method. It has been observed that all solvent extract exhibit antibacterial activity. The antibacterial assay was performed by the agar-well diffusion method. *Coleus aromaticus*, whose aqueous extract recorded antibacterial activity at 10 mg/ml, was subjected to methanol extraction and tested for the presence of phytochemical compounds and also for antibacterial activity at different concentrations viz., 0.25 mg/ml, 0.5 mg/ml, 1.0 mg/ml, 2 mg/ml, 4 mg/ml, 6 mg/ml, 8 mg/ml, and 10 mg/ml. Preliminary phytochemical analysis of the leaves extract revealed the presence of reducing sugar, protein, phenolic compounds, alkaloids, flavonoids, tannins, cardiac glycosides, steroids, and terpenoids. Methanolic leaf extract of *C. aromaticus* showed moderate to high activity against all the investigated bacterial pathogens. The results indicated that the methanolic leaf extract of *C. aromaticus* is pharmacologically active and is a good antibacterial agent. Further investigations are required on isolation and characterization of the bioactive principle responsible for antibacterial activity. The alcoholic extract showed maximum activity followed by aqueous extract while acetonic extract exhibits minimum antibacterial activity against *Staphylococcus*. From this study it is concluded that leaves of *Coleus* are effective in the inhibition of *Staphylococcus aureus* growth in vitro conditions. The leaves of CA are used in many places around the world to add a punch to their dishes. Several culinary usages have been reported in South America, Philippines, Indonesia, Africa, India and South East Asia. The strong flavour and aroma of these leaves make them ideal for flavouring certain meats and fish, helping to mask their strong odour. In Indian subcontinent, the leaves added with coconut, dhal, red chillies, coriander leaves and curry leaves are used for chutney preparation. It is also eaten raw with bread and butter, used as fried snack, and used for flavouring beer and wine. It is also used as condiment for sour soup in Vietnam, as principal flavouring in Cuban black bean soup and as salads in the Caribbean. The plant is also used as a food supplement and a flavoring for drinks. No Cases of toxic ingestion have been reported except some cases of handling allergy (skin). The juice of CA leaves with honey is helpful in cold and cough, the concentrated decoction consumed while warm is effective in respiratory infections. It can be grown in kitchen gardens and used for culinary purpose. The antimicrobial, antioxidant and flavoring potentials are continuously being explored and validated by researchers in different parts of the world. There is enough scope for research on its application in nutraceuticals and functional food industry which may exponentially develop in near future. However, the digestive and appetizing properties of the herb still need to be proved substantially by modern science apart from the traditional claims.

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