Antibacterial activity of Nirgundi (Vitex negundo Linn.)

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Abstract

The antibacterial activity of Nirgundi (Vitex negundo) extracts were tested against bacterial dental infections (Staphylococcus aureus, Streptococcus mutans, S. sanguis, S. salivarius and Lactobacillus acidophilus) and some other pathogens (Bacillus subtilis, E. coli). The aqueous, methanolic and petroleum ether extracts of plants were tested for their antibacterial activity using well diffusion method at the sample concentration of 200 mg/ ml. The methanolic extract showed maximum activity as compared to other extracts. The methanolic extract was most active against S. salivarius followed by Staphylococcus aureus, Streptococcus mutans, S. sanguis and Lactobacillus acidophilus.

Keywords: Vitex negundo, dental plaque, Antibacterial activity.

Introduction

The different systems of medicine practiced in India, Ayurveda, Siddha, Unani, Amchi and local health traditions, Utilize large number of plants for the treatment of human diseases. Most of these medicinal plants have been identified and their uses are well documented and described by different authors (Nadkarni, 1976, Dastur, 1985, Saradamma, 1990, Jain, 1991, Kirtikar and Basu, 1991), but the efficacy of many of these plants are yet to be verified. In order to evaluate the efficacy of these plants by scientific investigations, an interdisciplinary programme was started with the aim of screening plants for their antimicrobial activity. Selection of the plants from the literature were made on the basis of their common use in the treatment of infectious diseases like fever, bronchitis, ulcer, diarrhoea, dysentery and skin disease. The medicinal herbs represent a rich source of antibacterial and antifungal activity (Ahmad et al., 1998). Vitex negundo has shown activity against Escherichia coli, Klebsiella aerogenes, Proteus vulgaris, Pseudomonas aerogenes (Perumal Sanny, 1998). But there is no record of its antibacterial property against dental infections caused by Streptococcus mutans, S. sanguis, S. salivarius, S. aureus and Lactobacillus acidophilus. In this paper the antibacterial activity of V. negundo is presented along with references to their traditional uses.

Materials and Method

Plant material & extracts

The plant was collected from the foot hills of Shivalik range of Himalayas in Hardwar and identified at Botanical Survey of India, Dehradun, Uttarakhand. The plant was shade dried at room temperature and then powdered plant material was loaded in soxhlet assembly and extracted in four different solvents such as petroleum ether, acetone, methanol and water. The polarity of the solvents would leach out compounds...
The plant shows broad spectrum antimicrobial activity (Table 1) i.e. the methanol, water, acetone and petroleum ether extracts were active against both gram positive and gram negative bacteria. The *V. negundo* extracts were found to be less effective as compared to ampicillin. The methanolic extracts exhibited the highest degree of antibacterial activity as compared to aqueous, acetone and petroleum ether extracts. The extracts were highly inhibitory to *S. mutans* and *S. salivarius*, but the maximum inhibition zone 23 mm was attained with methanol extract of *V. negundo*.

The medicinal plants are used by large proportion of the Indian population because there is a true improvement of disease condition after herbal treatment with no harmful side effects and high cost of other forms of treatment. *V. negundo* extracts show broad spectrum of action against microbes causing dental...
Antibacterial activity of Nirgundi
caries. Ampicillin is more effective against microorganisms because it is used in a pure form as compared
to crude extract of *V. negundo* in different solvents.
The methanolic extracts exhibited the highest degree of antimicrobial activity as more compounds i.e.
alkaloids, steroids, terpenoides and glycosides are extracted by methanol in comparison to petroleum ether and acetone.
Further work is going on to locate the active principle from the various extracts and these preliminary results of this investigation indicates that *V. negundo* has a wide spectrum of antibacterial activity.

References
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