

Antibacterial activity of plant extracts on methicillin-resistant *Staphylococcus aureus* (MRSA)

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SUMMARY

Methanolic and aqueous leaf extracts of three plants, *Leucas longifolia*, *Ocimum basilicum* and *Lantana camara*, were evaluated for their potential antibacterial activity against methicillin resistant *Staphylococcus aureus* (MRSA). The extracts of all three plants demonstrated positive antibacterial activity. The extract of *L. camara* exhibited high antibacterial activity having minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) values. Combination of extracts of plants showed synergistic antibacterial activity. Methanolic extracts presented more growth inhibitory action than aqueous extracts. The extracts were found to be bacteriostatic at lower concentration and bactericidal at higher concentration.

Key words : *Leucas longifolia*, *Ocimum basilicum*, *Lantana camara*, Methanolic extract antibacterial activity, Methicillin-Resistant *Staphylococcus aureus* (MRSA)

Bacteria have the genetic ability to transmit and acquire resistance to drugs resulting in the emergence of new multi drug resistant bacterial strains (Cohen 1992).

This fact has become a cause for concern, even though pharmacological industries have produced a number of new antibiotics during the last three decades. (Abu-Shanab *et al.*, 2004).

Plants are a rich source of wide variety of secondary metabolites such as tannins, terpenoids, alkaloids, flavonoids, phenols, essential oils, which have been found to have antimicrobial properties (Trease and Evans 1972; Evans *et al.*, 1986; Cowan, 1999) and have the potential to act against multi drug resistant bacteria (Firas and Hassan, 2008).

Plants based antimicrobials may become the base for the development of new drugs or be used for the treatment of disease. (Trease and Evans, 1972).

Interest in plants with antimicrobial properties is revived as a result of current problems associated with the use of antibiotics. Dependence on traditional medicine for curing a variety of diseases has increased particularly

in developing countries.

In recent years several workers, Ikram and Inamul (1984), Naqvi *et al.* (1991), Samy *et al.* (1998), Dorman and Deans (2000), Gislene *et al.* (2000), Samy and Ignacimuthu (2000), Srinivasan *et al.* (2001), Kapoor *et al.* (2007), Nair and Chanda (2007), Seema *et al.* (2007), Sengottuvel *et al.* (2007), Jeya and Veerapagu (2008), Farooz Ahmad Dar *et al.* (2008) screened many plants for antibacterial properties.

Methicillin-resistant *Staphylococcus aureus* (MRSA) pathogenic bacteria is now common in many areas of the world. The frequencies of infections and outbreaks due to MRSA have continued to increase. MRSA is often multi drug resistant and therapeutic options are limited. (Fluit *et al.*, 2001, Fridkin *et al.*, 2005, Schito 2006). The effect of plant extract on *Staphylococcus aureus* was evaluated by Ayandele and Adebisi (2007) and Firas and Hassan (2008).

Therefore the present investigation was carried out to evaluate the effect of leaf extracts of *Leucas longifolia*, *Ocimum basilicum*, *Lantana camara* on the growth MRSA.

MATERIALS AND METHODS

Fresh and mature leaves of *L. longifolia*, *O. basilicum* and *L. camara* were collected washed first in tap water and then again in sterile distilled water and kept for drying in shade. The dried leaves were then ground into fine powder in a blender and then sieved through 2-micron sieve.

10 g of the powder was extracted in 100 ml methanol and distilled water in Soxhlet apparatus. The crude extracts

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