

SUMMARY OF THE WORK

Antistaphylococcal Activity of *Moringa oleifera* Lam Against Multi Drug Resistant Strains of *Staphylococcus aureus*

Staphylococcus aureus is part of the skin and nasal cavities of healthy individuals, and this association with the skin presents the organism an opportunity to cause a wide range of diseases. This species is capable of expressing a variety of virulence factors and has the ability to develop changes in their sensitivity to antimicrobials. At present, occurrences of MRSA strains that are virtually resistant to all the beta lactam antibiotics are common. Interest in medicinal plants as a source of novel antimicrobial compounds has been growing, owing to their popular use in traditional medicine for the treatment of various ailments including infectious diseases. *Moringa oleifera*, Lam also known as *Moringa pterygosperma* Gaertn, is a member of the Moringaceae family of perennial angiosperm plants, which includes 12 other species. A wide variety of nutritional and medicinal virtues have been attributed to its roots, barks, leaves, flowers, fruits and seeds. In the present study the antistaphylococcal activity of crude, aqueous and methanol extracts of barks, leaves and fruits *M.oleifera* Lam was carried out in multidrug resistant strains of *S. aureus*. Comparison with a standard MTCC strain was also done. Mutidrug resistant strains of *Staphylococcus aureus* were collected from various hospitals. The anti staphylococcal activity of crude extract, methanol extract and aqueous extract of the leaves, bark and fruits of *Moringa oleifera* Lam were tested by direct contact method and well diffusion method. The minimum inhibitory concentration(MIC) was determined by broth dilution method.

The crude extract of the leaves were effective against all the isolates whereas those of bark and fruit pulp were effective against only a few isolates. The zones of inhibition measured were comparable to the zones of inhibition of antibiotics. The zone diameter measured for the crude extract was between 16 mm and 23 mm . The extract of the leaves were active against two of the five MRSA isolates and that of fruit pulp against three MRSA isolates.

Both aqueous and methanol extracts of fresh leaves were found to be effective. The zones of inhibition measured ranged from 13mm-20mm. The aqueous extracts of dried leaves showed activity against all the isolates other than the five MRSA isolates, but methanol extracts of dried leaves showed no activity. The aqueous and methanol extracts of bark and fruit pulp showed no

activity. The minimum inhibitory concentration of aqueous and methanol extracts of fresh leaves was ≤ 5 mg/ml.

Preliminary qualitative analysis showed that tannins, flavonoids, alkaloids, glycosides, terpenes and phenolic compounds were present in all the extracts. Preliminary phytochemical analysis showed the presence of bioactive components common to all the extracts. The present study encourages the traditional method of treatment of *S.aureus* infections and the plant could be utilized as an alternative to antibiotics for the treatment of wounds without the risk of emergence of new resistance strains.