

INTERNATIONAL CONFERENCE ON MEDICAL SCIENCES (ICM) 2023

RESILIENCE. REMEDIATION. REINVENTION



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FACULTY OF MEDICAL SCIENCES
UNIVERSITY OF SRI JAYEWARDENEPURA
SRI LANKA



International Conference on Medical Sciences (ICM) 2023

"RESILIENCE. REMEDIATION. REINVENTION"

**Organized by
The Research Committee
Faculty of Medical Sciences
University of Sri Jayewardenepura**

**8th & 9th June 2023
Faculty of Medical Sciences
University of Sri Jayewardenepura
Sri Lanka**

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PP5

In-vitro susceptibility of clinical isolates of extended-spectrum beta-lactamase (esbl) producing *Escherichia coli* and *Klebsiella pneumoniae* to Dimethyl Sulfoxide (DMSO)

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PP6

An investigation of plasmid-based quinolone resistant genes existence in mid-gut contents from pigs farmed for human consumption in Kegalle district, Sri Lanka

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PP7

Retrospective analysis of dermatological specimens for fungal studies received at a selected center

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PP8

Antimicrobial activities of silver nanoparticles biosynthesized by *Lannea coromandelica* aqueous extract

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were studied with their proportions. Certain criteria were used for the identification of significant species among them, and other associated factors such as age and gender with each organism were analyzed using Microsoft Excel and SPSS software.

Results

Aspergillus niger was the commonest organism isolated from all the samples. In nail specimens 70.5% were from females and 28.4% were from males. Among skin samples 56.8% were from females and 42.7% were from males. Fifty percent (50%) of hair specimens were from males and 47.4% were from females. Prominent mean ages were 36 and 35 in skin and nail specimens respectively. *Trichophyton mentagrophytes*, *Trichophyton interdigitale*, *Trichophyton rubrum*, *Trichophyton tonsurans*, *Trichophyton erinacei*, *Trichophyton schoenleinii*, *Trichophyton verrucosum* and few other *Trichophyton* species were isolated from skin and nail samples, but no dermatophytes were isolated in hair specimens. $P > 0.05$ between the organisms isolated and the associated factors in all the specimen types.

Conclusions

Middle aged women were more likely to be infected in skin and nail but there is no significant difference between male and female in infecting hair, and the commonest causative agents in superficial infection were non-dermatophyte moulds than dermatophytes in this study. According to this study, there was no correlation of age and gender in developing a fungal infection.

PP8

Antimicrobial activities of silver nanoparticles biosynthesized by *Lannea coromandelica* aqueous extract

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Background

Novel approaches are urgently required to reduce the clinical burden in the use of antibiotics. Nanotechnology-based antimicrobials is one of the promising strategies to promote the efficacy of natural products. In Ayurvedic medicine, *Lannea coromandelica* (Indian ash tree, hik, Family: Anacardiaceae) plant leaves, barks and gums are used to treat various disorders with microbial origin.

Objectives

Biosynthesis of LC-AgNPs and in vitro screening for antimicrobial properties.

Methods

L. coromandelica bark pieces (10 g) derived aqueous crude extracts (LCA) was prepared under sonication (44 kHz, 40°C, 30 min). LCA coated AgNPs (LC-AgNPs) were biosynthesized under different conditions i.e., homogenization, magnetic stirring, exposure to UV or sun light with loading different concentrations (2.5, 5, 7.5 mg/mL). Antimicrobial properties of crude extracts, LC-AgNPs and uncoated AgNPs (U-AgNPs) were screened in vitro (1 mg/per well) in triplicate, using agar well-diffusion method against standard microbial strains *Staphylococcus aureus* (ATCC 25923), *Escherichia coli* (ATCC 25922) and *Pseudomonas aeruginosa* (ATCC 27853). Gentamicin (Intravenous solution at 40 mg/mL diluted to 0.4 mg/mL) 10 µg per well was used as the positive control. AgNPs were characterized using size distribution data, polydispersity index (PDI), zeta potential, Fourier transform infrared spectroscopy, AFM and SEM imaging. However, the overlay of spectra i.e., LC-AgNPs, U-AgNPs and the LCA indicated successful coating of LCA on the surface of the AgNPs.

Results

SEM and AFM imaging revealed the presence of spherical LC-AgNPs size ranges 50–300 nm. Z-average particle diameter was 200.2 ± 1.0 nm with a PDI of 0.435. Inhibition zone diameter of LC-AgNPs against *P. aeruginosa* was 12 ± 0.2 mm, while it was zero for LCA. Comparable antimicrobial activities were observed for both LC-AgNPs (13 ± 0.8 mm) and LCA (13.3 ± 0.5 mm) against *S.aureus*. Both LC-AgNPs and LCA did not inhibit the growth of *E. coli*. U-AgNPs did not exert any bioactivity against the three microbial strains.

Conclusions

The present study revealed that the novel LC-AgNPs formulation is a promising antimicrobial agent against *P. aeruginosa* and *S.aureus*.

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