

**ANTIBACTERIAL SUSCEPTIBILITY TESTING OF CATECHIN FRACTION OF  
TEA FLUSH (CULTIVAR TRI2025) AGAINST METHICILLIN RESISTANTS  
STAPHYLOCOCCUS AUREUS**

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Methicillin-resistant *Staphylococcus aureus* (MRSA) has become a common cause of nosocomial or community based infections (blood stream infections, surgical wound infections, skin and soft tissue infections). The therapeutic options for MRSA infections are very limited because most MRSA strains are resistant to  $\beta$ -lactams, macrolides, aminoglycosides, and fluoroquinolones. The emergence of MRSA strains with reduced susceptibility to vancomycin suggests that MRSA may eventually become fully resistant to vancomycin. Therefore, new chemotherapeutic agents and new approaches are urgently needed to combat such antibiotic-resistant bacteria. Catechins are one of the major components of tea extract which show antibacterial and strong antioxidant activity. The usefulness of tea catechins in controlling methicillin resistant *Staphylococcus aureus* was studied using a wide range of MRSA strains.

*Staphylococcus aureus* strains, isolated from patients in Peradeniya Teaching Hospital, which were available in the Department of Microbiology culture collection were used for the study. The purity of the sub-cultures was confirmed by selecting a single colony and checking identity by direct microscopic examination, coagulase test, and DNAase test. The oxacillin resistant strains of *S. aureus* were selected using the BSAC disk diffusion method. The oxacillin containing disks (10  $\mu$ g) were placed on the MHA medium which was inoculated with *S. aureus* and incubated for 24 hours. The cultures without a clear zone around the disks were taken as resistant strains. The degree of the resistance was assessed by determining the minimum inhibitory concentration (MIC) values of oxacillin corresponding to each strain using agar plate dilution method. Eighty five strains were found to be highly resistant to oxacillin having MIC values over 128 ppm and 15 strains had MIC values in the range of 4-128 ppm.

The tea shoots of the tea cultivar TRI2025 were collected from the Tea Research Institute sub-station at Hantane, Kandy. The crude tea extract was obtained from the tea shoots by boiling with 70% aqueous methanol, and the methanolic solution was partitioned with dichloromethane followed by ethyl acetate. The ethyl acetate fraction was concentrated and freeze-dried to obtain the crude tea extract as a brownish solid. The crude extract was examined for antibacterial activity using 24 highly resistant MRSA strains. MIC values were then determined using the agar plate dilution method. Six MRSA strains showed an MIC value of 32 ppm, eight strains – 64 ppm, nine strains – 128 ppm, and one strain more than 128 ppm indicating that the tea extract is more effective than oxacillin against 23 MRSA strains. The crude tea catechin extract was fractionated by high speed counter current chromatography (HSCCC) with a view to isolating the active component.

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