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Antimicrobial mechanism of n-hexane and dichloromethane extract of *Cledodendron phlomidis* on *Bacillus licheniformis*

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Resistance of microorganism against antibiotics is a serious concern in both developed and developing country. The resistance of these microorganisms against these microorganism force researches to search new antimicrobial compound from plant source to inhibit their pathogenicity. Though plants phytochemicals have antimicrobial activity but the mechanism behind their action is limited. *Cledodendron phlomidis* n-hexane and dichloromethane extract were isolated by soxhlet to assess the antimicrobial potential by agar well diffusion over *Bacillus licheniformis*, a common food poisoning bacterium. The mechanism of action behind their antimicrobial activity was determined using DNA fragmentation, scanning electron microscopy, fluorescent activation of cell sorting (FACS). The well diffusion assay showed an inhibition zone of 19 and 15.5 mm in n-hexane and dichloromethane hexane extract of *Cledodendron phlomidis*. The DNA fragmentation showed significance of apoptosis after an incubation of bacteria with n-hexane and dichloromethane extract of *Cledodendron phlomidis* for 72 hours. Scanning electron microscope revealed adherence of plant extract of n-hexane and dichloromethane extract of *Cledodendron phlomidis* and degradation of bacterial membrane. The flow cytometer revealed that incubating *Bacillus subtilis* with extract resulted in decrease in fluorescence intensity that gives significant evidence for reduction of membrane potential and hence suggesting the mechanism of antibacterial activity involves disruption of membrane potential. The antimicrobial potential of these extracts can be utilized for the treatment of various food born infections in spite of industrially produced antibiotics.

Biography

Alok Kumar Yadav is pursuing his PhD in the Department of Biotechnology, Motilal Nehru National Institute of Technology, and Allahabad under the supervision of Dr. N K Singh working on the application herbal and dietary phytochemicals for human health care. He has published 3 abstracts in international conferences and submitted one research article in reputed journal.

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