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Antibacterial effect of plant extracts against clinical isolates of acne inducing bacteria

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Master of Science in Microbiology

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Abstract:

Acne is one of the most common skin diseases, affecting more than half the individuals of a population. *Propionibacterium acnes* is a gram-positive human skin commensal that prefers anaerobic growth conditions and is involved in the pathogenesis of acne. *S. epidermidis* is a most frequently isolated species from human epithelia. It colonizes the axillae, head, and sebaceous areas such as the facial skin. The incidence of isolates among 100 patients screened in Allahabad (Prayagraj) region, where 65% of patients found to be positive for bacterial infection, with an incidence of 36% for *Propionibacterium acnes* and 30% for *Staphylococcus epidermidis*, which were identified respectively on the basis of cultural, morphological and biochemical characteristics. A number of demographic factors have been found responsible for the prevalence of acne, such as high humidity level, skin texture and high stress levels, hormonal changes. The age group of 15-25 years and gender, particularly females were found to be more susceptible to acne as compared to males. Furthermore the antibiotic susceptibility pattern test showed that the isolates; i.e. *S epidermidis* and *P acnes* were found to be multi drug resistant. These findings demonstrated that the high incidence of multidrug-resistant *P. acnes* and *S. epidermidis* species constitute an important potential threat to the human health. Control measures need to be taken to avoid contacting acne infection and prevent it from becoming extensively drug-resistant. Therefore plant extracts were tested against both the isolates, to observe the antimicrobial activity. The result showed that *Punica granuatum* had the maximum antimicrobial activity against both the isolates. Thus, the present study concludes that plant extracts containing bioactive compounds have antimicrobial properties which can be used in the treatment of acne.

Keywords:

Acne vulgaris, *Propionibacterium acnes*, *Staphylococcus epidermidis*, Multi drug resistant, Plant extracts