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Antibacterial activity of *Punica granatum* peel extracts against *Staphylococcus aureus* isolated from different infections

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Introduction and objectives: *Staphylococcus aureus* is an important pathogen in different infections. Increasing of antibiotic usage for *Staphylococcus aureus* infections, created antibiotic resistance. Medical herbs with anti-microbial activity have always been important role in traditional medicine. The purpose of this study was to determine the antibacterial activity of hot aqueous, methanolic and ethanolic extracts of *Punica granatum* peel against *Staphylococcus aureus* isolated from different infections in vitro.

Materials and methods: This research is a descriptive analytic study. First, samples of hot aqueous, methanolic and ethanolic of *Punica granatum* peel were prepared by maceration method. Then its antibacterial activity against 208 isolates of *Staphylococcus aureus* from 500 samples of different infections was evaluated by well diffusion and then agar serial dilution method. Also, the MIC (Minimum Inhibitory Concentration) of extract was determined.

Results: The diagrams, T- test were used to compare the results. The results demonstrated that the hot aqueous, methanolic and ethanolic extracts of *Punica granatum* peel show an average inhibitory zone diameter of 25.5, 23, and 22 respectively. The hot aqueous extract shows best result having ZOI greater than that of the selective antibiotics. Hot aqueous extract of *Punica granatum* has lowest MIC of 1.5µg/mg showing that it is most effective as compared to MICs of other extract. There was significant difference between the effects of the plant and antibiotics on *Staphylococcus aureus* (P<0.001).

Conclusion: This study demonstrates that a hot aqueous extract of *Punica granatum* peel have excellent antibacterial activity against *Staphylococcus aureus* isolated from different infections and its effect is even better than selective antibiotic. Further investigations will be necessary.

Keywords: Different infections, *Staphylococcus aureus*, *Punica granatum*, Antibacterial Activity.