

Antibacterial activity of *Punica granatum* L. peels extracts against three common human wound pathogenic bacteria and formulation of topical ointment and hydrogel pharmaceutical forms

Abstract

Ethanollic and aqueous extracts of *Punica granatum* L. peels were prepared and tested for antibacterial activity against *Escherichia coli* and *Pseudomonas aerogenosa* as gram negative bacteria and *Staphylococcus aureus* as gram positive bacteria. The suitability of extracts for topical pharmaceutical preparations was attempted by formulation of extracts into simple ointment and hydrogel pharmaceutical dosage forms. The antibacterial activity was assessed by agar well diffusion method using four different concentrations for both extracts include (100, 10, 1, 0.1mg/ml). Ethanollic and aqueous extracts showed antibacterial activity against *Staphylococcus aureus*, with lowest inhibition zone of 12mm at 0.1mg/ml. The same result was obtained for ethanollic extract against *E. coli*, whereas, aqueous extract showed 9mm zone of inhibition. The lowest inhibition zone against *Pseudomonas aerogenosa*, was 10mm at 0.1mg/ml of ethanollic extract and 1mg/ml of aqueous extract which showed resistance at 0.1mg/ml. From this it is concluded that both extracts have inhibitor effect on the growth of both gram positive and negative

bacteria and ethanolic extracts exhibited higher degree of antibacterial activity as compared to aqueous extract. In present study, simple ointment containing (10%w/v) of ethanolic extract and hydrogel containing (10%w/v) of aqueous extract were prepared successfully.