

Antibacterial Activity of Polysaccharide Gel from Durian Fruit-hull and its Application in Treatment of Wounds *in vivo*

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Abstract

Antibacterial activity and medical application of polysaccharide gel (PG) of fruit-hull of durian (*Durio zibethinus* L.) were examined. Antibacterial effects of PG was investigated against 11 strains of bacteria, 7 strains were susceptible to PG inhibition. MICs and MBCs of PG were 0.64 and 2.56% (w/v) against *S. epidermidis*, *B. subtilis*, *M. luteus* and *E. coli*; 1.28 and 2.56% (w/v) against *S. aureus* and 2.56 and 5.12% (w/v) against *L. pentosus*; respectively. Bactericidal effect of PG against *S. aureus* and *E.coli* in NSS with 0.02% PG was clearly demonstrated, colony counts were declined to zero after 24 hours incubation. Scanning electron micrographs showed the disappearance of flagella of *E. coli*, the aggregation of *S. aureus* cells; and PG fragment adhesion on bacterial cells surface. PG film dressing was satisfactory prepared, the film of PG demonstrated inhibitory activity against these susceptible bacteria. Wound treatment with PG film was performed in full-thickness excisional wounds in young female pig skin *in vivo*. Wounds in treatment group were treated with PG film cover on wounds and povidone iodine was applied in control group. The performance of healing rate clearly demonstrated that PG film accelerated wound closure, represented by a smaller of wound areas ($p < 0.05$) on day 12 of treatment than those in the control. Complete wound closure was 100% of total wounds on day 18 with PG film treatment compared to only 68.7% in the control. PG film of durian gel showed beneficial effect for medical application in treatment of wounds.

Keywords : Pigs, Swine, Durian, *Durio zibethinus* L., Polysaccharides, Antibacterial, Wound treatment , Wounds, *In vitro*, Polysaccharide gel

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