THE EFFECT OF DISTILLED COCONUT SHELL (Cocos nucifera L.) LIQUID SMOKE TOWARDS IL-1β EXPRESSION OF ORAL ULCER IN RATS WITH DIABETES MELLITUS

ABSTRACTS

Background: *Oral ulcer in individual with diabetes mellitus could undergo complications such as delayed wound healing. One of the cytokines that cause delayed healing is IL-1β. Distilled coconut shell liquid smoke is a complex liquid compound produced from pyrolysis of coconut shell that contains phenolic compound which has anti-inflammation, antioxidant, antiseptic, and analgesic effect. Distilled coconut shell liquid smoke is expected to help accelerate the healing of delayed healing oral ulcer in diabetic patients by decreasing the expression of IL-1β.* ***Purpose:*** *Analyzing the effect of distilled coconut shell liquid smoke towards the of IL-1β expression diabetic rats' oral ulcer.* ***Methods:*** *Wistar rats were injected with Alloxan to create diabetes mellitus condition and an oral ulcer was made in the mandible labial fornix mucosa. Wistar rats were given aquades (negative control), benzydamine hydrochloride (positive control), and distilled coconut shell liquid smoke 20 μL/20gr body weight topically once a day for 3, 5, and 7 days. The IL-1β expression was analyzed by histological assessment with immunohistochemistry staining.* ***Results:*** *ANOVA test showed significant difference of IL-1β expression after topical application for 3, 5, and 7 days (P=0.010; 0.001; 0.000). IL-1β expression after topical application of distilled coconut shell liquid smoke are lower compared to topical application of aquades (P=0.04; 0.00; 0.00) and benzydamine hydrochloride (P=0.024; 0.041; 0.01) for 3, 5, and 7 days.* ***Conclusion:*** *Distilled coconut shell liquid smoke affect oral ulcer healing in diabetes mellitus condition by decreasing IL-1β, expression.*

Keywords: *distilled coconut shell liquid smoke, IL-1β expression, oral ulcer, diabetes mellitus*

EFEK PEMBERIAN *DISTILLED LIQUID SMOKE* TEMPURUNG KELAPA (*COCOS NUCIFERA L.*) TERHADAP EKSPRESI IL-1β PADA ORAL ULCER TIKUS DIABETES MELLITUS

ABSTRAK

Latar Belakang: *Oral ulcer* pada individu dengan kondisi *diabetes mellitus* dapat menimbulkan komplikasi, salah satunya adalah *delayed wound healing*. Salah satu sitokin yang menyebabkan hal ini adalah IL-1β. *Distilled liquid smoke* tempurung kelapa merupakan cairan senyawa kompleks dari proses pirolisis tempurung kelapa yang mengandung *phenolic compound* yang bersifat anti-inflamasi, anti-oksidan, antiseptik, dan efek analgesik. *Distilled liquid smoke* tempurung kelapa diperkirakan dalam mebantu mempercepat penyembuhan *oral ulcer* pada pasien *diabetes mellitus* yang mengalami *delayed wound healing* melalui penurunan ekspresi IL-1β. **Tujuan:** Menganalisis efek pemberian *distilled liquid smoke* tempurung kelapa terhadap ekspresi IL-1β pada penyembuhan *oral ulcer* tikus *diabetes mellitus*. **Metode:** Tikus wistar diinduksi *diabetes mellitus* dengan Alloxan dan dibuat *oral ulcer* pada mukosa regio *labial fornix mandibula.* Tikus wistar diberi aplikasi topikal *aquades* (kontrol negatif), *benzydamine hydrochloride* (kontrol positif), dan *distilled liquid smoke* tempurung kelapa sebanyak 20 μL/20gr berat badan tikus secara topikal satu kali sehari selama 3, 5 dan 7 hari. Ekspresi IL-1β diperiksa menggunakan pemeriksaan histologis dan pewarnaan immunohistokimia. **Hasil:** Uji ANOVA menunjukkan perbedaan ekspresi IL-1β yang signifikan pada aplikasi topikal selama 3, 5, dan 7 hari (P=0.010; 0.001; 0.000). Ekspresi IL-1β setelah aplikasi topikal *distilled liquid smoke* tempurung kelapa lebih rendah dibandingkan pemberian aplikasi topikal *aquades* (P=0.04; 0.00; 0.00) dan *benzydamine hydrochloride* (P=0.024; 0.041; 0.01) selama 3, 5, dan 7. **Simpulan:** *Distilled liquid smoke* tempurung kelapa (*Cocos nucifera L.*) dapat menurunkan ekspresi IL-1β dalam penyembuhan *oral ulcer* dengan kondisi diabetes mellitus.

Kata kunci: *distilled liquid smoke* tempurung kelapa, ekspresi IL-1β, *oral ulcer, diabetes mellitus.*