Acute inflammatory increase in Interleukin 1β and Interleukin 6 induced by λ-carrageenan injection in ICR mice reduced by Philippine stingless bee (Tetragonula biroi Friese) honey & propolis

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Acute Inflammatory Increase in Interleukin 1β and Interleukin 6 Induced by λ-carrageenan Injection in ICR Mice Reduced by Philippine Stingless Bee (Tetragonula biroi Friese) Honey & Propolis

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ABSTRACT

The carrageenan-induced hind paw edema model in mice was used to further elucidate the anti-inflammatory activity of honey and propolis from the Philippine stingless bee (Tetragonula biroi Freise). Injection of the phlogistic agent, λ-carrageenan, in mice resulted in significant 11-fold and 7-fold increase in blood levels of interleukin 1β (IL-1β) and IL-6, respectively compared with the healthy non-treated mice. Remarkably, pre-treatment with Philippine stingless bee honey significantly reduced blood levels of IL-1β by 38.46% and IL-6 by 36.75%, respectively in carrageenan-injected mice. Similarly, pre-treatment with Philippine stingless bee propolis reduced blood levels of IL-1β and IL-6 by 41.12% and 50.78%, respectively. This aforementioned reduction in blood IL-1β and IL-6 levels with honey and propolis treatment were statistically comparable with the anti-inflammatory drug, diclofenac sodium. These findings indicate that the Philippine stingless bee honey and propolis possess potent anti-inflammatory activity through inhibition of the pro-inflammatory cytokines, IL-1β and IL-6. Altogether, it strengthens the potential development of these indigenous bee-derived substances as new biomedical products for the treatment of acute inflammatory conditions.

Keywords: acute inflammation, Philippine stingless bee, honey, propolis, interleukin 1β, interleukin 6, carrageenan