

Histopathological Analysis of Vaginal Structure in Rats Following Honey Supplementation

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Structured Abstract

Background: The vagina, a crucial organ linked to reproductive systems, puberty, period cycle, and menopause, undergoes changes due to aging and hypoestrogenism. This can result from factors such as aging, cancer treatment, ovarian failure, or surgical menopause. Honey, a popular global health food, contains numerous nutrients and antioxidants. It has been shown to prevent uterine and vaginal shrinkage and dryness in menopausal animals, possibly due to its high levels of phytoestrogens. Gelam Honey, a Malaysian monofloral wild honey produced by *Apis dorsata* bees, has therapeutic properties such as antioxidant, anti-inflammatory, anti-cancer, and accelerated wound healing. This study aims to observe the tissue of normal rats given varying doses of honey.

Methods: The method that was used in this study is histological examination. The vagina of the Sprague Dawley rat was donated by Gamete Research Group, Department of Physiology, Faculty of Medicine, Universiti Kebangsaan Malaysia (UKM). There were three groups: the control group and the Gelam honey group with two different doses (GHM: 1.0 g Gelam honey/kg bw; GHL: 2.0 g Gelam honey /kg bw). The harvested organs underwent processing which are fixation, trimming, embedding, and sectioning. For histological staining, Hematoxylin & Eosin staining was used to stain the tissue. A light microscope with a 20X objective was used to observe and measure the thickness of the vaginal epithelia by using Image J software.

Results: The study examines the effects of 14-day supplementation of Gelam Honey on vaginal epithelia thickness. The vagina epithelial thickness of the control group was $63.21 \mu\text{m} \pm 0.75 \mu\text{m}$. GHM group recorded a thinner vaginal epithelial as compared to the GHL group ($61.41 \mu\text{m} \pm 1.77 \mu\text{m}$). One-Way ANOVA showed a significant difference between groups and vaginal epithelia thickness.

Conclusion: This study examined the effects of Gelam Honey on the female reproductive organ, the vagina. Results showed a significant difference in average vagina epithelial thickness between GHM and GHL groups. Gelam Honey significantly improved vaginal health by increasing vagina epithelial thickness and vagina structures, especially at a daily dose of 2.0 g Gelam honey/kg bw possibly due to its estrogenic properties.

Keywords: Vagina epithelia; Gelam Honey; estrogenicity;

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