A Preliminary Study of Kelulut Honey Effects on Ovarian Histology in Letrozole-Induced Polycystic Ovary Syndrome Rats Model.

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Introduction

Polycystic ovary syndrome (PCOS) is a combination of reproductive, endocrine, and metabolic diseases, which is the leading cause of anovulatory infertility.

80% of women with anovulatory infertility have PCOS.

The pathophysiology of PCOS is including hyperandrogenism, oxidative stress, and chronic inflammation.

Kelulut honey is stingless bee honey with anti-inflammatory, and excellent antioxidant effects [1].

This present study investigated kelulut honey's effects on ovarian histology analysis in letrozole-induced PCOS in rats.

References

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Methods and Materials

18 Sprague dawley rats (120-150 g) with 3 consecutive regular estrus cycle (n=3)

- **Control group** (distilled water) 21+35 days
- 1 mg/kg/day Letrozole for 21 days [2]
- **PCOS group** 1 mg/kg/day Letrozole for 21 days only

Confirm rats to develop PCOS by estrus cycle irregularities

- **PCOS control group** (distilled water) for 35 days
- **0.5 g/kg** Kelulut honey for 35 days
- **1 g/kg** Kelulut honey for 35 days
- **2 g/kg** Kelulut honey for 35 days

All rats were sacrificed, and left ovary harvested for H&E staining

Ovarian histology assesment based on characteristics proposed by Ndeingang et al [3]

Results

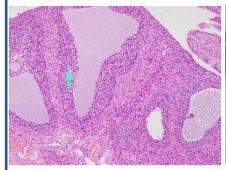

Figure 1. Arrow indicate atretic follicle.

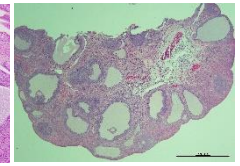

Figure 2. Appearance of cyst.

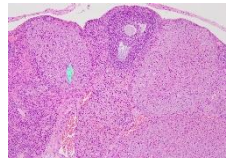

Figure 3. Arrow indicate corpus luteum.

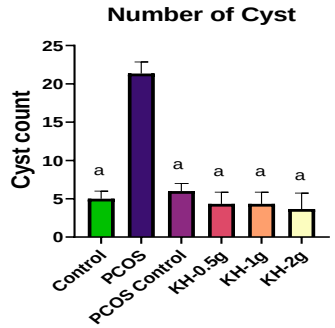

Figure 5. Cyst number. [a]p<0.05 significance against control PCOS.

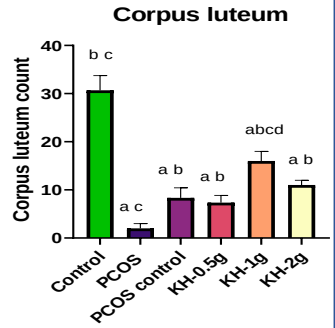

Figure 4. Corpus luteum number. [a]p<0.05 significance against control, [b]p<0.05 significance against PCOS, [c]p<0.05 significance against PCOS control, [d]p<0.05 significance against KH-0.5.

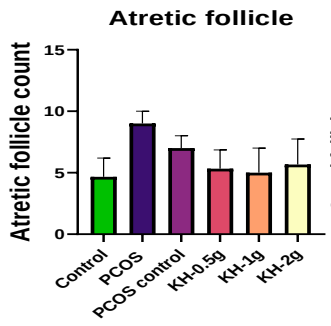

Figure 5. Atretic follicle number.

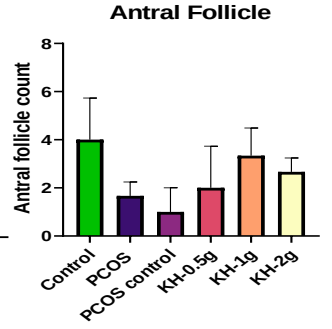

Figure 6. Antral follicle number.

Discussion

With 1mg/kg/day kelulut honey, the corpus luteum increased significantly, indicating an increase in ovulation rate.

The PCOS-induced group has the most cysts, indicating that PCOS induction was successful in this study.

No differences between the atretic and antral follicles in all groups, although the kelulut honey groups showed a trend of improvement in both parameters.

Restoration of corpora lutea in the Kelulut honey groups indicated renovation of estrous cycle to normal function [4].

This preliminary study provides a good foundation for further research into the effects of kelulut honey on PCOS pathophysiology and related pathways.

Conclusions

1mg/kg/day kelulut honey showing the most potential in inducing ovulation assessed through increasing the count of corpus luteum.