

UNIVERSITI TEKNOLOGI MARA

**EFFECTS OF *Ficus deltoidea* ON
METABOLIC AND REPRODUCTIVE
SYSTEM IN LETROZOLE INDUCED
FEMALE POLYCYSTIC OVARIAN
SYNDROME RATS**

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MSc

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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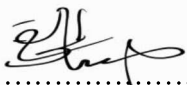
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ABSTRACT

Polycystic ovarian syndrome (PCOS) affects fertility and leads to hormonal derangements in women. *Ficus deltoidea* Jack (Moraceae) has been reported capable of promoting fertility in PCOS rats. However, the exact mechanism underlying the therapeutic effects of *F. deltoidea* in alleviating PCOS symptoms remains elusive. Therefore, the study aimed to investigate the biochemical, hormonal, and histological changes in letrozole (LTZ) induced PCOS female rats following treatment with *F. deltoidea* extract (PFD). Five groups were induced into PCOS, while the sixth group was a non-PCOS normal control. PCOS induced groups were grouped and treated with: saline; 10 mg/kg b.wt clomiphene citrate; and plant extract treated animals PFD250, PFD500, and PFD1000 received 250 mg, 500 mg, and 1000 mg/kg b. wt respectively for 15 days. At the end of the treatment, the blood samples were collected for biochemical and hormonal analyses. The serum levels of fasting blood glucose, fasting insulin, total cholesterol, triglycerides, low-density lipoprotein cholesterol, and high-density lipoprotein cholesterol, testosterone, estrogen, progesterone, luteinizing hormone, and follicle-stimulating hormone were determined by ELISA assays. Histomorphometric changes in the ovarian and uterus tissue were observed by hematoxylin and eosin staining. The present study demonstrates, for the first time, that treatment with higher dosages of *F. deltoidea* extracts (500 mg and 1000 mg/kg bwt) towards LTZ induced PCOS rats showed significant ($p < 0.05$) improvement on the physical parameters, lipid profiles, and glucose homeostasis. The reproductive system also demonstrated significant increased ($p < 0.05$) in the estrous cyclicity and restoration on the steroid and gonadotropin hormones. A significant ($p < 0.05$) improvement was also demonstrated on the ovarian histology, such as a higher number of corpus luteum, healthy follicles, indicating the ability of *F. deltoidea* to induce ovulation and a lesser amount of follicular cysts. Meanwhile, the uterine histology displayed an increased in uterine and endometrial thickness, increasing the number of endometrial glands. Apart from this, the oxidative damages caused by PCOS were also encountered by increasing antioxidant levels. These findings suggest that treatment with *F. deltoidea* can reverse some symptoms of PCOS in female rats by improving glucose homeostasis, antioxidant activity, hormonal balance, and histological changes.

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