

**UNIVERSITI TEKNOLOGI MARA**

**THE EFFECT OF FREEZE-DRIED  
STRAWBERRY (*Fragaria anannassa*) POWDER  
ON REPRODUCTIVE PARAMETERS  
OF DIET-INDUCED OBESE MALE RATS**

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Thesis submitted in fulfillment  
of the requirements for the degree of  
**Master of Health Science**

**Faculty of Health Science**

**April 2019**

## ABSTRACT

Obesity alters physical being and causes hormonal imbalance, metabolic abnormalities and oxidative stress. Obesity has also been implicated in reduced reproductive functions in male by compromising on sperm parameters and reducing levels of androgenic hormones. Attenuating the harmful effects of metabolic abnormalities and oxidative stress with agents containing both antioxidant and anti-obesity properties such as strawberry may be beneficial therapeutically and offer safe options to health and reproductive performance. Thirty-five male Wistar rats were fed with normal diet (control group, n=7) and high-fat diet (HFD) (n=28) for 8 weeks or until obese. The HFD rats were then divided equally into 3 groups and continued with HFD-enriched with either 1.25%, 3.4% or 6% w/w of freeze-dried strawberry powder (FDSP). After 12 weeks, rats were sacrificed; the body weights, body fat, reproductive organs, and body mass index (BMI) were measured. Testes were collected and the epididymal sperm was analyzed. The collected blood was tested for triglyceride and androgenic hormones levels. Results showed that FDSP-enriched diet induced body and body fat weight loss, decreased BMI, and increased prostate gland, seminal vesicles, and testicle weight ( $P < 0.05$ ). FDSP also improved reproductive parameters by increasing sperm count, concentration, morphology, motility, movement velocity, and length. Serum testosterone, FSH and LH levels were increased similarly with seminiferous tubules diameter and epithelial height. FDSP also exhibited protective effects on testes tissue indicated by the reduced level of lipid peroxidation product, malondialdehyde (MDA). Hence, these studies have shown that strawberry has high potential to improve reproductive parameters in obese male and possibly able to improve fertility as well.

## ACKNOWLEDGEMENT

Firstly, I wish to thank God for giving me the opportunity and helping me to embark on my Master and for completing this long and challenging journey successfully. My gratitude and thanks go to my supervisor, Dr. Rozzana Mohd Said, and co-supervisor, Dr. Hamzah F. Hassan. Thank you for the support, patience and ideas in assisting me with this project. I also would like to express my gratitude to the staff of Health Sciences faculty, UiTM Puncak Alam, especially Dr. Amir Muhriz Abdul Latiff (Col)(R), Dr. Akehsan Bin Dahlan, and Dr. Maria Justine Stephany for providing the facilities, knowledge and assistance.

I would like to thank the Beasiswa Thesis Indonesia program, Lembaga Pengelola Dana Pendidikan (LPDP), Departemen Keuangan Indonesia for taking part in providing me with the financial support to finish my Master study. My appreciation goes to the staff of Laboratory Animal Facility and Management (LAFAM) UiTM Puncak Alam who provided the facilities and assistance during laboratory work. Special thanks to my colleagues and friends for helping me with this project.

Finally, this thesis is dedicated to my father and mother for the vision and determination to educate me, my lovely husband and children. This piece of victory is dedicated to all of you. Alhamdulillah.

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