Abstract for MSPP (will be on the 15th July 2021)

**Sperm Morphology and Testis Histological Changes In 12% High Cholesterol Diet Administered Rats Following Tualang Honey Supplementation and Diet Modifications**

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**Background:** Hypercholesterolaemia is recognized as a factor associated with male infertility. However, currently, there is limited therapy available. Tualang honey (TH) is a type of Malaysian polyfloral wild honey produced by the rock bee (*Apis dorsata*) proven to exert both anti-inflammatory and anti-oxidative effects.

**Objective:** This study aimed to determine the effects of TH coupled with diet modification on sperm morphology and testis histology of 12% high cholesterol diet (HCD) administered rats.

**Methodology:** Fifteen rats were fed with HCD for 16 weeks. They were then divided into 3 groups. Group A rats were not treated and continued HCD as control. Group B rats were supplemented with TH (3.0g/kg) and continued HCD, while group C was given TH (3.0g/kg) but was changed to a normal diet for 4 weeks.

**Results:** Compared to group A, group B, and C demonstrated significant improvement in both sperm morphology and Johnsen testicular scoring compared to group A (p<0.001). However, there are no significant changes in Johnsen testicular scoring between the groups.

**Conclusion:** Diet modification in addition to TH supplementation may further improve male fertility in HCD rats as compared to TH alone. Based on our findings, there is a need to further explore the potential TH in improving male infertility associated with hypercholesterolaemia.

**(Keywords: High cholesterol diet, Tualang honey, Sperm morphology, Testis histology, Johnsen testicular scoring)**

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Abstract for YSN ASM ISVC

**The Effects Of Tualang Honey On Sperm Profile In Mixed Cholesterol Diet Administered Rats**

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**Background:** Hypercholesterolaemia are recognized factors associated with male infertility. They have been shown to reduce the semen quality, change the sperm proteomes and also contribute to erectile dysfunction. However, currently there is limited therapy available. Tualang honey (TH) is a type of Malaysian polyfloral wild honey produced by the rock bee (*Apis dorsata*) proven to exert both anti-inflammatory and anti-oxidative effects.

**Objective:** This study aimed to determine the effects of TH on the sperm profile of mix cholesterol diet administered rats.

**Methodology:** Thirty male Sprague Dawley rats 2 weeks of age weighing 200 - 250 gm were divided into two groups, the mixed (12%) cholesterol diet (12% CD; n= 24) and standard diet (SD; n=6) and were fed for 16 weeks. At 16 weeks, the rats in the 12% CD group were subsequently divided into four groups. The first group was continued with only SD while the other 3 groups in addition to SD, they were given TH supplement at different doses (1.2, 2.4 and 3.0 g/kg/day) for 4 weeks. Sperm profile analysis from the caudal epididymis was performed for all groups at the end of the 4 weeks.

**Results:** After 16 weeks of 12% CD and 4 weeks of SD, the sperm concentration, the percentage of total sperm motility, progressive motility and viability reduced significantly compared to the SD group (p<0.001). On the contrary, all TH supplemented groups demonstrated significant improvement in the sperm concentration, percentage of sperm viability, total sperm motility and progressive motility (p<0.001).

**Conclusion:** TH supplementation of animal model with diet modifications improved the sperm profile parameters. Based on our findings, there is a need to further explore the potential TH in improving male infertility associated with hypercholesterolaemia.

**(Keywords: Mix cholesterol diet, Tualang honey, sperm profile)**

Abstract for Monash Initiate

**The Effects Of Tualang Honey On Sperm Profile In High Cholesterol Diet Induction Animal Model**

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**Background:** Hypercholesterolaemia and obesity are recognized factors associated with male infertility. They have been shown to reduce the semen quality, change the sperm proteomes and also contribute to erectile dysfunction. However, currently there is limited therapy available. Tualang honey (TH) is a type of Malaysian polyfloral wild honey produced by the rock bee (*Apis dorsata*) proven to exert both anti-inflammatory and anti-oxidative effects.

**Objective:** This study aimed to determine the effects of TH on the sperm profile of animal model with chronic exposure to high cholesterol diet.

**Methodology:** Thirty male Sprague Dawley rats 2 weeks of age weighing 200 - 250 gm were divided into two groups, the high (12%) cholesterol diet (12% CD; n= 24) and standard diet (SD; n=6) and were fed for 16 weeks. At 16 weeks, the rats in the 12% CD group were subsequently divided into four groups. The first group was continued with only 12% CD while the other 3 groups in addition to the 12% CD, they were given TH supplement at different doses (1.2, 2.4 and 3.0 g/kg/day) for 4 weeks. Sperm profile analysis from the caudal epididymis was performed for all groups at the end of the 4 weeks.

**Results:** At 16 weeks of 12% CD, the sperm concentration, the percentage of total sperm motility, progressive motility and viability reduced significantly compared to the SD group (p<0.001). On the contrary, all TH supplemented groups demonstrated significant improvement in the sperm concentration, percentage of sperm viability, total sperm motility and progressive motility (p<0.001).

**Conclusion:** TH supplementation of animal model with chronic exposure to high cholesterol diet improved the sperm profile parameters. Based on our findings, there is a need to further explore the potential TH in improving male infertility associated with hypercholesterolaemia and obesity.

**(Keywords: High cholesterol diet, Tualang honey, sperm profile)**