

The effect of high sugar and palm oil diet on cholesterol and triglyceride levels of fruit flies (*Drosophila melanogaster*)

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ABSTRACT

Metabolic syndrome (MS), characterized by dyslipidemia, hyperglycemia, hypertension, and central obesity, is a major contributor to mortality and morbidity in Indonesia since they are considered as important risk factors for non-communicable diseases such as cardiovascular disease, stroke, type 2 diabetes mellitus (DMT2), liver disease, and reproductive disorders. The cause of SM is multifactorial, one of which is the diet of parents who pass on to their offspring. Fruit fly (*Drosophila melanogaster*) is an organism that has the potential to be a model for research on human disease because it has genes that are homologous to humans. This study examines the potential of *Drosophila melanogaster* as a MS epigenetic model organism by looking at the effect of high sugar and palm oil diet as a variation of environmental factors on cholesterol and triglyceride profiles in several generations of fruit flies (F1 – F8). The samples was completely randomized from the wild fruit fly population, consisting of 240 pairs in each medium (MS and control media) and each of F1-F8 generation. MS diet consisted of fat (1.25% palm oil) and high sugar (1% sucrose), while corn starch was used as control diet. Cholesterol and triglyceride profiles were examined with spectrophotometer. Data analysis was carried out using Mann Whitney test. The results showed that there is no significant effects of high sugar and palm oil diet on the cholesterol and triglyceride levels in each generation (F1 to F8), however there is an increase trend of higher cholesterol level up until the third generation (F3).

Kata Kunci: *fruit flies, lipid profile, sugar, fat, feed media*