



Malays. Appl. Biol. (2019) 48(1): 21–26

PINEAPPLE HONEY INHIBITS ADIPOCYTES PROLIFERATION

AND REDUCES LIPID DROPLET ACCUMULATION

IN 3T3-L1 ADIPOCYTES

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Accepted 23 January 2019, Published online 20 March 2019

ABSTRACT

Honey has potential in controlling obesity by reducing excess weight gain and other obesity parameters such as triglyceride levels. However, its effects on the cells that stores lipid (adipocytes) is still unclear. This study was performed to observe the effects of pineapple honey on the growth and lipid accumulation of adipocytes *in vitro*

. Pineapple honey was standardised according to its total phenolic and flavonoid contents prior to treating on differentiated 3T3-L1 adipocytes. Proliferation of adipocytes was observed using 3-(4,5 dimethylthiazol-2-yl)-2,5-dipenyltetrazolium bromide (MTT) assay while lipid accumulation and droplet size were determined using oil red O staining and

Feret's

diameter. Pineapple honey exhibited 0.0379 ± 0.001 mg/100 mL GAE of total phenolic content and 0.098 ± 0.001 mg catechin/kg of total flavonoid content. It significantly inhibited adipocytes' proliferation starting from 6.25% of pineapple honey concentration. In addition, the honey also significantly reduced lipid droplet size by 33.78% to 70.36% and reduced lipid accumulation compared to the control.

These findings suggest that pineapple honey may affect the storage of lipids in adipocytes.

Future investigation involving the biomarkers of adipogenesis is required to confirm whether the reduction in lipid accumulation is attributed to the effect of honey on these pathways.

Key words: 3T3-L1 adipocytes, adipocyte size, pure honey, pineapple honey