# Enhancing Effects of *Trichosanthes cucumerina* extracts on Adipogenesis, Adipolysis and Glucose Uptake in 3T3-L1 Adipocytes

*Assia Sassi*[1,*], *Mohammad Muzaffar Ali Khan Khattak*[1] *& Mohammad Taher*[2]

[1]Department of Nutrition Sciences, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia
[2]Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, International Islamic University Malaysia

ABSTRACT

*Objectives/Research Problem:* Alternative traditional medicines and herbal remedies are continuously being used in the prevention of various diseases due to their beneficial health implications and cost-effectiveness. One of these diseases is a state of hyperglycemia which can be managed through the use of natural products originating from herbs, fruits or vegetables. One of the proclaimed and underutilized vegetables used in this study is a commonly consumed gourd belonging to the *Cucurbitaceae* family, named: *Trichosanthes Cucumerina* (known as Snake gourd or Labu Ular).

*Materials and Method:* Water and ethanol extracts of the whole vegetable were assessed for cell viability which revealed that 3T3-L1 adipocytes maximum toleration concentration was 0.063 mg/ml. The extracts were further tested on adipocytes' differentiation and showed a stimulation of lipid droplets formation during adipogenesis.

*Results and Discussion:* The extracts significantly ($p<0.001$) increased glycerol concentrations during adipolysis with concentrations of 75.34±3.69 and 43.50±4.23 µg/ml for the ethanol extract (TCWe) and water extract (TCWw) of the whole vegetable, respectively. The extracts also significantly ($p<0.001$) promoted the uptake of glucose into the cells with values of 71.24 and 44.47% for the ethanol extract (TCWe) and the water extract (TCWw) of the whole vegetable, respectively.

*Conclusion:* The present study showed that there is a beneficial effect of the extracts of *Trichosanthes Cucumerina* on adipogenesis, adipolysis and glucose uptake on 3T3-L1 adipocytes which can be a key factor in the prevention and treatment of non-communicable diseases such as diabetes, obesity and metabolic syndrome.

KEYWORDS: 3T3-L1, Adipocytes, Adipogenesis, Adipolysis, Glucose Uptake

*CORRESPONDENCE: sassia19@gmail.com