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Back to results | 1 of 1



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## Trichosanthes cucumerina extracts enhance glucose uptake and regulate adiponectin and leptin concentrations in 3t3-l1 adipocytes model (Article) (Open Access)

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## Abstract

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Trichosanthes cucumerina (Cucurbitaceae) commonly known as Snake gourd or Labu Ular is considered the largest genre in the Cucurbitaceae family and is mainly found in the southeast areas of Asia. It has been used in Ayurvedic medicine as a treatment for certain diseases such as Diabetes mellitus, but these acclaims lack scientific-based evidence. In this study, water and ethanol extracts of three parts of Trichosanthes cucumerina namely; whole vegetable, peels, and seeds, were assessed for toxicity through a cell viability assay using 3T3-L1 pre-adipocytes model which revealed a maximum toleration concentration of 0.063 mg/mL. The extracts were further tested on adipocytes' differentiation and positively showed a stimulation of lipid droplets formation during adipogenesis and significantly ($p<0.001$) increased glycerol release levels (75.34±3.69 µg/ml) during adipolysis. The extracts also significantly ($p<0.001$) promoted the uptake of glucose into the cells (2636.22±91.33 Bq) in an action similar to that of insulin. Similar results were observed during ELISA assay with a significant increase ($p<0.001$) in adiponectin concentrations (3593.1±225.25 ng/mL) and a decrease in leptin concentrations (23870±5066.07 pg/mL). The present study results indicate a beneficial effect of Trichosanthes cucumerina extracts on adipogenesis, adipolysis and glucose uptake, in addition to a regulation of adiponectin and leptin concentrations in 3T3-L1 adipocytes which can be of clinical importance in energy regulation which is a key factor in treating diabetes, obesity, and metabolic syndrome. © 2017 The Authors.

## SciVal Topic Prominence

Topic: Momordica charantia | Cucurbitaceae | bitter melon

Prominence percentile: 91.108

## Author keywords

3T3-L1 | Adipogenesis | Adipolysis | ELISA | Glucose uptake | Trichosanthes cucumerina

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