

[Look Up Full Text](#)
[Full Text from Publisher](#)
[Find PDF](#)
[Export...](#)
[Add to Marked List](#)

Bottle gourd (*Lagenaria siceraria*) extracts improve glucose and lipid metabolism in 3T3-L1 adipocytes

By: [Sassi, A \(Sassi, Assia\)^{\[1\]}](#); [Khattak, MMAK \(Khattak, Mohammad Muzaffar Ali Khan\)^{\[1\]}](#); [Taber, M \(Taber, Mohammad\)^{\[2\]}](#)

PROGRESS IN NUTRITION

Volume: 21 Pages: 238-245 Supplement: 2

DOI: 10.23751/pn.v21i2-S.6367

Published: DEC 2019

Document Type: Article

[View Journal Impact](#)

Abstract

The aim of this study was to investigate the effect of bottle gourd which belongs to family of cucurbitaceae (*Lagenaria siceraria* (LS) on hyperglycemia by assessing the cells viability, adipogenesis, adipolysis, glucose uptake, adiponectin and leptin using 3T3-L1 adipocytes as a model. Fresh bottle gourd were washed thoroughly with distilled water and segregated into three parts namely; whole vegetable (LSW), peels (LSP) and seeds (LSS). Each part was blended either with water or ethanol which then labeled as LSWw, LSPw, LSSw LSWe, LSPe and LSSe, respectively. The collected data was compiled and statistical analysis was performed. Mainly, one-way analysis of variance (ANOVA) was performed followed by Tukey's posthoc test to ascertain differences in the means. The lipid droplet formation was significantly ($P < 0.001$) higher in the adipocytes treated with the extracts of LSWw, LSSw, LSPw, LSPe and lower in the extracts of LS peels (LSPw, LSPe) compared to induction medium (MDI)/insulin (control). The same extracts also significantly ($P < 0.001$) increased glycerol release during adipolysis compared to the control. It caused a significant ($P < 0.001$) increase in adiponectin concentrations for LSPw, LSWw and a decrease in leptin concentrations for the water extracts of the LSPw. The present study showed that there was a hypoglycaemic effect of LS extracts by improving the regulation of adipogenesis through the formation of lipid droplets, adipolysis by increasing the release of glycerol, glucose uptake by increasing the uptake into the cells as well as adiponectin and leptin concentrations which could be of clinical importance in energy regulation which is a key factor in diabetes, obesity and metabolic syndrome.

Keywords

Author Keywords: adipocytes; adipogenesis; adipolysis; glucose uptake; adiponectin; leptin

KeyWords Plus: ACTIVATED RECEPTOR-GAMMA; INSULIN; PHYTOCHEMICALS; CUCURBITACINS; EXPRESSION; LIPOLYSIS; RELEASE; IMPACT; MUSCLE; CELLS

Author Information

Reprint Address: Sassi, A (reprint author)

IIUM Kuantan Malaysia, Nutr Dept, Kulliyah Allied Hlth Sci, Kuantan, Malaysia.

Addresses:

[1] IIUM Kuantan Malaysia, Nutr Dept, Kulliyah Allied Hlth Sci, Kuantan, Malaysia

[2] IIUM Kuantan Malaysia, Pharmaceut Technol Dept, Kulliyah Pharm, Kuantan, Malaysia

E-mail Addresses: sassia19@gmail.com

Publisher

MATTIOLI 1885, VIA DELLA LODESANA 649-SX, FIDENZA, 43046 PR, ITALY

Journal Information

Impact Factor: [Journal Citation Reports](#)

Categories / Classification

Research Areas: Nutrition & Dietetics

Web of Science Categories: Nutrition & Dietetics

[See more data fields](#)

Citation Network

In Web of Science Core Collection

0

Times Cited

[Create Citation Alert](#)

40

Cited References

[View Related Records](#)

Use in Web of Science

Web of Science Usage Count

0

Last 180 Days

0

Since 2013

[Learn more](#)

This record is from:

Web of Science Core Collection

- Science Citation Index Expanded

[Suggest a correction](#)

If you would like to improve the quality of the data in this record, please [suggest a correction](#).

Cited References: 40

Showing 30 of 40 [View All in Cited References page](#)

(from Web of Science Core Collection)

1. Cucurbitacins - A Promising Target for Cancer Therapy

Times Cited: 54

By: Alghasham, Abdullah A.

INTERNATIONAL JOURNAL OF HEALTH SCIENCES-IJHS Volume: 7 Issue: 1 Pages: 77-89 Published: JAN 2013