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

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Abstract
The aim of this study was to investigate the effect of bottle gourd which belongs to family of cucurbitaceae (Lagenaria siceraria) on hyperglycemia by assessing the cells viability, adipogenesis, adipophysis, 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 ethan and then they labelled as LSWw, LSWp, LSSw, LSPw and LSSe respectively. The collected data was compiled and statistical analysis was performed. Mainly, one-way analysis of variance (ANOVA) was performed followed by Turkey’s post-hoc 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, LSWp, LSSw, LSPw and LSSe respectively. 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 in creasing 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: adipogenics; adipophysis; glucose uptake; adiponectin; leptin

Abstract

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