Insulinotropic activity of standardized methanolic extracts of Ficus deltoidea from seven varieties

ABSTRCT

Ficus deltoidea is a traditional medicinal plant that has been proven to show antidiabetic effects. This study focus is to assess the insulin secretion activity of Ficus deltoidea standardized methanolic extracts from seven independent varieties and mechanisms that underlie the insulin secretion action of the extracts. The cytotoxicity of Ficus deltoidea extracts was tested using viability assay. The insulin secretion assay was carried out by treating clonal BRIN BD11 cell line with standardized methanolic Ficus deltoidea extracts or glybenclamide. The clonal BRIN BD11 cell was also treated with insulin agonist and antagonist to elucidate the insulin secretion mechanism. Only the viability percentage for Ficus deltoidea var. kunstleri and intermedia was identified to be toxic at 500 and 1000 μg/ml (P<0.001). The insulin secretion for Ficus deltoidea var. deltoidea, angustifolia, and motleyana was dose-dependent; further evaluation suggested that Ficus deltoidea var. trengganuensis was involved in K$_{ATP}$-independent pathway. This study suggests that standardized methanolic extracts of Ficus deltoidea varieties have an insulinotropic effect on clonal BRIN BD11 cell line and can be utilized as a modern candidate of antidiabetic agents targeting the escalation for insulin secretion from pancreatic beta cells.

Keyword: Ficus deltoidea; Traditional medicinal plant; Insulinotropic effect