

## Antidiabetic effect of polyherbal combinations in STZ induced diabetes involve inhibition of $\alpha$ -amylase and $\alpha$ -glucosidase with amelioration of lipid profile

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### Abstract

The concerned study reveals antidiabetic effects of different polyherbal combinations of six medicinal plants used in traditional medicine. Aim of the present study was to evaluate antidiabetic action of polyherbal combination of six medicinal plants. Aqueous extracts of *Stevia rebaudiana*, *Momordica charantia*, *Tamarindus indica*, *Gymnema sylvestre*, *Allium sativum* and *Murraya koenigii* were used for polyherbal combinations. All these combinations were studied for their acute toxicity and 250 mg/kg dose was selected. OGTT, antidiabetic and anti- $\alpha$  amylase and  $\alpha$ -glucosidase activity and liver function tests were performed for all the combinations. Reduction in blood glucose level was determined in antidiabetic activity for 0 to 20 days and histopathology of the pancreas was performed after 20<sup>th</sup> day. IC<sub>50</sub> value is determined in anti- $\alpha$  amylase activity. Results revealed that all combinations were safe and dose was selected at 250 mg/kg. Polyherbal combinations II showed significant antidiabetic activity in OGTT and STZ-diabetic rats. Combination II showed significant anti- $\alpha$  amylase and  $\alpha$ -glucosidase activity which is better than other combinations. Treatment with combination-II in diabetic animals produced beneficial improvement in lipid profile. Histopathological observations showed improvement in the rat treated with combination-II. It may be concluded that combination-II was most effective and safe in comparison to other combinations. Flavonoids, tannins and sterols present in this combination might be responsible for the effect.

**Key words:** Polyherbal combinations; Acute toxicity; OGTT; Antidiabetic;  $\alpha$ -amylase,  $\alpha$ -glucosidase; FBG, STZ,

### Introduction

Diabetes mellitus is characterized by hyperglycemia, hypercholesterolemia, and hypertriglyceridemia, resulting from defects in insulin secretion or reduced sensitivity of the tissue to insulin (insulin resistance) and/or combination of both (Mishra et al., 2009). The pri-