

A Review of the Anti-diabetic Effects of Mormordica Charantia (Bitter Melon)

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Abstract

Diabetes mellitus (DM) is among one of the most common and rapidly increasing human diseases that is currently affecting more than 200 million people worldwide. This disease is characterized by hyperglycemia and arises from defects in insulin secretion, insulin action, or both. Insulin is a major metabolism regulating hormone secreted by β -cells of the islets of Langerhans of the pancreas that helps in the control of blood glucose levels. Diabetes mellitus has led to serious morbidity and mortality worldwide, therefore there is an increasing need for effective, economical and accessible natural anti-diabetic agents of treatment. One such natural anti-diabetic agent is Momordica charantia (M. charantia) or bitter melon, a member of the Cucurbitaceae family that is a commonly consumed vegetable known by various names, such as balsam pear, bitter gourd, carilla and karela found in various tropical and subtropical regions of the world. Several studies have acknowledged the anti-diabetic effects of M. charantia which has been known to be used in traditional treatment of diabetes mellitus among indigenous populations of Asia, South America, India and East Africa. This review seeks to highlight some of the anti-diabetic benefits of bitter melon use. Some preliminary clinical studies have shown that bitter melon improves glucose tolerance and reduces blood glucose levels in patients with type-II diabetes. Several mechanistic studies have also shown that bitter melon causes hypoglycemia, stimulates peripheral skeletal muscle glucose utilization, inhibits intestinal glucose uptake, suppresses key gluconeogenic enzymes, and preserves pancreatic β cells and insulin secretory function.

Keywords: Diabetes mellitus; Langerhans cells; Momordica charantia.