

α -Glucosidase and α -amylase inhibitory activities of *Pithecellobium dulce* bark and leaves

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Abstract

In present study the bark and leaves of *Pithecellobium dulce* were evaluated for α -amylase and α -glucosidases inhibition *in vitro*, compared with acarbose. acetone extracts of bark and leaves showed more sucrase inhibition ($IC_{50} = 1.29 \pm 0.32$ and 1.43 ± 0.84 mg/mL, respectively) than maltase ($IC_{50} = 1.49 \pm 0.18$ and 2.07 ± 0.45 mg/mL, respectively), while methanol extract of bark and leaves showed more sucrase inhibition ($IC_{50} = 2.35 \pm 0.72$ and 2.21 ± 0.28 mg/mL, respectively) than maltase ($IC_{50} = 2.03 \pm 0.91$ and 2.46 ± 0.44 mg/mL, respectively). Amylase inhibitory activity of acetone extract of bark and leaves was found to be 74.78% and 62.43% while methanol extract had 72.23% and 68.32% inhibition at 4 mg/mL, respectively. Acarbose (standard) showed more sucrase inhibition ($IC_{50} = 8.45 \pm 0.21$ μ g/mL) than maltase ($IC_{50} = 27.62 \pm 1.34$ μ g/mL) and had 83.40% α -amylase inhibition at 50 μ g/mL. Acetone extract showed significant activity against α -glucosidases for sucrase than maltase enzyme.

Keywords: *Pithecellobium dulce*; α -glucosidase; α -amylase; diabetes

Introduction

The prevalence and morbidity associated with type 2 diabetes mellitus continues to increase throughout the world. The secondary complications in diabetes mostly from micro and macro vascular changes (Engelgau, et al., 2004). Several studies on the treatment of Type 2 diabetes suggest that improved glycemic control reduces micro vascular risks (Gaster and Hirsch, 1998; Ohkubo, et al., 1995; Vijan, et al., 1997). Glucosidase inhibitors are widely studied and isolated from different sources such as plants (Yoshikawa, et al., 1098) and microbes (Kameda, et al., 1984). In 1970s, it was realized that inhibition of all or some of the intestinal disaccharidases and pancreatic α -amylase by inhibitors could regulate the absorption of carbohydrate and these inhibitors could be used therapeutically in the oral treatment