ID 474

Review on Antidiabetic Potency of Family Aristolochiaceae Using the Diabetic Rat Model, α-Glucosidase, and α-Amylase Inhibitory Assays

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The plant species in the family Aristolochiaceae consists of various important bioactive compounds, and they are used as functional ingredients in the development of therapeutic agents to act against diseases including diabetes. The main objective of this review is to identify the glucose-lowering potencies regarding the diabetic mellitus of plant species in the family Aristolochiaceae. This was conducted by analyzing the alpha-glucosidase inhibition in the alpha-glucosidase inhibitory assay, the alpha-amylase dehydrogenase rate in the alpha-amylase inhibitory assay, and glucose reduction in the diabetic rat model. In the diabetic rat model, root ethanolic extract of Aristolochia ringens showed the highest glucose reduction with the Streptozotocin (STZ) diabetogenic agent, which is 113.1±1.8 mg/dl. The leaf ethanol extract of Aristolochia indica showed the highest glucose reduction with the alloxan diabetogenic agent, which is 5.28±0.37 mg/dl. When using dexamethasone as a diabetogenic agent, methanolic extract of the whole plant of Aristolochia bracteolata showed the highest glucose reduction, which is 124.5±1.231 mg/dl. In α- glucosidase inhibitory assay, ethyl acetate root extract of Aristolochia longa showed the highest IC50 value which is 0.199±0.014 mg/ml. In the α- amylase inhibitory assay, whole plant methanolic extract of Aristolochia indica showed the highest α-amylase dehydrogenase rate which is 60.12 ±0.46 nm/min/mg protein. The genus Aristolochia in the family Aristolochiaceae showed significant glucose-lowering potency. Moreover, the importance of using species in the family Aristolochiaceae in the management of diabetes should be identified and accepted for suitable alternative medicines in future studies.

Keywords: *alpha-glucosidase, alpha-amylase, diabetic rat model*