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# Isolation and Identification of α-Amylase Inhibitors from *Syzygium cumini* leaves

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Diabetes mellitus is a chronic disorder associated with hyperglycemia and uncontrolled postprandial blood glucose elevation. Inhibitors of α-amylase and α-glucosidase reduce blood glucose elevation by reducing digestion of carbohydrates. *Syzygium cumini* is a plant widely used in traditional medicine for management of diabetes. Several studies on *S. cumini* seeds and bark have shown hypoglycemic effects. The current study was focused on identifying potential antidiabetic compounds from ethyl acetate extract of *S. cumini* leaves (SCE).

Dried ground *S. cumini* leaves were extracted with EtOAc and activity guided isolation of α-amylase inhibitors from it was carried out using various chromatographic methods and porcine pancreatic α-amylase inhibition assay. While SCE showed moderate inhibition (72.6 % at 1 mg/ml) with $IC_{50}$ of 704 µg/ml of α-amylase, a fraction eluting with methanol:dichloromethane (1:19 to 3:17) in silica gel chromatography showed 99.6 % inhibition at 0.1 mg/ml and an $IC_{50}$ of 39.9 µg/ml. It also strongly inhibited α-glucosidase with $IC_{50}$ 28.2 µg/ml. The fraction was shown to contain a 3:1 mixture of ursolic acid and oleanolic acid which were identified by NMR and TLC/HPLC comparison with authentic samples. Authentic samples of ursolic acid and oleanolic acid respectively inhibited α-amylase with $IC_{50}$ of 6.7 and 57.4 µg/ml and α-glucosidase with $IC_{50}$ of 3.1 and 44.1 µg/ml.

This study demonstrates that ursolic acid and oleanolic acid from *S. cumini* leaves have the potential of decreasing postprandial elevation of blood glucose and that the leaf is a promising source of antidiabetic compounds. *In vivo* efficacy and safety of the active fraction need investigation.