

## Screening of α-amylase inhibitory activity of endophytic fungal strains associated with *Costus speciosus*

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Diabetes mellitus is a well-known carbohydrate metabolic disorder that affects the body's ability to create or utilize insulin marked by abnormal glucose levels in the blood stream. Inherited and/or earned paucity in production of insulin by the beta cells of pancreas are the prominent causes of this chronic disease. Costus speciosus is a renowned medicinal plant used in traditional medicine to treat diabetes patients in Sri Lanka. Endophytic fungi dwell asymptomatically within the intracellular spaces of healthy plant tissues and they synthesize similar bioactive compounds as those originating from their host plants. With this in mind, the present study was initiated to determine the *in vitro* anti-diabetic activity of endophytic fungal strains associated with C. speciosus by screening for  $\alpha$ -amylase inhibitory activity, which is responsible for postprandial hyperglycemia. Surface treated fresh leaves of C. speciosus were cultured in Potato Dextrose Agar resulted in two types of endophytic fungi (SB/CS/C & SB/CS/F). They were cultured large scale in Potato Dextrose Broth and the mediums were extracted to ethyl-acetate (EtOAc) and the mycelia were sequentially extracted with EtOAc and Methanol (MeOH). The ability of fungal extracts to inhibit  $\alpha$ -amylase enzyme activity was determined by chromogenic dinitrosalicylic acid (DNSA) method and the results revealed that the both EtOAc extracts of SB/CS/C and SB/CS/F showed high inhibitory activity with IC50 of 116.51 ppm and 250.78 ppm, respectively. The  $\alpha$ -amylase enzyme inhibitory activity of these endophytic fungal extracts may lead to reduction of reactive hyperglycemia in diabetic condition. Further, identification of the isolated endophytic fungi by molecular means and screening anti-diabetic activity of isolated compounds are in progress.

*Keywords:* anti-diabetic activity, endophytic fungi,  $\alpha$ -amylase inhibitory activity