

PP 19 - Hypoglycaemic Potential of Ethyl Acetate-Soluble Fraction of Mature Fruits of *Averrhoa carambola* (Star Fruit) on Normal Glycaemic Rats

Senevirathne L.R.K.C.K.^a, Ekanayake P.B.^a, Priyankara C.^a
Fernando P.H.P.^b

^a*Department of Medical Laboratory Science, Faculty of Allied Health Sciences, University of Peradeniya*

^b*Department of Biochemistry, Faculty of Medicine, University of Peradeniya*

#Corresponding author: *kaushalyasenevirathna50@gmail.com*

Background: *Averrhoa carambola* (star fruit) or “kamaranga” is a popular antidiabetic fruit. The hypoglycaemic activity of fruit pulp and leaves were well proven, with different in-vitro and in-vivo methods. Determination of the hypoglycaemic effect of several fractions of the fruit, including ethyl acetate (EA) soluble fraction remains as an unmet challenge.

Objectives: The objective of this study was to determine the hypoglycaemic effect of EA fraction of mature fruits of *A.carambola* on normal rats by assessing the alterations of post-prandial metabolism and the in-vivo α -amylase inhibitory activity.

Methodology: The EA soluble fractions were extracted from fresh fruits of both sweet and sour varieties separately. The study was designed as an animal experiment, which was conducted using 10 adult, male Sprague-Dawley rats with normal blood glucose levels. Animals were divided equally (n=5) into test and control groups. After 10 hours fasting, the test group was given ethyl acetate soluble fraction at the rate of 30 mg (dry weight)/kg body weight. The oral glucose tolerance test (OGTT) and oral starch tolerance test (OSTT) were done (for both varieties separately) and results were analysed. Parallel to this study an in-vitro study was conducted by another researcher.

Results and conclusions: In OSTT, sweet type treated group decreased peak blood glucose (PBG) level, area under curve (AUC), blood glucose levels (BGL) at 60 min and 90 min significantly ($P < 0.05$). In OGTT, both test groups did not produce significant reduction of PBG or AUC, while showing a significant reduction in BGL at 60 min (in sweet type). In-vivo α -amylase inhibitory activity could be predicted using OSTT which may be caused by delayed digestion of starch and/or prolonged carbohydrate absorption. Also our concurrent in-vitro study had shown a 19% α -amylase inhibition of EA extract of sweet type which comply with this in-vivo observations. Therefore, EA extract of sweet type may have contained some phytochemicals which are responsible for starch tolerance. Thus, isolation and recognition of phytochemicals responsible for α -amylase inhibitory activity may result in successful therapeutic approach against diabetes mellitus in future.

Keywords: *Averrhoa carambola*, ethyl acetate soluble fraction, hypoglycaemic activity