Insulin-secretagogue action of the traditional antidiabetic plant *Coccinia grandis* Voigt in rat insulinoma cell line RINm5F *in vitro*

Meenatchi P[1,2], Purushothaman A[2], Maneemegalai S[1*]

[1] Department of Biochemistry**,** Bharathidasan University Constituent College for Women, Orathanadu-614 625, Tamil Nadu, India.

[2] PG & Research Department of Biochemistry, Mohamed Sathak College of Arts and Science (*Affiliated to the University of Madras, Approved by UGC and AICTE, and Reaccredited by NAAC with "B" Grade*), Chennai-600119, Tamil Nadu, India.

[*]Corresponding author e.mail: maneedevi@yahoo.co.in

From National Conference on Interdisciplinary Research and Innovations in Biosciences, NATCON -2018. Post Graduate & Research Department of Biochemistry, Mohamed Sathak College of Arts & Science, Sholinganallur, Chennai-600119, India. 24th & 25th January 2018.

American J of Bio-pharm Biochem and Life Sci 2018 January, Vol. 4 (Suppl 1): **OP41**

ABSTRACT

Diabetes mellitus is a metabolic disease affecting millions of individuals worldwide, characterized by absolute or relative deficiencies in insulin secretion and/or insulin action associated with chronic hyperglycemia and disturbances of carbohydrate, lipid and protein metabolism. The total predicted increase in numbers of people with diabetes from 2012 to 2030 is about 180 million, an astonishing increase of 48% from 2012 at an annual growth of 2.7%, which is twice the annual growth of the total world adult population. The revived scientific interest in natural product-based drug discovery, new approaches for the identification, characterization, and resupply of natural products are crucial for the development of plant-based therapeutics. *Coccinia grandis*, Voigt (Cucurbitaceae family) is widely used in traditional treatment of diabetes. The fruits are used for culinary purposes as a vegetable. Hence, this study was aimed at investigating the phytochemical constituents as well as to examine the effect of *Coccinia grandis* Fruit extract (CGF) on insulin secretion using insulin-secreting Rat insulinoma clone m5F (RINm5F) cells *in vitro*. Phytochemical screening of CGF extract revealed the presence of flavonoids, alkaloids, glycosides, saponins, steroids, terpenoids, tannins and phenolic compounds. It is well known that phenolic compounds belong to the bioactive components of plant products and have good health-promoting activities. Further, CGF extract at 0.250 mg/mL and 0.50 mg/mL concentrations has significantly increased insulin secretion to 1.28 and 1.71- fold, respectively. Present findings provide experimental evidence that the fruits of *C. grandis* have potential antidiabetic activity which might be used as a functional food and safe remedy for the treatment of diabetes and associated complications. This study also revealed that the plant can be a promising source for development of natural novel insulin secretagogues.

Published: February 2018.