Journal of Pharmacreations

PharmaCreations

Pharmacreations |Vol.1 | Issue 2 | April-June - 2014
Journal Home page: www.pharmacreations.com

Reseaarch article ***Open Access***

In vitro antidiabetic activity of *Clerodendrum viscosum* Vent.

Faisal Ahmed, Md.Shafikur Rahman.

Department of Pharmacy, Southeast University, Banani, Bangladesh, Zia sharoni, Nurpur, Dania, Kadamtali, Dhaka-1236, Bangladesh.

*** Corresponding author: Faisal Ahmed.**

E-mail id: Faisalahmed.pharm@gmail.com

ABSTRACT

Clerodendrum viscosum a common plant belonging to the family verbenaceae, grows as a weed on roadside and waste lands. The methanolic extract of the leaves of *Clerodendrum viscosum* vent were prepared by successive solvent extraction. For Antidiabetic study in vivo model was utilized. The glucose level was determined in alloxan induced diabetic mice by administering methanolic extract of *Clerodendrum viscosum* vent at the dose of 250 mg/kg significantly reduce at 1st hour to 3rd hour 541 to 470 mg/dl and for a dose of 500 mg/kg 130 to 36 mg/dl . There was a significant decrease in glucose level being found.

Key word: *Clerodendrum viscosum* (vent), Alloxan, Methanolic extract, Mice, Antiseptic powder.

INTRODUCTION

Blood glucose level is regulated and maintained by the hormone insulin which is secreted from the beta cells of the pancreas. Insulin increases the utilization of glucose. Lack of insulin or decreased sensitivity of tissue cells to insulin usually causes hyperglycemia. Lack of insulin secretion may due to the destruction of the beta cells by viral attack, chemical toxin, genetic disorder or beta cells over-activity. Hyperglycemia occurs naturally during times of infection and inflammation. When the body is stressed, endogenous catecholamine is released that amongst other things serve to raise the blood glucose levels. The amount of increases varies from person to person and from inflammatory response to response. As such, no patient with first time hyperglycemia should be diagnosed immediately with diabetes if that patient is concomitantly sick. Further testing, such as fasting plasma glucose, random plasma glucose, or two hour postprandial plasma glucose level, must be performed. Glucose levels are measured in either milligrams per deciliter mg/dl in the United States and other countries (e.g., Japan, France, Egypt, Colombia) or millimoles per liter (mmol/L), which can be acquired by dividing (mg/dl) by factor of 18. Scientific journals are moving towards using mmol/L; some journals now use mmol/L as the primary unit but quote mg/dl in the parentheses. Glucose levels vary before and after meals, and at various times of day; the definition of "normal" varies among medical professionals. In general, the normal range for most people's (fasting adults) is about 80 to 126 mg/dl or 4 to 7 mmol/L. A subject with a consistent range above 126 mg/dl 7 mmol/L is generally held to have hyperglycemia, whereas a consistent range below 70 mg/dl or 4 mmol/L is

considered hypoglycemic. In fasting adults, blood plasma glucose should not exceed 126 mg/dl or 7 mmol/L. Sustained higher levels of blood sugar cause damage to the blood vessels and to the organs they supply, leading to the complications of diabetes.

MATERIAL AND METHODS

Plant material

The leaves of *Clerodendrum viscosum* Vent were collected from Banani in Dhaka, Bangladesh in October 2011. These are familiar plant and widely distributed. The collected plant parts were separated from Undesirable materials, or plant parts. They were cut into small pieces and dried for two weeks. The plant parts were ground into a coarse powder with the help of a suitable grinder and passing through sieve no 40, stored in an airtight container, and kept in a cool, dark, and dry place until analysis commenced. By using about 250 gm of dried powdered material was refluxed with 750 ml of 95% methanol for 10 days. The whole mixture was successively filtered through a piece of clean, white cotton material and filter paper. The filtrate (methanol extract) obtained was evaporated using hot water bath. It rendered greenish black color of extract. Finally, we got 2 gm methanolic extract. The extract transferred to a closed container for further use and protection.

Experimental Animal

Experimental animals mice (weighed about 25-35 gm) were obtained from the animal Resource Branch of the "International center For Diarrhoeal Disease and Research, Bangladesh (ICDDR, B)". They were kept in standard environmental condition and fed the ICDDR; B formulated rodent food and water.

Experimental Design

Experimental animals were randomly selected and divided into 5 groups denoted group-I, group-II, group-III , group-IV and group-V , consisting of 2 mice in each group i.e.; control, standard, and the doses of the extract 250 and 500 mg/kg) of plant respectively. Prior to any treatment, each rat was weighted properly and the dose of the test sample and control material was adjusted accordingly.

Method of Identification of Animals

Each group considered of 2 mice. As it was difficult to observe the biologic response of 2 mice at a time receiving same treatment, it was quite necessary to identify individual animal of a group during the treatment. The animals were individualized and marked as M1= Mice 1, M2= Mice 2, M3= Mice 3, M4= Mice 4 and M5= Mice 5.

Preparation of test Materials

In order to administer the crude extract at a dose of 250 and 500 mg/kg by body weight of mice, 24 mg for 250 mg/kg dose and 12 mg for 500 mg/kg dose were measured. After proper mixing of extract and Normal saline water was slowly added to each preparation.

Induction of Diabetes

Diabetic was induced in mice by injecting intra-peritoneal a freshly prepared aqueous solution of alloxan monohydrate (120 mg/kg by body weight). After one day, when the condition of diabetes was established in animals with desired blood glucose levels. Then animals were selected to see Antidiabetic effect of the extract.

Procedure for Alloxan Induced Diabetic test of Antidiabetic activity evaluation

In the experiment, a total 10 mices about 25-30 gm divided randomly into four groups (2 mices in each group). Treatment was done for 24 hrs as follows:

Group 1: Normal control (0.9% NaCl solution)
Group 2: Alloxan control (120 mg/kg, i.p.).
Group 3: Alloxan + Extract (250mg/kg)
Group 4: Alloxan + Extract (500 mg/kg).
Group 5: Alloxan + Glibenclamide (0.5 mg/kg)

Procedure

The animals were weighed and randomly divided into 5 groups consisting of 2 mice in each group. Mices were made diabetic by single intraperitonial injection of 120 mg/kg body weight of alloxan monohydrate in normal saline water. At that time the mices were maintained on 5% glucose solution for next 24 hours to prevent hypoglycemia. After one day the blood glucose level was measured. The tail tip of mice was cut with a sharp blade and little amount of blood was collected to touch of strips. Within 15 seconds blood glucose level was visualized. Nabanol (bacitracin) powder was applied on the cutting end. Then test samples of *Clerodendrum viscosum* Vent extract preparation, control solution (0.9%NaCl solution) and standard sample were administered orally by means of a long needle with a ball shaped end. After 1st hour, 3rd hours and 5th hours the blood glucose levels were again measured to see the Antidiabetic effect of the test sample in relative to control and standard groups.

RESULT

Table: Effect of *Clerodendrum viscosum* Vent extracts on blood glucose levels (mg/dl) of alloxan induced diabetic mice.

Group	Treatment	No. of mices	Blood glucose at different hours after the treatment			
			0h	1h	3h	5h
1	Normal	M-1	21	32	28	23
		M-2	27	39	31	26
2	Diabetic- Untreated	M-1	380	364	250	311
		M-2	363	337	318	308
3	Diabetic mices treated with 500 mg/kg of a extract	M-1	363	130	36	40
		M-2	510	133	47	63
4	Diabetic mices treated with 250 mg/kg of a extract	M-1	556	541	470	269
		M-2	H1	H1	188	154
5	Diabetic mices treated with 0.25 mg/kg of Glibenclamide	M-1	559	478	253	160
		M-2	541	512	280	171

DISCUSSION

In the present study, diabetes was induced in mice by injecting alloxan (120 mg/kg body weight) intraperitonial. This work has evaluated the effect of *Clerodendrum viscosum* on blood glucose level in alloxan induced diabetic mice. Glibenclamide has been used as standard Antidiabetic agents to compare the effects of extracts for this experiment. In this study it is revealed that the extract could have the ability to decrease the blood glucose level. At the dose of 500 mg/kg, the blood glucose level was more decrease than the dose of 250 mg/kg.

REFERENCE

[1] Grover JK, Yadav S and Vats VJ. 2002. Medicinal plants of India with anti-diabetic potential.Journal of Ethnopharmacology, 81: 81-10
[2] Ghani A. (1998), Medicinal plants of Bangladesh: Chemical constituents and uses.
[3] Asiatic society of Bangladesh, Dhaka.
[4] Griffiths, G.; Trueman, L.; Crowther, T.; Thomas, B. Onions, a global benefit to health. Phytother. Res. 2002, 17, 603–615.

[5] Hipkiss AR. Accumulation of Altered Proteins and Ageing: Cause and Effects. Experimental Gerontology 2006; 41: 464-473.

[6] Akinloye O. A. and Solanke, O. O. Evaluation of hypolipidemic and potential antioxidant effects of Pigeon pea (*Cajanus cajan*(l) mill sp.) leaves in alloxan-induced hyperglycemic rats.Journal of Medicinal Plants Research Vol. 5(12), pp. 2521-2524, 18 June, 2011

[7] Adaobi C. Ezike, Peter A. Akah, Charles C. Okoli and Chinwe B. Okpala; Experimental evidence for the antidiabetic activity of *Clerodendrum viscosum* leaves in rats. JBCP 15-may-2010.