ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 8, Issue, 04, pp. 29777-29779, April, 2016

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

ANTI- DIABETIC ACTIVITY OF ETHANOLIC EXTRACT OF *PORTULACA QUADRIFIDA* LEAVES

***Jerra Vidya Sagar**

Department of Medicinal Chemistry, National Institute of Pharmaceutical Education and Research, India

ARTICLE INFO

Article History:
Received 15th January, 2016
Received in revised form
15th February, 2016
Accepted 24th March, 2016
Published online 26th April, 2016

Key words:

Antidiabetic activity, *Portulaca qudrifida* leaves, Alloxan induced diabetes rats.

ABSTRACT

Diabetes mellitus is a chronic metabolic disorder of impaired carbohydrates, fat and protein metabolism. It is characterized by hyperglycemia expressed as abnormal glucose value, which is due to insulin deficiency and/or insulin resistance which results in decrease utilization of carbohydrate and excessive glycogenolysis and gluconeogenesis from amino acid by fatty acids. A single dose of Alloxan monohydrate (120 mg/kg, i.p.) was used to induce diabetes mellitus. Diabetes was confirmed by the elevated blood glucose levels determined at 72 hrs. Animals with blood glucose level more than 250 mg/dl were considered as diabetes. Plant extract at the dose of 200 and 400 mg/kg of ethanol extract and the standard drug glibenclamide 1 mg/kg, were administered as single dose per day orally to diabetes induced rats for a period of 21 days were studied on blood glucose. In the diabetic rats, all the two doses of plant extract produced a significant reduction in blood glucose levels.

Citation: Jerra Vidya Sagar, 2016. "Anti- diabetic activity of Ethanolic extrct of Portulaca qudrifida leaves", *International Journal of Current Research*, 8, (04), 29777-29779.

INTRODUCTION

Diabetes is the world's largest endocrine disease involving metabolic disorder of carbohydrate, fat and protein (Gupata and Lahiri, 1993). According to W.H.O projections, there are over 150 million diabetics worldwide currently and this number is likely to increase to 300 million by 2025.Statistical projection about India suggests that the number of diabetics will rise from 15 million in 1995 to 57 million in the year 2025 making it the country with the maximum number of diabetics in the world (Bibhuti, 2002). The methods available to treat diabetes in modern medicine are effective enough but like all other methods of therapy they too have side effects like insulin resistance after chronic insulin treatment. The thrust these days therefore is to look for alternative methods with minimal side effects to manage the disease (Maureen, 2004; Stephen and Granner, 1997; Palmer and Lernmark, 1997).

MATERIALS AND METHODS

Collection of plant material

Plant material

The fresh whole plant of *Rhus mysorensis* were collected from Sri Venkateswara University, Tirupati, Chitoor District of Andhra Pradesh and authenticated by Botanist. The voucher specimen was preserved in the department of Pharmacology laboratory of for future reference. The plant was processed, powdered coarsely and coarse plant materials were used for extraction.

Preparation of ethanol extract

The *portulaca qudrifida* was shade dried at room temperature about 200 g pulverized in a 500 ml of 95% ethanol at temperature 30-50^{0}C, in a Soxhlet extractor for 24 h. The combined extracts were concentrated at 45^{0}C to obtain dark brownish green residue. The selection of the solvent was based on their extractive values of the plant. The extract was concentrated in a rotary flask evaporator and dried in a desicator over the sodium sulphide and preserved in a refrigerator.

Experimental animals

Albino-Wister rats of either sex, weighing 150-200 g. The animals were acclimatized for seven days under laboratory conditions, all rats were kept at room temperature of 37^{0}C in the animal house. The animals were fed with commercially available rat pelleted diet. Water was allowed *ad libitum* under strict hygienic conditions. Prior to the experiments, rats were fed with standard food for 1 week in order to adapt to the laboratory conditions.

****Corresponding author: Vidya Sagar, J.***
Department of Medicinal Chemistry, Niper, Hederabad, Telangana, India.

Table 1. Effect of *portulaca Qudrifida leaves* on blood glucose level on Alloxan induced diabetic albino rats

Groups	Blood glucose levels (mg/dl)			
Group-I	100±0.33	101.23±0.29	102.33±0.21	105.12±0.40
Group-II	295.45±0.31	300.01±0.42	304.33±0.49	306.42±0.31
Group-III	280.42±0.22***	250.03±0.56***	120.55±0.66***	102.5±0.32***
Group-IV	272.66±0.45**	250.83±0.53**	190.55±3.33**	120±0.08**
Group-V	266.5±1.72***	257.5±2.14***	160.33±2.10***	119.16±0.10***

Tukey-Kramer multiple comparison tests, the p values less than 0.001 were considered as significant

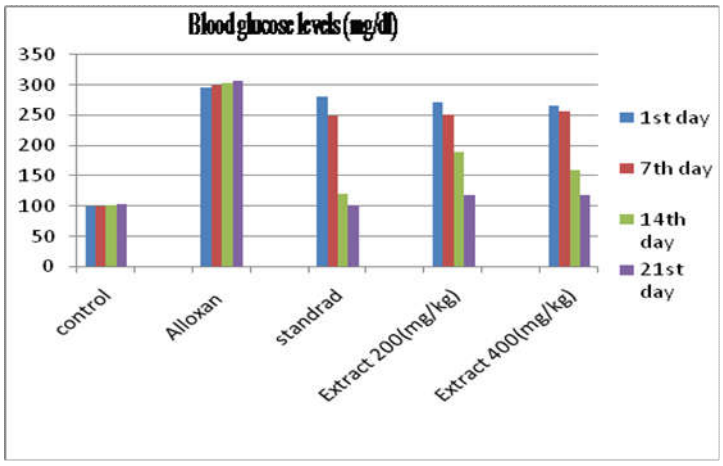

Figure 1. Effect of *Portulaca qudrifida leaves* on blood glucose level on Alloxan induced diabetic albino rats

Pharmacological evaluation

Alloxan induced diabetic model

Diabetes was induced by a single i.p. injection of 120 mg/kg of Alloxan monohydrate. The wistar albino rats 150-200 g of either sex were allowed to fast for 24 hrs prior to experimentation and diabetes was induced by injection of single dose of Alloxan 120 mg/kg of b.w. in 0.3% sodium CMC by i.p. route. After one hour of alloxanisation the animals were given feed *ad libitum* and 5% dextrose solution for a day to avoid early hypoglycemic phase. The blood glucose was monitored after every 24 h of alloxanisation. The diabetic condition was observed at 48 h, after 72 h of Alloxan injection, the diabetic rats (glucose level > 250 mg/dl) were separated and used for the study.

Determination of blood glucose

Blood glucose level of all rats was determined before the start of the experiment. Blood samples were collected for the measurement of blood glucose by retro-orbital plexus puncture method under mild ether anesthesia on 1st day, 7th, 14th and 21st day. The values of sample treated were compared with that of the standard group which was treated with Glibenclamide.

Statistical analysis

The data were expressed as mean ± standard error mean (SEM). The Significance of differences among the group was assessed using one way and multiple way analysis of variance (ANOVA). The test followed by Tukey-Kramer multiple comparison tests, the p values less than 0.001 were considered as significant.

RESULTS

Evaluation of anti diabetic activity

Blood glucose level: Alloxan treatment in rats resulted in raised in blood glucose levels which were evident by increase in blood glucose. The groups were treated with glibenclamide and ethanol and aqueous extracts on diabetic albino rats for 21 days showed a significant dose dependent beneficial effect when compared with the reference drug glibenclamide

Evaluation of anti diabetic activity

The groups were treated with Alloxan, glibenclamide and ethanol extract on diabetic albino rats for 1,7,14 and 21 days showed a beneficial effect when compared with the reference drug glibenclamide. In this study effect of *portulaca Qudrifida* on hyperglycemia is evaluated in Alloxan-induced diabetic rats. It was found that the blood glucose levels of the animals which are treated with *portulaca Qudrifida* (Groups IV,V) and the standard drug glibenclamide (Group-III), significantly reduces when compared with diabetic control (untreated) group. The BG of all groups was observed on 1st, 7th, 14th, and 21st day. The diabetic rats which treated with *portulaca Qudrifida* and glibenclamide showed a significant decrease in blood glucose level on 1st, 7th, 14th, and 21st day. On 21st day BG of Group-III decreases nearly to normal range. In the case of Group-IV, V animals BG significantly reduces, but it was some less when compared to Group-III. When compared with untreated group, the *portulaca Qudrifida* at the dose of 200 & 400 mg/kg significantly reduces the hyperglycemia. These results give us the suggestion that *portulaca Qudrifida* having significant hypoglycemic effect.

Conclusion

The present study clearly indicates that the Ethanolic extract of the leaves at 200 and 400 mg/kg doses exhibited significant anti hyperglycemic effect. Further investigation is necessary for this study

REFERENCES

Bibhuti TB. Definition, Classification and Diagnosis. In: Ahuja MS, TripathyBB, editors. RSSDI Text book of Diabetes mellitus. Hyderabad: Mudrika Graphics; 2002. p. 75 – 93

Gupata JK, Lahiri SC. *Indian Drugs,* 1993; 31(3) :112

In: Goodman and Gilman, editor. The pharmacological basis of Therapeutics. 10thed. New York: McGraw Hill Medical publishing division; 1997. p. 1686-87

Maureen HI. Definition and classification of diabetes mellitus and the criteria for Diagnosis. In: LeRoith D, Simeon TI, Jerrold OM, and editors. Diabetes mellitus: Afundamental and clinical text. 3rd ed. Philedelphia: Lippincott Williams and Wilkins; 2004. p. 456-67

Palmer JP. Lernmark A. Pathophysiology of type I (IDDM). In: Porte D Jr, Sherwin RS, editors. Diabetes mellitus theory and practice. 5thed. New York: Elsevier Science; 1997.p.455-86

Stephen ND, Granner DK. Insulin, Oral hypoglycemic agent, and the Pharmacology of endocrine pancreas.

****