www.sphinxsai.com

PharmTech

International Journal of PharmTech Research
CODEN (USA): IJPRIF ISSN : 0974-4304
Vol.1, No.3, pp 892-893, July-Sept 2009

Hypoglycemic Activity of Coccinia Indica (*Cucurbitaceae*) Leaves

S.S.AJAY*

Department of Pharmaceutical Chemistry, Vinayak Missions University

Salem-636001 Tamil Nadu, India

Email: ajay_singh_20042004@yahoo.com

Fax – Tel- (91)(427)3987000, 9971035331 (M)

Abstract: In view of suggested anti diabetic potential, effect of aqueous and cold extracts of Coccinia Indica (Cucurbitaceae) leaves on fasting blood sugar levels and serum biochemical analysis in streptozotocin induced diabetic rats was investigated. All the extracts of Coccinia Indica produced a significant anti diabetic activity at dose levels of 1/5th of their lethal doses.
Key Words: Anti-diabetic activity, Coccinia Indica, Aqueous extract, cold extract.

INTRODUCTION

Diabetic Mellitus (DM) is a chrome disease caused by inherited or acquired deficiency in production of insulin by the pancreas of by ineffectiveness of insulin produced, such a deficiency results in increased concentration of glucose in the blood, which in turn damages many of the body's systems in particular the blood vessels and nerves. As the number of the people with diabetes multiplies world, the disease has taken an ever-increasing share of national and international health care budgets. It is protected to become of the world's main disablers and killers with in the next 25 years.

Regions with the present rats. Apart from currently available therapeutics options, many herbal medicines have been recommended for the treatment of diabetics[1]. Traditional plant medicines are used throughout the world for a range of diabetic presentation, hepatoprotective and anti-inflammatory[2].

Coccinia Indica (Cucurbitaceae) is found in warmer and humid part of India. It is also known as Kundru, Bimbi, Lindora. The various extracts of fruit, root juice & leaves of the plant have been reported to be anti-diabetic, dysentery, vomiting, mouth ulcers and bronchitis, asthma and gastrointestinal disturbance[3]. The phytochemicals of this plant include saponin, flavonoid, glycosides and polysaccharides, xyloglucan, taraxerol, carotenoids, cryptoxanthin[4].

EXPERIMENTAL

Coccinia Indica commonly known as Kundru belongs to the family Cucurbitaceae are collected from Ghaziabad district of U.P. India.

Preparation of plant extract: Coccinia Indica leaves collected and air dried in shade at room temperature. The dried leaves were powdered and sieved using the fine muslin cloth. The fine powdered leaves were kept with 90% alcohol in soxhlet apparatus to get the crud[5.6].

Animal: Wister albino male rats of in breed colony weighed 150-250g procured from germ free animal house of VIMS Ghaziabad. Those rats were kept under grilled cages in air-controlled room where the congenial temperature or 25 ± 5 ^{o} C, and b & h light and dark cycle were maintained[6]. The animals fed a pallet diet and water ad libitum. The animals were kept under standard condition for 7 days with access and food before the experiment commenced. The experiments were conducted according to the Animal Ethics Committee Guidelines[7].

Anti -diabetic evaluation:

Using normoglycemic rats: The normal rats were divided into four groups having 6 in each group[8.9]. The animals were put to fast for 12 h and allowed access to the water before and throughout the duration of experiment. At the end of

The fasting period, zero time (0 h) blood was withdrawn from the Jugular veins and blood sugar level was determined by 0 toludine method. The animals having blood sugar concentration 110-220 mg % were used[9].

Diabetes induced: normal rats having sugar level 110-220 mg % after 12 h fast were used. Diabetes was induced by a single intraperitoneal injection of a freshly prepared of streptozotocin 55mg/kg body weight of rats in 0.1M citrate buffer (pH .45)[10] Animal showing glycosuria (indicated by brick red test of urine) after 36 h and hyperglycemia after 48 h after streptozotocin injection considered as diabetic.

Experimental bioassay: The animals were divided into four groups. Group-I (normal); group-II (diabetic control);

group–III (diabetic + glibenclamid); group–IV (diabetic + alcoholic extract of Coccinia Indica leaves). Group–I (normal) received normal saline, group-II (diabetic control), group-III (diabetic) received glibenclamide 5mg/kg body weight by the oral dose and group-IV alcoholic extract of Coccinia Indica leaves 250 mg/kg body weigh by the oral dose. Blood samples were collected from the Jugular vein prior to glucose administration and at 1h and 2h after glucose loading serum was separated and blood glucose level were measured by glucose oxidize Method.

RESULT AND DISCUSSION

Based on preliminary study, the alcoholic extract of Coccinia Indica leaves are found to be safe for biological study as no lethal effect was observed at 600mg/kg orally in mice. Mira et al found that extract of leaves and stem is non-toxic to human being. Oral administration of alcoholic extract of leaves of Coccinia Indica significant hypoglycemic effect on blood glucose level in normal fasted rats. Effects of alcoholic extract of Coccinia Indica on glucose tolerance have been shown in Table-1. At 1h after glucose administration, the blood glucose level was found to be increased. The blood glucose was measured prior to, 2, 4 and 6 h of administration of extracts. The test for alcoholic extract of Coccinia Indica have shown significant hypoglycemic activity in streptozotocin induced rats as compared to reference anti-diabetic drug glibenclamide (dose 5 mg/kg). The results were statistically significant as against glycemic effect in streptozotocin induced rats ($P < 0.01$)

TABLE 1: EFFECT OF ALCOHOLIC EXTRACT OF COCCINA INDICA (250 mg/kg) ON ORAL GLUCOSE TOLERANCE IN RATS

Group	Fasting	2h	4h	6h
I A (Normal + Saline)	123.578±0.354	124.36±0.357	124.86±0.5030	125.734±0.425
II B (Diabetic Control) (Glucose loaded)	246.182 ± 0.0646	257.198 ±0.257	262.24 ± 0.2074	264.48 ± 40.967
III C (Diabetic)+ Gliberclamide	156.14 ± 0.680	144.42 ± 0.389	137.26± 0.798	129.64 ± 0.391
IV D (Diabetic) Coccinia Indica extract	167.62 ± 2.604	158.64 ± 1.201	148.1 ± 2.011	139.08 ± 0.852

Value are given as mean ± SD group of 6 animal each: $p < 0.01$

REFERENCES

1. K. Baskaran, B.K. Ahamath, K.K, Sharmugasundram and E.R.B. Shamugasundram, J Ethnopharmacol, 1990, 30, 295
2. H.d. Brahamchari and K.T. Augusti, J. Pharm. Pharmacol., 1962, 14, 617.
3. S. Bajaj and B.P. Srinivasan, Indian J. pharmacol, 1999, 31, 138.
4. A. Purohit and D. Mohmound, Hamdard, 1999, 43, 33.
5. P.P. Mitra, T. Chakraborty and T. Ganguly Bull. Calcutta Schoo Trop. Med., 1975, 23, 6.
6. S.P. Banergee and P.C. Dandiya, J. Pharma Sci., 1967, 56, 1665.
7. A. Dafni. Z. Yaniv and D. paleviteh, J. Ethenolpharmacol., 1984, 10, 295.
8. S. Al-Faraj, Ann. Trop parasital., 1995, 89,695.
9. P. Trinder, J. Clin. Pathol., 1969, 22, 246.
10. A. Troyato, A. M. Forestieri, L. Iank, R. Barbera. M.T. Monforte and E.M. Galati, plant Med. Phytotherap., 1993, 26, 300.

*****