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ANTIDIABETIC AND ANTIOXIDANT ACTIVITY OF ISOLATED STIGMASTEROL FROM METHANOL EXTRACT OF ACALYPHA INDICA

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ABSTRACT

methanolic solvent extract of acalypha indica were tested for antidiabetic activity and antioxidant activity using streptozocin induced diabetic rats compared with standard and DPPH method for antioxidant activity.the results expressed that methanol has significant protection and maximum reduction in blood glucose was observed in streptozocin induced diabetic rats.in DPPH method maximum antioxidant showing the freeradical scavenging activity of DPPH .the result of this comprehensive study reveal that acalypha indica methanol extract shown stastically significant antidiabetic activity comparison to the standard glibenclamide**.**

KEYWORDS: Acalypha indica, antidibetic activity streptozocin induced method, Antioxidant acivity, DPPH method**.**

INTRODUCTION

Acalypha indica in telugu name murkonda or kuppichettu. its botanical name acalypha indica, family Euphorbiaceae, plant uses, antibacterial[1], antibacterial[2], antivatha[3], anthelmintic[4], expectorant[5], Diuretic[6], Emetic[7], Acalypha indica in English Indian acalypha. The leaf juice of leaves is boild along with gingelly and this is applied externally over pain ful areas of body. The leaves are ground with salt and externally ove skin infectionlike scabies. The leaves are ground along with manjal and applied externally over ulcers, poisonus, bites. The paste leaves along with lime or chunambu is externally applied over painful arthritis. The leaf juice is externally applied over head ache The dried leaf

powder is bandaged over the bed sore areas and hence produce an antelmintic action. The decoction of roots is also used to induce purgation[8,9].

MATERIALS AND METHODS

Plant materials were wahed with running tap water and died under shade conditionsthe it is subjected to soxhlet extraction method after extraction again it is for chemical isolation subjected to column chromatography method with solvent ratio is chloroform: ethanol (9.5:0.5) is used for isolation of stigma sterol.

Streptozotocin induced diabetes

Adult inbred wistar albino rats (35 numbers) of either sex were over night fasted and received a freshly prepared solution of streptozotocin (STZ), [Sigma Chemical Co, St Louis, MO, USA], (50mg/kg) in 0.1 M citrate buffer, p^H 4.5, injected intraperitonially. After injection the animals had free access to food and water and were given 5% glucose in their drinking water for the first 24 hours to counter any initial hypoglycemia. The development of diabetes was confirmed after 72 hours of the streptozotocin injection. The animals with fasting blood glucose level more than 200 mg/dl were selected for the experimentation. Out of 35 animals subjected for diabetes induction, 6 animals died before grouping and five animals were omitted from the study, because of sub diabetic condition (118mg/dl) and (122mg/dl). The remaining 24 animals 4 groups of 6 animals were formed and used for the experimentation. In the present study, glibenclamide (4 mg/kg body weight) was used as the standard drug.

Grouping of animals

Group I : served as normal control

Group II : served as diabetic control and received STZ

Group III : Test-1

Group IV : Test-2

Group V : Diabetic rats treated with alloxan monohydrate and libenclamide 10mg/kg/p.o.

Served as Standard

Fasting blood glucose estimation was done at 0, 2, 4 and 6 hr after the treatment. Drug treatment was continued for 21 consecutive days. The fasting blood glucose levels were estimated on days 0, 1, 7, 14, and 21.

DPPH Scavenging Activity of Sample

DPPH quenching ability of Sample was measured according to Hanato, Kagawa,Yasuhara, and Okuda (1988). The methanol DPPH solution(0.15%) was mixed with serial dilutions (200–1000 µg/ml) of the compound and after 10 min, the absorbance was read at 515 nm.The antiradical activity was expressed as IC50 (µg/ml), (the antiradicaldose required to cause a 50% inhibition). Vitamin C was used as standard. The ability to scavenge the DPPH radical was calculated using the following equation:

DPPH scavenging effect (%)= (A0 _ A1)/ A0* 100

Where A0 is the absorbance of the control at 30 min, and A1 is theabsorbance of the sample at 30 min. All samples were analysed in triplicate.

Blood glucose level(mg/dl)						
Groups	**Test Sample (mg/kg)**	**0 min**	**30 min**	**60min (glucose load)**	**90 min**	**120 min**
I	Control	88.6±2.531	92.5±2.341	110.2±3.01	105.8±2.612	97.5±3.420
II	Diabetic control (STZ)	91.6±1.86	99.82±2.24	103.1±2.73	84.3±2.22	78.2±2.60
III	Test 200	90.1±2.603	89.7±1.964	102.5±2.631	94.4±2.215	89.1±2.604
IV	Test 400	92.4±2.812	88.2±3.408	99.6±2.540	85.6±2.554	79.3±3.151
V	Standard (Glibenclamide)	93.2±2.706	85.7±1.856	81.1±2.617	74.3±3.125	68.4±3.623

Blood glucose level(mg/dl)						
Groups	**Treatment**	**0hr**	**30min**	**60min**	**120min**	**240min**
I	Control(1% SCMC)	82.1±1.6	90.5±2.29	91.0±2.53	94.3±2.26	96.0±2.54
II	Diabetic control (STZ)	252.6±69.	266.4±3.90	306.6±5.07	332.7±3.2	356.5±4.28
III	Test 200	244.5±5.4	266.2±3.5	299.3±4.51	305.3±4.0	326.3±3.28
IV	Test 400	240.2±3.5	264±4.94	271.8± 4.57	289.7±3.0	299.7±4.29
V	Standard (Glibenclamide+STZ)	253.3±4.5	251.7±2.9	260.3±3.78	273.5±2.9	292±4.0

Effect of sub acute treatment extracts on blood glucose level on STZ induced diabetic rats

Group	**Treatment**	**Dose (Kg^{-1} Body Weight)**	**Blood Glucose (mg/dl)**			
			O Day	**7th day**	**14th Day**	**21days**
I	Control(1% SCMC)	5 ml	82.1±1.6	85.4±2.6	91.0±4.3	94.6±3.5
II	Diabetic control (STZ)	50mg	252.6±3.6	286.3±5.2	301.4±6.8	315.4±10.5
III	Test 200	200mg	244.5±5.4	182.3±40.	155.2±6.2	125.0±5.1
IV	Test 400	400mg	240.2±3.5	175.2±9.8	131.5±8.2	106.1±5.3
V	Standard (Glibenclamide+STZ)	4mg	235..3±4.5	165.1±3.9	125.2±4.1	105.4±6.8

DPPH METHOD

Concentration(µg/ml	Control	Sample	Sample%Inhibition
200	472	0.192	99.95932203
400	472	0.177	99.9625
600	472	0.143	99.96970339
800	472	0.093	99.98029661
1000	472	0.065	99.98622881

RESULT AND DISCUSSION

In diabetes acivity and antioxidant activity when compared to the test solution test-I,II contrast the standard solution control is normal and test I solution was exhibit the inhibition activity is there.again test solution II more inhibition activity is there when compare to the standard solution where as inacase of antioxidant activity suppression of activity is there.

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