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**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**Available online at: <http://www.iajps.com>**Research Article****EVALUATION OF ANTIDIABETIC ACTIVITY OF *CLEOME GYNANDRA* LEAVES****K. Sravanthi, R. Bramha Reddy, T. Nirosa***

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Abstract:

This study suggests that the induction of diabetes mellitus by may be prevented by flavonoids of plant constituent's administration. There is a need to continue to explore the mechanisms for anti diabetes. To evaluate the antidiabetic activity of methanolic extract of Cleome gynandra leaves. Collection and authentication Cleome gynandra of plant. To prepare methanolic extract of Cleome gynandra by using soxhlet apparatus. To conduct preliminary phytochemical examination of methanolic extract of the Cleome gynandra leaves. To evaluate the antidiabetic activity of methanolic extract of Cleome gynandra leaves against for this estimation of blood glucose levels.

Keywords: *Diabetes mellitus, Antidiabetic activity, Cleome gynandra leaves, methanolic extracts.*

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INTRODUCTION:

Diabetes mellitus, or simply **diabetes** is a group of metabolic diseases in which a person has high blood sugar, either because the pancreas does not produce enough insulin, or because cells do not respond to the insulin that is produced. This high blood sugar produces the classical symptoms of polyuria (frequent urination), polydipsia (increased thirst) and polyphagia (increased hunger) [1-5]. There are three main types of diabetes mellitus (DM).

Type 1 DM

results from the body's failure to produce insulin, and currently requires the person to inject insulin or wear an insulin pump. This form was previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes".

Type 2 DM

results from insulin resistance, a condition in which cells fail to use insulin properly, sometimes combined with an absolute insulin deficiency. This form was previously referred to as non insulin-dependent diabetes mellitus (NIDDM) or "adult-onset diabetes".

Type 3 DM

The third main form, gestational diabetes occurs when pregnant women without a previous diagnosis of diabetes develop a high blood glucose level. It may precede development of type 2 DM [5-10].

1. PLANT PROFILE

Plant Name : **Cleome Gynandra**
Family : **Cleomaceae**

Common Name: **Shona Cabbage (Or) African Cabbage**

Synonym : **Cleome Acuta Schumach & Thom**

Taxonomic Classification

Kingdom : **Plantae**
Order : **Brassicales**
Family : **Cleomaceae**
Genus : **Cleome**
Species : **C. Gynandra**

Vernacular Names

Telugu Name : **Vaminta (or) Vayinta**
English Name: **Dog Mustard**
Malayalam Name: **Atunari Vela**



Plant Name: Cleome Gynandra

MATERIALS AND METHODS:**Collection of Plant Materials**

Fresh leaves of *Cleome gynandra* were collected and botanically identified. The leaves were washed with distilled water, shade dried, powdered, and stored in an air tight container until future use. **Preparation of ethanolic extract-** Preparation of plant extract was done The collected fresh leaves were thoroughly cleaned with distilled water, dried well and powdered. It was soaked in absolute ethanol in cold(72 hrs). After three days, the extract was filtered, and then it was evaporated at 400C in cylindrical water bath for the elimination of solvent. A semisolid extract (40g) was obtained after complete elimination of alcohol under reduced pressure. It was stored in refrigerator until used.

RESULTS:

The effects of Ethanolic extract of CG 100mg/kg and 200mg/kg on blood glucose , SGOT & SGPT levels (0 and 8 days) of control, diabetic and Ethanolic extract of CG, treated diabetic rats were summarized in Tables 1 & fig 1 , 2, 3 respectively. Lipid profiles were represented in figs. 4 .The treatment with Ethanolic extract of CG 100mg/kg and 200 mg/kg were significantly ($p < 0.001$) reduced the blood glucose and SGOT & SGPT concentration in diabetics groups ($p < 0.001$). The Ethanolic extract of CG was significantly reduced the Triglycerides, LDL-Cholesterol and Total cholesterol but increased HDL- cholesterol levels after treatment.

Table 1: Ethanolic extract of CG 100mg/kg and 200mg/kg on blood glucose , SGOT & SGPT levels

Groups/Parameters	Blood glucose	TC	TG	HDL	LDL	VLDL	SGOT	SGPT
Normal	84.3 ±11.2	45±1.7	53.7±4.3	21.6 ±0.6	11±0.5	10.74±1.1	25±3	42.6 ±9
Metformin (25mg/kg)	113.3 ±21.4	60±4.3	61.9±3.2	18.8 ±0.3	10.8 ±0.8	12.38±0.9	32.3±3.1	55.3 ±4.7
CG-I (100mg/kg)	203.6 ±48.6	74.3 ±4.2	75.8±2.8	12 ±0.5	21.0 ±0.6	15.16±0.86	51.6 ±5.7	76.3 ±3.2
CG-II (200mg/kg)	173.3 ±45.1	62±7.9	68.9±5.3	14.5±0.5	11.5 ±0.5	13.78±1.4	40.6 ±4.2	61.6 ±4.9

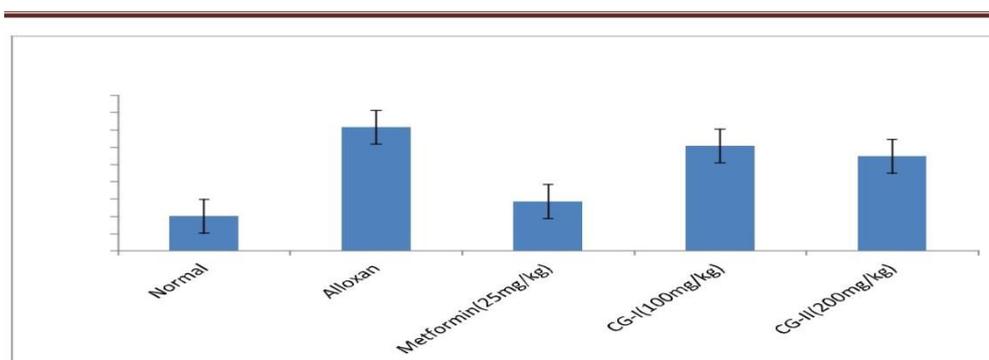


Fig 1: Blood glucose levels were estimated in Normal, Diabetic control & Treatment groups.

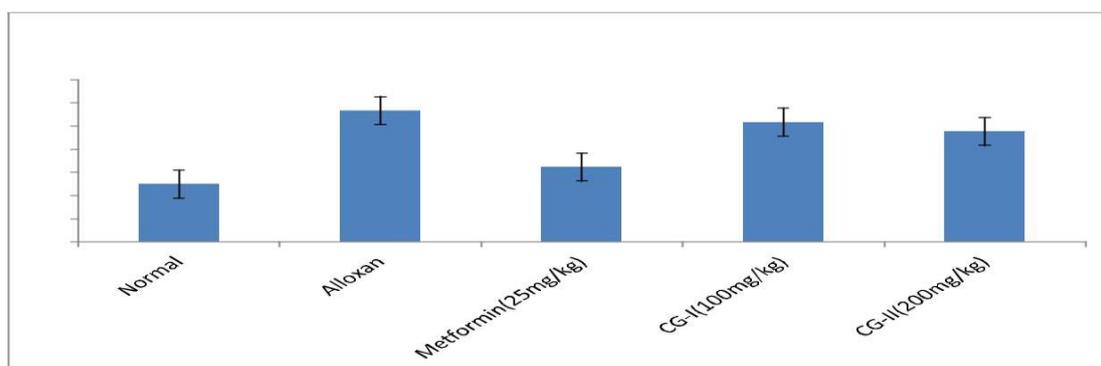


Fig 2: SGOT levels were estimated in Normal, Diabetic control & Treatment groups

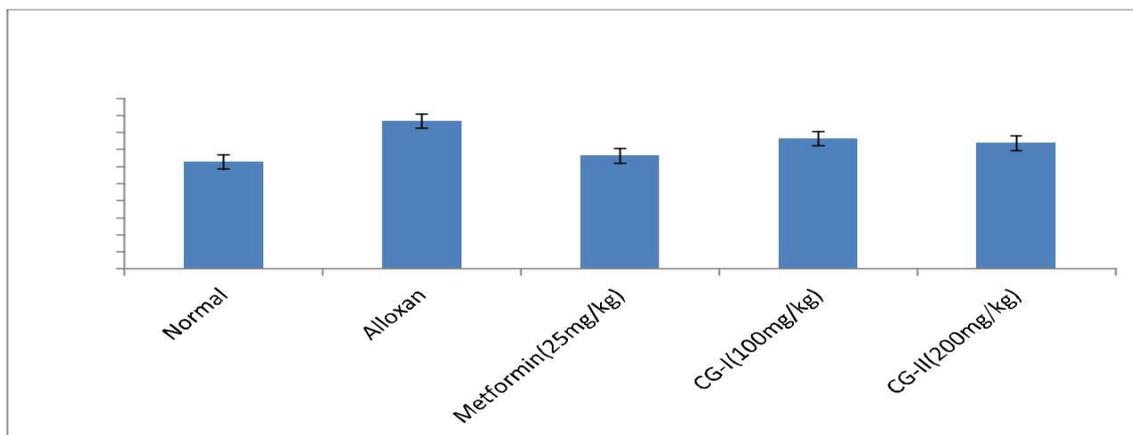


Fig 3: SGPT levels were estimated in Normal, Diabetic control & Treatment groups.

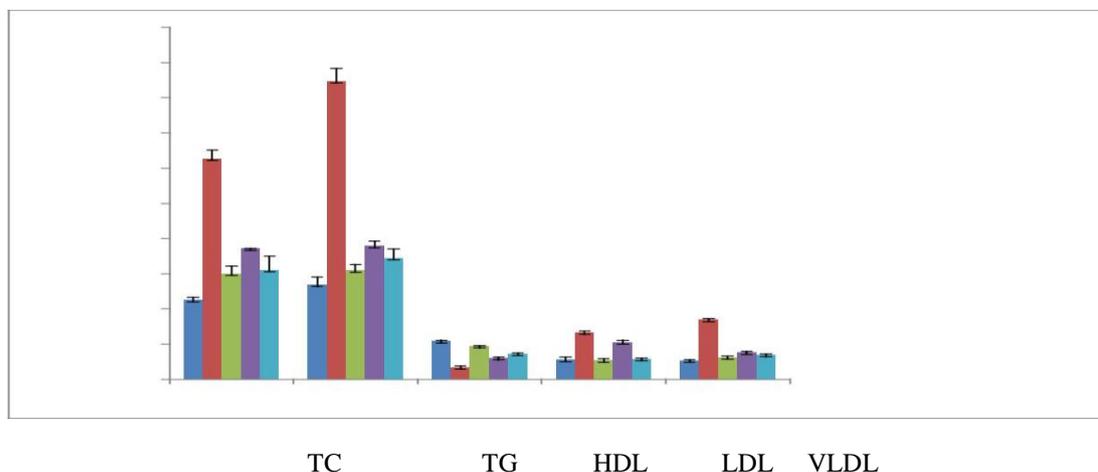


Fig 4: Lipid profile levels were estimated in Normal, Diabetic control & Treatment groups

DISCUSSION:

Plants may act on blood glucose through different mechanisms (193). Anti diabetic herbs stimulates beta cell in the pancreas and also regenerate pancreatic beta cells (194, 195). Fiber of plants also interferes with carbohydrate absorption, affecting blood glucose level.

Which is one of the threats associated with DM. Treatment with *Cleome gynandra* extract showed signs of recovery as comparable with the standard drug Metformin. Treatment with *Cleome gynandra* extract arrested elevation of glucose and lipid profiles. significantly increased the level of glucose when compared to control rats, which might account for the cytotoxic effect on beta cells. toxic to insulin producing pancreatic beta cells because it preferentially accumulates in beta cells through uptake via the GLUT2 glucose transporter. This cytotoxic action is mediated by ROS source of

generation of free radical is dialuric acid, a reduction product. The free radicals undergo dismutation to H₂O₂. The action of ROS increase in cytosolic calcium concentration causes rapid destruction of beta cells (196) and decreasing the secretion of insulin, which in turn increase the blood glucose level.

Treatment with *Cleome gynandra* leaf extract produced significant improvement in the levels of ALT and AST are the specific markers to assess hepatocellular damage leading to liver cell necrosis (197). In present study ALT and AST activities were assessed as it is the more specific index of liver cell damage in humans (198) and in experimental animals (199). The lowering of these enzymes contents in serum is a definite indication of Hepatoprotective action of a drug. High level of AST indicates hepato cellular damage. Activity of AST in serum. *Cleome gynandra* extract afforded a

significant protection against Ethanolic extract of *Cleome gynandra extract* may induce accelerated regeneration of liver cells by reducing the leakage of AST in to blood there by lowering its value to normal levels. ALT is more specific to the liver and a better parameter for detecting liver damage (200). In the present study alloxan induced ALT level was brought back to normal by the administration of *Cleome gynandra extract*.

In the present study indicates that diabetic animals had prior high blood glucose level. After administration of *Cleome gynandra extract* reduced the LDL-cholesterol, total cholesterol, triglyceride levels were observed in alloxan induced rats and plant containing flavonoids and other constituents were inhibited the dyslipidemia in our study is support of further findings of (201) Jung et al. (2006) reported that can inhibit lipogenesis and lower plasmatic triglycerides levels by enhancing LDL receptors expression and increasing fat bile rejection from the results of clinical studies (202). Insulin resistance was compensated by the enhanced insulin secretion, whereas persistently elevated FFAs may contribute to progressive β -cell failure (β -cell lipotoxicity) in individuals genetically predisposed to type 2 diabetes mellitus (203).

Cleome gynandra occurs throughout the tropic and subtropic regions. It contains chemical constituents such as triterpenes, tannins, anthroquinones, flavonoids, saponins, steroids, resins, lectins, glycosides, sugars, phenolic compounds and alkaloids(204) and these are more beneficial in diabetes and its associated complications, holding hope of the new generation antihyperglycemic drug.

CONCLUSION:

Our results shown that oral administration of *cleome gynandra* extract has a beneficial effect on the reducing hyperglycaemia, SGOT & SGPT

levels, Total cholesterol, Triglycerides levels, LDL-Cholesterol, VLDL-Cholesterol and improving the HDL status. This study suggests that the induction of diabetes mellitus by may be prevented by flavonoids of plant constituent's administration. There is a need to continue to explore the mechanisms for anti diabetes.

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