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Anti-Diabetic and Spermatogenic Activity of *Cocculus Hirsutus* (Linn.) Diels (Menispermaceae)

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Abstract – Antidiabetic effect was observed with Cocculus hirsutus (Menispermaceae) when given its leaf extract. The study identified pharmacological evidence supporting the assertion of folklore that it is anti-diabetic and decreases diabetes mellitus blood sugar.

Key Words: Cocculus Hirsutus, Folklore, Anti-Diabetic, Leaf Extract.

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INTRODUCTION

Diabetes mellitus is a category of etiological disorders. It is defined by carbohydrate, protein and fat-metabolism disruptions induced by absolute or relative failure of insulin secretion and insulin action (Balkau, 2002). Around 150 million people globally are diagnosed with diabetes (WHO, 1999). In developed countries, the disease becomes a real public health concern (Djrolo et al. 1998).

Hirsutus Linn Cocculus. Jal jammi is generally considered to be (MENISPERMACEAE) (Chopra et al. 1958). He's a big twiner. Her leaf extract is used for eczema, dysentery and urinary disorders. Blades and truncations are used to manage eye problems. Sarsaparilla has roots and leaves as diuretics (Nadkarni, 1982). The existence of isoquinoline, alkaloid, d-trilobine and di-claurine was seen by ethanol extracts from the whole plant (Jaganatha, 1961). Since, not much study had been done to evaluate the biological activity of this plant, the present study is focused to evaluate the anti - diabetic activity of its leaf extract.

MATERIALS AND METHODS

Materials :

- Leaves of *Cocculus hirsutus*
- Hand-grinding mill
- Soxhlet apparatus
- Petroleum ether
- Chloroform
- Acetone
- Methanol
- Tared vessels
- Sieve no. 60

Methods: Cocculus hirsutus' leaf was shaded at room temperature for 10 days and extensively powdered by sieve no. 60, using a hand grinder and powder. The powdered substance has then been removed isolated from the oil ether, chloroform, acetone, methanol by continuous hot extraction method using Soxhlet devices with various solvents in increasing sequence (Kokate, 1994). The extracts were concentrated in tared vessels after removal under lower pressure. In order to detect the existence of dried extracts, numerous chemical experiments were carried out various phytoconstituents, such as isoquinolines, alkaloids, triplets, etc.

Toxicity evaluation in mice:

The methanol extract was acutely examined in the rat. Diverse mice classes were administered to test the acute toxicity of a single oral dosage of methanol extract (300, 600, 900 mg/kg). Periodically 48 hours of death and mice's general behaviour had been recorded. The parameters observed were sedation, lack of reflex, breathability and convulsion. After 48 hours, blood samples were drawn from tail and glucose levels determined to confirm diabetes. The diabetic mice exhibiting blood glucose levels higher than 250 mg /dl were selected for studies and get divided into 5 groups.

Group – I: Normal control group (Given food & water)

Group – II: Untreated (0.5 ml of 5% between 80)

Group – III: Diabetic rats (0.5 ml of 5% between 80)

Group – IV: Diabetic rats (400 mg / kg methanolic extract of *Cocculus hirsutus*)

Group – V : Diabetic rats (800 mg / kg – methanolic extract of *Cocculus hirsutus*).

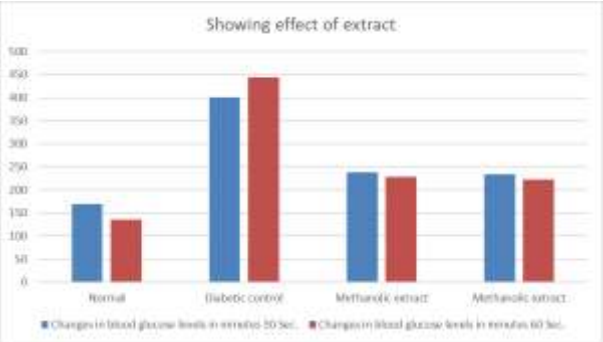
The treatment continued daily for 15 days. In the untreated control (diabetic) mice 3 died on 5th day and 3 on 7th day. Blood drop was collected for glucose estimation just before drug administration on 1st day and 1 hour after drug administration on 4th, 7th, 10th, and 15th day.

RESULTS AND DISCUSSIONS

In the long-term care model for 15 days the hyperglycaemic mice showed substantial reductions in glucose at doses of 400 and 800 mg/kg (Group IV, V). The party of 6 mice (diabetic) died untreated control, 3 on 5 and 3 on 7 days. Diabetic control. The body weight was raised marginally to the original body weight under normal regulation, while the body weight was decreased considerably for the diabetic control mouse.

The effect of the extract of *Cocculus hirsutus* on glucose levels varies from 280 - 850 mg /100 ml on the 4th day. The methanolic extracts (400, 800 mg / kg) treated mice the blood glucose levels steadily decreased and was 165 mg / 100ml on the 15th day. Thus, treatment restored the serum glucose levels almost nearer to normal values. From the above results, we can

Groups	Changes in blood glucose levels in minutes		
	Treatment	30	60
Normal	D/W 10ml/kg	169.83 ± 2.93	135.83 ± 2.41
Diabetic control	D/W 10ml/kg	400.50 ± 6.78	444.67 ± 6.80
Methanolic extract	400 mg/kg	238.63 ± 4.11	228.83 ± 3.87
Methanolic extract	800 mg/kg	233.50 ± 3.67	223.0 ± 3.12



Confirm that a Cocculus hirsutus methanol extract has substantial long-term (15-day) anti-hyperglycemic effects at doses between 400 and 800 mg / kg due to insulinogenic activity of the extract. It indicates that *Cocculus hirsutus* extract may stimulates insulin secretion from the remnants β cells.

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