



## EFFECT OF METHANOLIC LEAF EXTRACT OF ACANTHOSPERMUM HISPIDUM DC. ON DIABETIC INDUCED RATS

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**ABSTRACT** Today diabetes became a global public health issue. More than 1200 species of plants are identified as herbal remedy for diabetes. In present study, the methanolic leaf extract of *Acanthospermum hispidum* DC. was tested on blood glucose levels (mg/dl) at different time intervals of diabetic induced rats and found that the blood glucose levels are decreased after 9 hours in all the three groups of rats with body weights of 150mg/kg, 300mg/kg and 450mg/kg that are taken for testing.

**KEYWORDS :** Diabetes, methanolic extract, blood glucose, *Acanthospermum hispidum*, body weight of rats.

### INTRODUCTION:

India holds credibility of diverse social, cultural and medical heritage with an unbroken tradition coming down across millennia. Though medical heritage is centuries old, million people in rural area still depend on traditional medicine to congregate their healthcare needs (Ved and Goraya, 2008). Today diabetic mellitus is in alarming rise and became globally an important public health issue. According to world health organization projection, the diabetes population is likely to increase to 300 million or more by the year 2025. The International diabetes federation (IDF) estimates the total number of diabetic subjects to be around 40.9 million in India and this is further set to rise to 69.9 million by the year 2025. (Zimmet, P. 2000).

Ethno botanical studies of traditional herbal remedies used for diabetes around the world have identified more than 1200 species of plants. There are apparent evidences that bioactive phyto chemicals will reduce the risk of diseases. Thus for the present study methanolic leaf extract of *Acanthospermum hispidum* DC. was taken to test on fasting blood glucose levels (mg/dl) at different time intervals of diabetic treated rats.

### MATERIALS AND METHODS:

Leaves of *A. hispidum* were collected from Rangampet and S.V.University, Tirupati campus and surrounding areas of Chittoor district. The plant is identified with the help of floras and voucher specimen was deposited in the herbarium of Department of Botany, S.V.University, Tirupati.

Leaves were shade dried in the laboratory and made into powder. The powered plant material was extracted in a Soxhlet's apparatus with methanol. The extract was distilled and used for the experiment.

Healthy albino wistar rats aged 3 1/2 months with a body weight 150 – 450 mg were procured from Sanzyme Pvt.Ltd. Hyderabad, Telangana were used in this study. Diabetes was induced into these rats by intraperitoneal administration of STZ. All the animals were allowed to free access to tap water and pellet diet and maintained at room temperature.

**Table showing the effect of methanolic leaf extract of *A. hispidum* on fasting blood glucose levels (mg/dl) at different time intervals of diabetic treated rats (Mean ± S.D.)**

Groups	0 hr.	1 hr.	3 hr.	5 hr.	7 hr.	9 hr.
Group 1	81.25 ±9.56	79.74±6.38	80.65 ±5.53	79.12 ±9.61	81.32±5.76	80.27 ± 5.12
Group 2	278.22±5.82	280.45±6.11	276.72±4.11	274.5±4.32	272.52±5.67	272.66±3.95
Group 3	278.49±4.75	258.59±8.54	257.10±19.04	239.0±4.83	228.80±9.76	226.21±13.30
Group 4	271.02±7.22	254.18±7.49	245.22±9.11	221.1±6.44	242.66±8.13	216.44±7.43
Group 5	278.58±4.47	252.28±6.80	243.61±12.47	188.7±9.11	176.43±6.29	156.31±5.28
F- Value	1000.59	612.38	165.869	81.161	665.120	641.531
Significance	0	0	0	0	0	0

Methanolic leaf extract of *A. hispidum* is dissolved in distilled water and administered orally for 15 days. After an overnight fast the plant extract suspended in distilled water is fed by using a force feeding needle. Group 1 and Group 2 rats are fed distilled water alone. Blood samples are collected for the measurement of blood glucose from the tail vein before plant extract treatment and after plant extract treatment. Blood glucose is measured and the results are compared with those of normal rats.

The rats were divided into 5 groups and each group consists of 6 rats.

Group I – Untreated normal rats

Group II – Untreated diabetic rats

Group III – Diabetic rats with 150mg/kg body weight treated with plant extract.

Group IV – Diabetic rats with 300mg/kg body weight treated with plant extract.

Group V – Diabetic rats with 450mg/kg body weight treated with plant extract.

The blood glucose level was estimated by using dextrostics with Ames Glucometer at different time intervals as 0hr., 1hr., 3hr., 5hr., 7hr., and 9<sup>th</sup> hr.

### RESULTS AND DISCUSSION:

The results obtained from the estimations are given in a table. They revealed less fasting blood glucose levels in group – I untreated normal rats and high fasting blood glucose levels in untreated diabetic rats (group II). In group – III diabetic rats with 150mg/kg body weight treated with leaf extract, blood glucose levels are decreased from 278 to 226 mg/dl. after 9 hrs. In group - IV diabetic rats with 300mg/kg body weight treated with leaf extract, blood glucose levels are decreased from 271 to 216 mg/dl. after 9 hrs. In group - V diabetic rats with 450mg/kg body weight treated with leaf extract, blood glucose levels are decreased from 278 to 156 mg/dl. after 9 hrs. Thus, it is concluded that the administration of *A. hispidum* methanolic leaf extract decreased fasting blood glucose and is suggested as diabetic remedial source.

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