

Effect of Crude Extract of *Adhatoda vasica* Nees on Diabetic Patients

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Abstract: Medicinal plants have been extensively used as major source of drugs for the treatment of various infections in human population since long ago. A study was conducted to evaluate the efficacy of crude extract of *Adhatoda vasica* Nees (Bakhar) on blood sugar level of 20 diabetic patients (males and females). It was observed that sugar level in blood of patients was significantly decreased from 290 to 220 and 385 to 310mg dl⁻¹ in both fasting and random condition in female patients. Where as results indicates more effects in male patients 280 to 185 and 386 to 180mg dl⁻¹ respectively, for before and after in take of diets. *Adhatoda vasica* Nees, which contain a lot of useful bioactive compounds, is a small evergreen plants species found in mountains area of Rawalpindi and Islamabad.

Key words: Crude extract, diabetic patient, *Adhatoda vasica* Nees

Introduction

Pakistan is rich in medicinal plants, although scattered in large area. These medicinal plants have been used by Hakims in folk of oral medicine. About 80% of the population lives in villages (rural areas) and mostly dependent on Unani system of medicine (Said, 1969). The basic action of drugs on human population based on four humors, blood, phlegm, bile and atrabile, therefore a optimum equilibrium between the four humors is essential for ill health (Dymock, 1972).

Adhatoda vasica Nees (Bakhar) is one of the most important plant that constitute the dominant vegetation of Margallas hills of Islamabad and their surrounding hills up to vicinity of Murree *Adhatoda vasica* Nees. Belongs to family Acanthaceae. It is evergreen, gregarious shrub 3-6 m long, leaves large, lanceolate, 10-20 by 4-8cm, Flowers are white or purple in short, dense auxiliary pedunculate (Baquar, 1989).

It was reported by Claeson *et al.* (2000) that *Adhatoda vasica* Nees has been used for respiratory tract ailments since past. Various alkaloids from *Adhatoda vasica* Nees have been reported by Saxena *et al.* (2001), which are vasicine, vasicinal and vasicinone etc. In addition to these alkaloids the compounds like essential oil, fats, resin, organic acid, sugar, gum and coloring materials and salts are also present in this plants (Dymock, 1972).

Zaman (1970) reported that all parts of the *Adhatoda vasica* Nees may be used for medicinal purpose, however, the extracts of leaves and roots of this plant are more effective against the diabetic infection, liver jaundice, cough, chronic bronchitis, asthma and tuberculosis. The study was under taken with following aim and objectives:

- * Preparations of leaf extracts of *Adhatoda vasica* Nees
- * Applications of leaf extracts against diabetes
- * Evaluation of bio-activity of plant extracts which contain Octosane, Octosanol and hentriacontane.

Materials and Methods

The study was under taken for six months from July to December 2001 in Biochemistry Laboratory, University of Arid Agriculture and Rawalpindi, Pakistan.

Collection of samples: The leaves of plant species used in this study were collected from various areas of Islamabad and Murree.

Extraction of leaves: About 30 leaves (Fig. 1, 2) having wet weight of 50gm were washed with distilled water and grinded. Extractions and filtration of leaves were carried out according to procedure given Mashooda (1978) and Ayurvedic Formulatory (Anonymous, 1992).

Application of extract: After having enough information about selected diabetic patient (both males and females) a dose of 50ml

Fig. 1: Flowers and leaves of *Adhatoda vasica* Nees from Islamabad areas

Fig. 2: Flowers and leaves of *Adhatoda vasica* Nees from Murree areas

was given to every patient (25-51 years old) in triplicate up to one week and then the blood samples of patient were analyzed in both fasting and random in order to check the effects of leave extract on sugar level in blood.

Results and Discussion

In this study blood samples of male and female diabetic patients were taken for analysis of sugar in both fasting and random condition. The results of blood sugar prior and after treatment

Table 1: Level of sugar in blood (mg dl⁻¹) of female and male patients before and after treatment with crude extracts

Age group	Sugar level before treatment		Sugar level after treatment	
	Fasting	Random	Fasting	Random
Female				
25	150	210	102	120
30	180	230	120	140
36	170	225	140	190
40	195	220	180	165
42	240	290	210	230
46	260	350	205	265
48	265	370	210	290
51	290	385	220	310
Male				
30	160	210	120	175
35	165	205	120	180
38	170	228	150	210
41	190	245	160	220
46	180	235	166	205
48	185	240	155	215
54	180	270	140	210
58	188	255	138	215
60	210	310	180	250
62	220	340	175	290
64	230	370	180	270
66	280	385	185	180

with crude extracts of *Adhatoda vasica* Nees (Table 1) show a difference in blood sugar level for both sexes in fasting and random condition. *Adhatoda vasica* Nees contained chemical compounds like octacosane, octacosanol and hentriacontane etc. (Mshooda, 1978) which will break down glycoside bonds between the glucose molecules and release the glucose molecules in to cells through blood stream. In the cell glucose will be oxidized for generation of biological energy (Delvin, 1992).

The results obtained in this study about glucose level in blood samples of diabetic patients before and after treatment with extract of *Adhatoda vasica* Nees in both fasting and random showed noticeable decrease in the blood sugar level. The effects of extract could be two folds, either it may act as a stimulate insulin hormone or it may facilities the uptake of active transport protein in the membrane of cell for glucose and amino acids. (Claeson *et al.*, 2000). Blood sugar level inversely expresses the insulin release from pancreatic β -cells and its biological action at the cellular level. Thus the estimation of sugar was chosen as useful parameters to evaluate the effects on the insulin release and its action at cellular level (Delvin, 1992). However, these conclusions required further experimental elaboration.

Therefore, more useful work for purification, isolation and characterization of these bioactive compounds of *Adhatoda vasica* Nees and other indigenous plants are required.

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