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LETTER TO THE EDITOR

A COMPARATIVE STUDY OF THE HYPOGLYCEMIC ACTION OF THE SEEDS AND FRESH LEAVES OF OCIMUM SANCTUM (TULSI)

Sir,

(Received on May 6, 1989)

Ocimum sanctum (Tulsi) is a well known pot herb sacred to Hindus, to which several medicinal properties have been attributed in traditional system of medicine (1, 2, 3). Hypoglycemic effect of the alcoholic extract of leaves (4) and antihyperglycemic effect of the aqueous extract of leaves are reported in rats (5) but not in other animals.

In view of the folklore claims regarding the medicinal value of the seeds and leaves of the plant, we have made a comparative assessment of the hypoglycemic action of 'tulsi' seeds and leaves in normal albino rabbits.

The dry seeds were purchased from the market, washed, dried in the sunlight and thereafter at 37°C in an incubator and then finely powdered. The leaves were collected fresh each day, washed, wiped dry, weighed and mixed with the diet.

The study was conducted in thirty-two healthy, normal adult albino rabbits (1.5–2.0 kg) equally divided into four groups. Each rabbit was fed 100 g of Hindustan Gold Mohr (HGM) rabbit feed daily for a month which was fully consumed. The rabbits had free access to food and water. Fasting blood samples were drawn at the end of fourth week to obtain control values of blood sugar (6). Thereafter, 100 g 'experimental feed' (99 or 98 g HGM feed alongwith 1 or 2 g dry seed powder or fresh leaves 0.4 g or 0.8 g dry wt) was given to each rabbit every day for one month. Thus, two groups received fresh leaves and two received dried seed powder of *Ocimum sanctum* at two dose levels. The animals consumed the whole diet in the course of 24 hrs. Blood specimens were drawn at intervals of one week for four weeks from the central ear vein, after subjecting the animals to twelve hr fast and analysed for fasting sugar (FBS). Statistical evaluation was done by applying Mahlanabi's 'd' test.

The results are summarised in Table I In a 4 week trial. the seeds as well as leaves exhibited progressive, significant hypoglycemic effect from the very first week. The dried seed powder at 1 g and 2 g per cent feeding levels caused approximately 16 and 21 per cent lowering in the FBS at the end of fourth week. Similarly, decrease of approximately 16 and 19 per cent in FBS levels was observed with 1 g and 2 g fresh leaves (0.4/0.8 g dry wt.) respectively at the end of fourth week Thus, on dry weight basis, leaves are apparently more effective in lowering the blood sugar levels as compared to dry seeds.

The plant has been reported to contain various alkaloids, glycosides, tannins, saponins and many other compounds (7) which yet remain to be identified and any of these substances could be responsible for the hypoglycemic action of the plant. There is a report that 'tulsi' leaves inhibit absorption of glucose from the intestines (5), but the nature of active principle and exact mode of its action remain unclear. Our data suggest that the principle may be present in greater amount in leaves as compared to seeds.

TABLE I : Effect of administration of *Ocimum sanctum* seeds and leaves at two different dose levels to normal albino rabbits for four weeks on fasting blood sugar level.

Preparation	Control	Blood sugar (mg/dl) Week ends			
		1st	2nd	3rd	4th
Raw dried powdered seeds					
(a) 1 g per cent in diet	87.6 ±6.8	84.1 ±6.2 (3.9)	80.16 ±50.8 (8 5)	76.7 ±5.9 (12.4)	73.6 ±4.6 (15.9)
Level of significance : 'p'		<0.01	<0.001	<0.001	<0.001
(b) 2 g per cent in diet	90.4 ±6.85	83.4 ±4.5 (7.8)	79.3 ±5.4 (12.3)	75.8 ±4.7 (16.1)	71.6 ±5.0 (20.8)
Level of significance : 'p'		<0.01	<0.001	<0.001	<0.001
Fresh leaves					
(a) 1 g per cent (dry wt. 0.4 g) in diet	89.9 ±5.0	86.0 ±4.6 (4.2)	81.4 ±5.8 (9.3)	78.5 ±5.1 (12.6)	75.5 ±4.4 (15.9)
Level of significance : 'p'		<0.01	<0.001	<0.001	<0.001
(b) 2 g per cent (dry wt. 0.8 g) in diet	81.1 ±6.6	77.0 ±6.3 (5.0)	72.8 ±6.7 (10.1)	69.9 ±5.5 (13.8)	67.5 ±5.8 (18.7)
Level of significance : 'p'		<0.001	<0.001	<0.001	<0.001

Figures in parantheses indicate per cent reduction in terms of Control (n=8).

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