

Table-4 Effect of aqueous extract of Strychnos-nux- vomica stem on the blood glucose level (BGL-mg/dl) in Alloxan induced diabetic rabbits

S. No	Groups	0 week	1 week	2 week	3 week	4 week	Difference between 4 th and 0 week in blood sugar
1	Normal control	180 ± 5	225 ± 15	235 ± 10	238 ± 5	235 ± 5	↑035
2	Diabetic control	280 ± 4	295 ± 10	310 ± 15	340 ± 15	390 ± 10	↑110
3	Standard	350 ± 8	325 ± 5	280 ± 8	240 ± 4	198 ± 5	↓132
4	Aqueous extract	343 ± 5	300 ± 7	270 ± 3	240 ± 8	220 ± 6	↓123

Normal blood sugar level of rabbit is from 190mg/dl to 260 mg/dl.

Each value is represented as mean±SEM, No. of animals (n) = 12, **p<0.01 Vs Normal control, ££ p<0.01 Vs Diabetic control, one way ANOVA followed by Dunnett's Test

At the end of experiment rabbits were fasted overnight and scarified by cervical decapitation. Blood is collected; plasma and serum were obtained and used for determination of various biochemical parameters like Blood glucose level, total protein, Total cholesterol, Serum creatinine & Blood urea nitrogen. The liver was carefully removed, homogenized and the homogenate was used for the estimation of glycogen level.

It is found that the strychnine aqueous extract received group of rabbits and Glipizide received standard group of rabbits show all most all similar reduced blood sugar levels.

RESULTS

The property of partial solubility of strychnine in water is helped in preparation of aqueous extract of strychnine of *Strychnos-nux- vomica* stem. The ratio of the dissolution of the alkaloid from the stem pieces was constant. The rate of diffusion of alkaloid from the stem pieces of *Strychnos-nux- vomica* is same in all cases and at room temperature. In case- 1 When 10 gm of stem pieces were soaked in 10, 20, 30, 40 and 50 ml water, the concentration of alkaloid diffused out was directly proportional to the volume of water (Table- 1). In this context, the weight of the stem is constant (10 gm) and volume of water differs.

In case- 2, when different weights of stem pieces were soaked in 150 ml of water samples, the diffusion rate of strychnine was found to be constant. When the weights are gradually increasing, the alkaloid concentration was also increased. The concentration of alkaloid diffused was directly proportional to weights of stem pieces (Table-2). Here the volume of water is constant and weight of stem is changed.

In case-3, 100 gm of stem piece gradually lost its diffusible alkaloid from day 1 to day 49 and became zero at the end.

100 gm of *Strychnos-nux- vomica* stem contains total 675.245 mg of strychnine alkaloid which is lower than the seed's alkaloid concentration. The total amount of alkaloid which is diffused from the 100 gm of stem pieces soaked in 150 ml of water for 12 hours/ day for 49 days was found 116.930 mg and remaining 558.315 mg was there still in the stem piece which could not be extracted through diffusion in water (Table-3) and that is not extracted out by water soaking method.

After the non toxic dosage of aqueous extract of strychnine alkaloid is obtained from the weight of 15 gm stem soaked overnight for 12 hours in 150 ml of water which contain 0.720 mg, orally given to the test group of rabbits from the day 3 of alloxan treatment continuously for 4 weeks and

blood sugar levels were checked on 0, 1, 2, 3,4 weeks. The blood sugar levels reduced from 343 mg/dl to 220mg/dl. Total sugar level is reduced by 123 mg/dl by the end of 28 days. From this the hypoglycaemic effect of strychnine is observed (Table-4). The animal group have not faced any ill effect during the experiment, so the safety, nontoxic dosage concentration of aqueous extract of strychnine for rabbit is found 0.720 mg/kg body weight.

DISCUSSION

The safety dosage of strychnine alkaloid can be obtained through the aqueous extract method rather than other methods like methanol extract. In methanol extraction method, the stem pieces are dried and powdered and soaked in methanol and total alkaloid is extracted, but this bulk concentration of alkaloid is not safe to use for treatment. It has to be weighed and take in required ranges and dissolved in water for then ready for treatment. 15 gm of stem soaked in 150 ml of water for 12 hours/day for 10-15 days can provide effective concentrations of strychnine alkaloid. The alkaloid concentration was measured calorimetrically and found the range 0.720 mg to 0.328 mg from day 1to 15 respectively which is a safety dosage for rabbits for controlling the blood sugar level.

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