

MATERIAL AND METHODS

Randomly selected male medical students of age group 18-25 years participated in this study. They were asked to drink 750 ml (about two glasses) of water 4 hours before the test, and not to consume any solids or liquids until the time of the test. At the time of the test the subjects emptied the bladder "completely" to their satisfaction and drank the liquid under test within a period of five minutes. Thereafter, urine has been collected every 15 minutes interval for the following two hours. During each collection of urine the subjects were asked to ensure to maintain the same level of satisfaction in emptying the bladder.

Water : Subjects were given different volumes, ranging from 200 ml to 750 ml at the time of the test.

Saline : Some other subjects were given 0.9% saline ranging from 100 ml to 750 ml.

Aurea lanata : This herb has been used in the form of raw plants as well as in the dried form. The plant has been dried by keeping it in an oven at 70°C for a period of 6-7 hours or more, until there was no weight loss has been observed. In some experiments extracts of the whole plant either dried or fresh was used, in other experiments the extracts from either flowers, or leaves, were used. The extracts were prepared in two concentrations, 50 g/L and 100 g/L solutions.

They were prepared by boiling either 50 g or 100 g of the plant in 2 L of water, until the volume was halved. Thereafter, the extracts were cooled and filtered. The subjects were given 200 ml of the fresh extract at the time of the test and urine has been collected as described above.

Coriandrum sativum : Either 50 g or 100 g of the dried coriander seeds was boiled in 2 L of water until the volume was halved. The subjects were given 200 ml of the fresh extract, at the time of the test.

RESULTS

Two hundred millilitre of the 50 g/L solution of raw-full plant of *Aerea lanata* induced an increased urine output consistent over four repetitions in 70% of the subjects under test (Fig. 1). The other subjects needed the same volume (200 ml) of the extract, but in higher concentration (100 g/L), to induce a diuresis. The urine output observed

with *Aerua lanata* was significantly high ($P < 0.001$) when compared with controls; when given the same quantities of water, 0.9% saline and *Coriandrum sativum* 100 g/L solution.

When the effects of the different parts of the plant has been examined (Fig. 2), the flowers were seen to have the maximum effect on urine output. The extracts obtained from the fresh-flowers induced an intense diuresis with a peak urine flow at

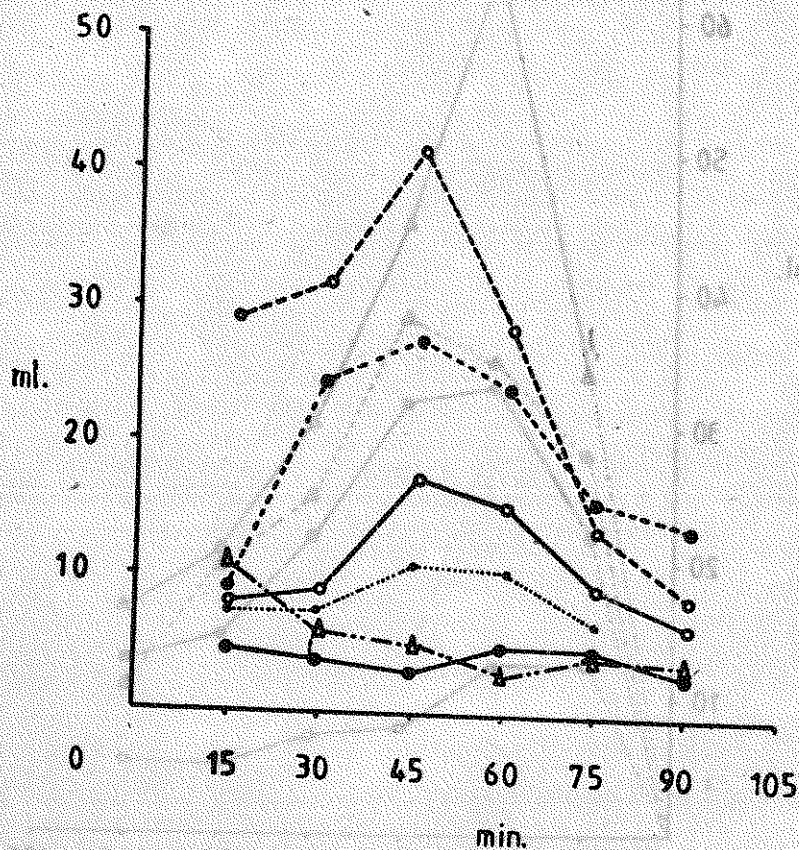


Fig. 1 : Comparison of the diuresis produced by drinking 200 ml solutions of the following :

- 50 g/L solution of raw *Aerua lanata* (○ - - - ○)
- 100 g/L solution of dry *Aerua lanata* (● - - - ●)
- 50 g/L solution of dry *Aerua lanata* (○ — ○)
- 50 g/L solution of dry Coriander (● ●)
- Normal saline (△ - - - △)
- Water (● — ●)

15-30 min of drinking the extract. The average maximum urine flow rate observed was 4.3 ml/min. The extracts obtained from the raw stems and the roots of the plants produced a less intense diuresis with a peak flow at 15-30 min after drinking 200 ml of

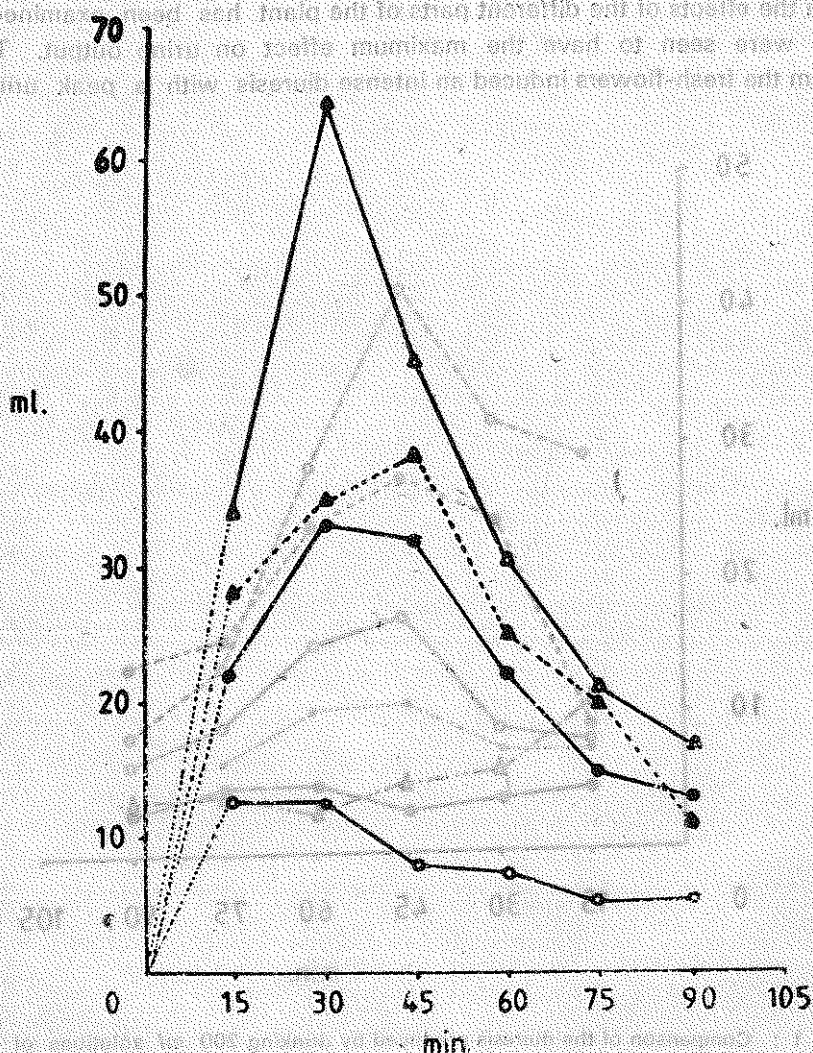


Fig. 2 : Comparison of the diuresis produced by drinking 200 ml extract of (50 g/L), different parts of *Aereue lanata*.

flowers (△ — △),
stem (▲ - - - ▲)

roots (● — ●)
leaves (○ — ○)

the extract (Fig. 2). Extract of the equivalent quantities of the dried parts of the plant gave rise to a less intense diuresis with a somewhat different pattern, the peak diuresis occurring at 45 min (Fig. 3). A diuresis comparable to what was produced by drinking

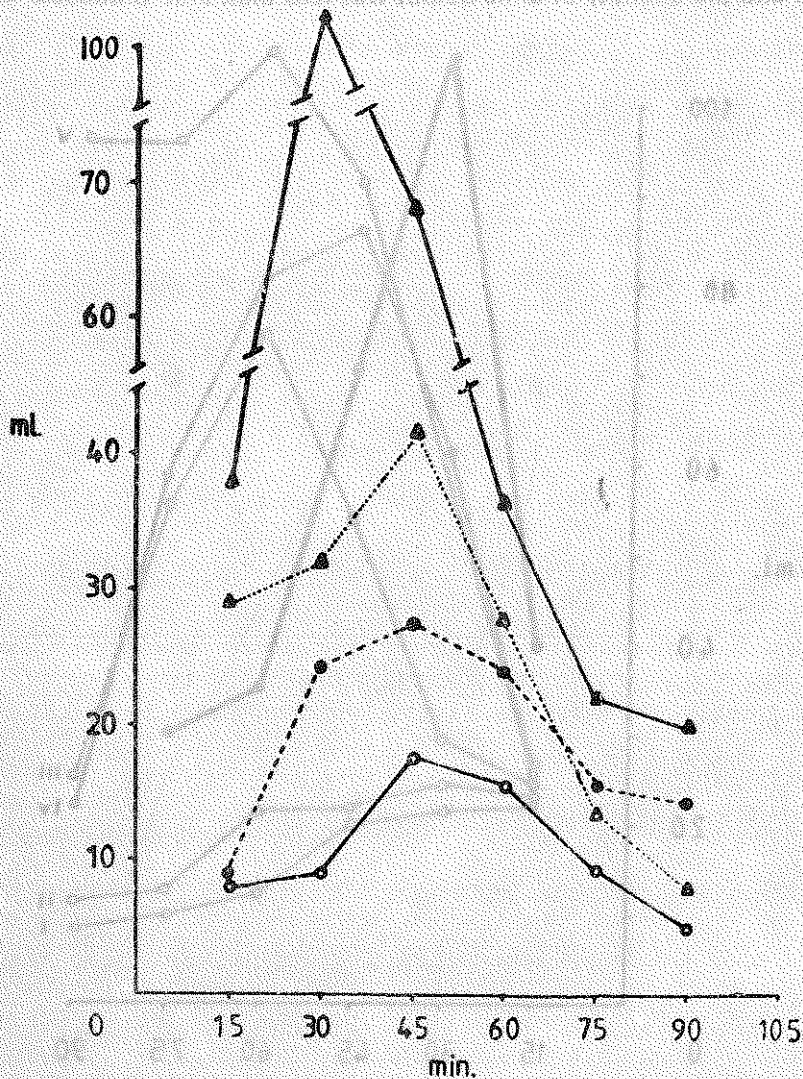


Fig. 3 : Comparison of the diuresis produced by drinking 200 ml solutions of *Aerua lanata* ;

- 50 g/L solution of raw plant (Δ - - - Δ)
- 100 g/L solution of raw plant (▲ — — ▲)
- 50 g/L solution of dry plant (○ — — ○)
- 100 g/L solution of dry plant (● - - - ●)

the extracts of 200 ml (50 g/L solution) of raw *Aerua lanata* was produced by drinking 400 ml of water, and the peak diuresis only (Fig. 4) occurred at 45-60 minutes. Normal saline (0.9%) was found to induce a diuresis only on drinking 750 ml. The peak flow was at 30 min and the quantity of urine output was less than that produced by drinking

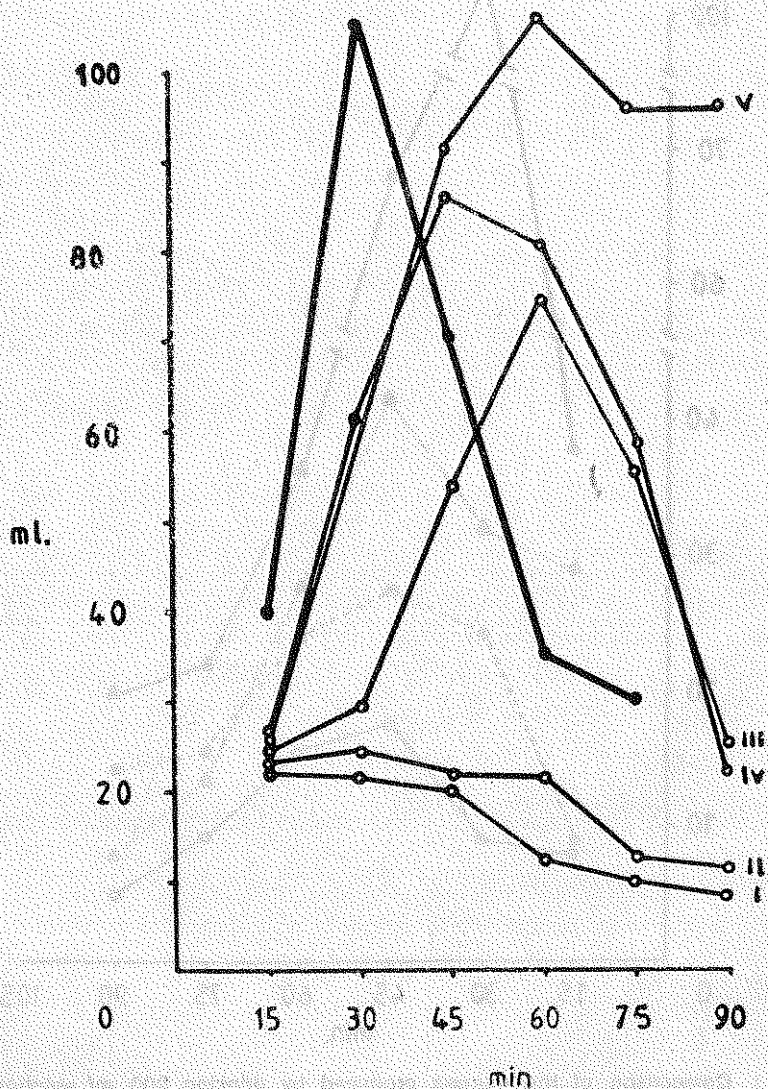


Fig. 4 : Comparison of diuresis produced by 200 ml (50 g/L) of *Aerua lanata* (thick line) with that of drinking 200 (I), 300 (II), 400 (III), 500 (IV) and 150 (V) ml of water.

200 ml of water. An extract of *Coriandrum sativum* (200 ml of 100 g/L) failed to produce a significant diuresis. The concentration of the extract has to be increased upto 800 g/L, in order to produce a very mild diuresis with a peak flow at 45 min and a flow rate of 1.5 ml/min.

DISCUSSION

It is seen from the above results that *Aerua lanata* extract produces an early diuresis. Water diuresis peak occurs after around 45-60 min whereas the raw *Aerua lanata* produced the peak diuresis between 15-30 minutes. Only, 400-750 ml of water produced a diuresis of comparative volume to that of 200 ml (50 g/L solution) of raw *Aerua lanata* extract. This suggests that the raw *Aerua lanata* has a highly potent diuretic factor. The diuresis produced by *Aerua lanata* is not an effect of the salinity of the plant extract because 200 ml of 0.9% saline did not show any diuretic effect.

The fact that the dried *Aerua lanata* produced a less intense, late diuresis comparable to that produced by raw *Aerua lanata* suggests that drying may have destroyed or partially transformed the diuretic factor. We noted a 30% weight loss in drying the plant.

The flowers of the plant appear to contain the highest concentration of the diuretic factor. However, leaves, roots and stems also showed a diuretic effect. The early onset of diuresis and the small volumes needed to produce the diuretic effect when compared with water diuresis, indicate that the mechanism of diuresis induced by *Aerua lanata* is different from a diuresis mediated by the anti-diuretic hormone. It would also be helpful to investigate the ionic strength of *Aerua lanata* extract and to investigate the urinary K^+ and Na^+ output in relation to diuresis in a later study.

CONCLUSION

Raw *Aerua lanata* contains a potent diuretic factor, and drying the plant probably destroys or changes it. The diuresis produced by drinking extracts of *Aerua lanata* is early in comparison to the late diuresis produced by drinking 200-700 ml of water. The fresh flowers of the plant, probably has the highest concentration of the diuretic factor. *Coriandrum sativum* did not produce a significant diuresis.

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REFERENCE

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