

LETTER TO THE EDITOR

DRINKING WATER AS A SOURCE OF DIETARY CALCIUM

(Received on October 27, 1980)

Sir,

The FAO/WHO Committee has suggested a dietary allowance of 500 *mg* calcium for adults (5). In India, about 40% of the dietary calcium is derived from milk and the rest from cereals and other vegetable foods (2). Besides these usual sources, drinking water may also contribute measurably to calcium intake in some places (5). Calcium content of drinking water has been determined in order to assess the magnitude of this source in Haryana.

150 samples of drinking water were obtained from 97 towns and villages of different districts in Haryana. Samples of water were obtained from 58 water taps (of different sources), 62 hand pumps and 30 wells. Calcium content of water was estimated by the oxalate permanganate procedure (7). Calcium concentration of the water samples ranged from 9.8 *mg/l*, to 248 *mg/l*, mean value being 59 *mg/l* \pm 3.14 (S.E.). Nearly 30% of the samples obtained from various districts contained over 75 *mg/l* calcium, the maximum acceptable concentration according to the international standards for drinking water (3). No significant difference could be detected in the mean calcium content of samples obtained from taps (52.70 *mg/l* \pm 4.04 S.E.), hand pumps (58.20 *mg/l* \pm 2.93 S.E.) and wells (72.83 *mg/l* \pm 11.73 S.E.).

This investigation has revealed fairly high calcium content in the drinking water of Haryana. However the amount of dietary calcium provided by this source would also depend on the amount of water consumed per day. In Haryana, the weather is hot for a greater part of the year. Mean maximum temperature during the months of March to October varies between 30°C to 45°C and touches 26°C even during winter months. Studies on water intake in India and abroad in similar climatic conditions have revealed an average intake of about 2.5 litres in winter (6) and 4 to 8 litres in summer (1). Farmers and labourers working in out-door places may consume over 8 litres per day in extremely hot weather (4). From these figures of water intake, it may be concluded that in Haryanvi population at least 50% of the recommended intake of calcium is provided by drinking

water alone. Moreover, due to non-interference by oxalates and phytic acid, the bioavailability of calcium from drinking water may be better than from the vegetable sources.

R.K. MARYA

*Department of Physiology,
Medical College, Rohtak - 124 001 (Haryana)*

REFERENCES

1. Beighton, P. Fluid balance in the Sahara. *Nature*, **233** : 275-277, 1971.
2. Gopalan, C. and B.S. Narasinga Rao. Dietary allowances for Indians. *Indian Council of Medical Research, Hyderabad*, p. 30, 1977.
3. International standards for drinking water. *World Health Organization, Geneva*, p. 29, 1963.
4. Malhotra, M.S. Salt and water requirement of acclimatized people working out-door in severe heat. *Ind. J. Med. Res.*, **42** : 212-217, 1960.
5. Report of an FAO/WHO Expert Group. Calcium requirements. *World Health Organization, Geneva* p. 7, 1962.
6. Singh, S.P., D.N. Pandey, S. Bhushan, P. Seth and A.K. Sisodia. A study of the intake of fluid, output and titratable acidity of urine in medical students. *Ind. J. Physiol. Pharmac.*, **21** : 369-373, 1977.
7. Taylor, E.W. The examination of water and water supplies *Churchill Ltd., London*, p. 232, 1958.