

# SCIENCE DIMENSION



National Research  
Council Canada

Conseil national  
de recherches Canada

Vol. 12, No. 6, 1980

ISSN 0036-830X

Indexed in the Canadian Periodical Index  
This publication is available in microform.

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## Magnesium: kidney pill for the 1980's?

Whether it will make medical history or not remains to be seen, but recently a Chinese surgeon used a miniature explosive charge to dislodge a bladder stone in a 40-year-old patient. The large stone was apparently ruptured into four easily-eliminated pieces without damaging the bladder wall — a rather unconventional medical technique to say the least.

John Marier of NRC's Environmental Secretariat suggests a less drastic but equally effective treatment for kidney stones; he proposes simply to supplement our daily diet with a little magnesium. Marier, a Secretariat member whose job it is to scan the published data in scientific journals, is expert at collating and evaluating information with a view to uncovering hitherto undetected cause-effect relationships; according to the former food chemist, the available evidence indicates that magnesium helps prevent urolithiasis, the medical term for kidney stone formation.

Marier points out that daily supplements in the form of at least 150 mg tablets are needed since we apparently aren't getting as much magnesium from our daily food intake as we should. Current food refining techniques lead to significant losses of magnesium, and soft water (as well as some types of hard water) contains very little of the element. The recommended daily intake of magnesium is about 300-350 mg. In Newfoundland (an area of "very soft" water), residents are only getting about 50 per cent of the needed level. Not surprisingly, they have the highest incidence of kidney stones in Canada.

Kidney stones are usually aggregates of

calcium phosphate or calcium oxalate, and patients suffering from problems of stone recurrence have been found to have lower magnesium levels (especially in relation to calcium) in their urine than control group. When less magnesium is present in the urine, phosphate (or oxalate) groups will bind to the calcium to form insoluble precipitates which can lead to stones. Measuring the urinary magnesium/calcium ratio could help provide a useful index for assessing a low magnesium status, thereby identifying persons prone to kidney stone problems. In cases where additional magnesium has been clinically administered to these people, kidney stone formation was shown to be greatly reduced.

The importance of magnesium has been recognized in Sweden, Japan and the United States where parallel studies have been carried out and are still continuing. Already in Finland, a magnesium-supplement program is under way involving the entire population; the usual 100 per cent sodium chloride in table salt has been replaced by a mixture of 65 per cent sodium chloride, 25 per cent potassium chloride and 10 per cent magnesium chloride. Such a change has the added benefit of reducing the intake of sodium, an element associated with high blood pressure.

Says Marier: "Low cost and the absence of side effects make magnesium a suitable alternative to the other prophylactic treatments presently used in kidney stone patients. Prevention is always cheaper and better than treatment." □

**Patricia Montreuil**

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Printed in Canada by Dolco

31159-9-0742

