

**ATOMIC ABSORPTION SPECTROSCOPY AS TOOL FOR PHARMACEUTICAL
QUALITY ASSURANCE: SOLUTION FORM OF TABLETS LOST MINERALS BY
MICROORGANISM**Nishat Chowdhury¹, Shingo Ueno² and Lubna Akter¹¹Department of Pharmacy, World University of Bangladesh, Green Road, Dhaka, Bangladesh.²Department of Material Engineering, Saitama University, Saitama, Japan.***Corresponding Author: Dr. Nishat Chowdhury**

Department of Pharmacy, World University of Bangladesh, Green Road, Dhaka, Bangladesh.

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Bacteria possess a specific biological mechanism to degrade the mineral and thereby gain energy directly from the mineral.

In atomic absorption spectroscopy amount of minerals magnesium, calcium, zinc, iron, manganese, copper was obtained in ppm from various mineral tablets' solution forms used in pregnancy.

Atomic absorption spectrometry (AAS) is an analytical technique that measures the concentrations of elements. Atomic absorption is so sensitive that it can measure down to parts per billion of a gram ($\mu\text{g dm}^{-3}$) in a sample. The technique makes use of the wavelengths of light specifically absorbed by an element. They correspond to the energies needed to promote electrons from one energy level to another, higher, energy level. Atomic absorption spectrometry has many uses in different areas of chemistry. Clinical analysis. Analysing metals in biological fluids such as blood and urine. Environmental analysis. Monitoring our environment – eg finding out the levels of various elements in rivers, seawater, drinking water, air, petrol and drinks such as wine, beer and fruit drinks. Pharmaceuticals. In some pharmaceutical manufacturing processes, minute quantities of a catalyst used in the process (usually a metal) are sometimes present in the final product. By using AAS the amount of catalyst present can be determined. Industry. Many raw materials are examined and AAS is widely used to check that the major elements are present and that toxic impurities are lower than specified – eg in concrete, where calcium is a major constituent, the lead level should be low because it is toxic.

Rocal-M

Description A combined preparation of Calcium and Vitamin D and 5 minerals specially designed to promote bone health. These are the key and important nutrients for healthy bone formation Magnesium- important for maintaining strong bone; Zinc, Copper & Manganese- essential for skeletal development and Boron- helps the body utilize calcium. Indications Prevention and treatment of osteoporosis. For the treatment of

hypocalcemic states Dietary supplementation Healthy bone formation and maintenance

Hemofix® FZ

Ferrous Ascorbate equivalent to elemental Iron 48 mg, Folic Acid 0.5 mg and Zinc Sulfate Monohydrate equivalent to Zinc 22.5 mg Tablet Description It is an oral iron, folic acid and zinc preparation indicated for the treatment of iron, folic acid and zinc deficiency. Indications It is indicated on prophylaxis of iron deficiency especially when inadequate diet calls for supplementary zinc and iron during pregnancy and anemia.

Santogen

Santogen is a special formulation comprising of important Vitamins and Minerals. Each film-coated tablet contains:

Calcium 162 mg Iron 18 mg Phosphorus 109 mg Iodine 150 m g Magnesium 100 mg Zinc 15 mg Selenium 20 m g Copper 2 mg Manganese 2 mg Chromium 120 m g Molybdenum 75 m g Chloride 72 mg Potassium 80 mg Boron 150 m g Nickel 5 m g Silicon 2 mg Tin 10 m g Vanadium 10 m g Lutein 250 m g Santogen tablet maintains a healthy body and active lifestyle and keeps nutrition covered for all. Santogen is a once-daily tablet indicated for use to improve the nutritional status of women throughout pregnancy and in the postnatal period for both lactating and non-lactating mothers. This preparation can also be beneficial in improving the nutritional status of women prior to conception and geriatric patients.

Santox

Santox is a special formulation comprising of important antioxidant vitamins and minerals. Each tablet contains : Vitamin A 2000 IU Vitamin E 50 IU Vitamin K 75.00 mg Vitamin C 200.00 mg Zinc 15 mg Copper 1 mg Manganese 3.00 mg Selenium 70.00 mg

Calorate

Calorate® contains Calcium Orotate, a calcium supplement with a functional amino acid chelating ligand - orotic acid. Orotic acid assists the transport of calcium through cellular membrane structures, thus facilitating

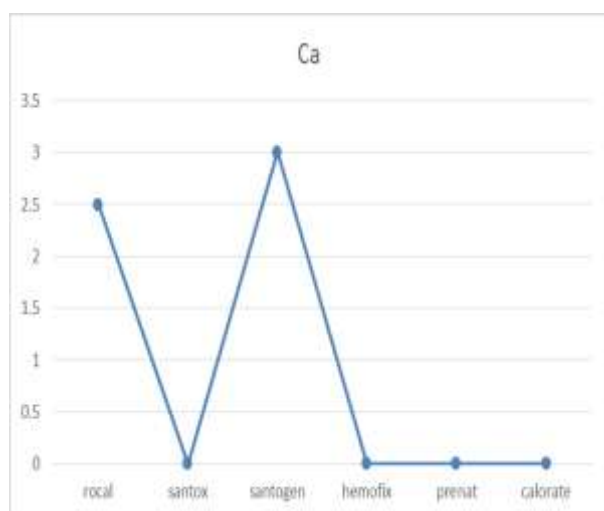
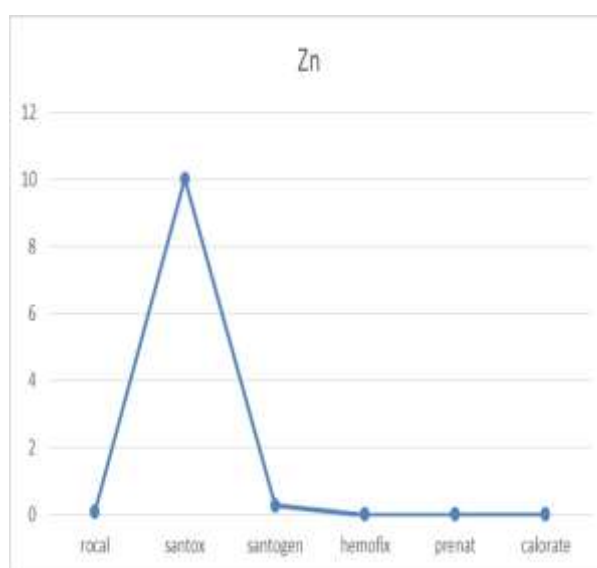
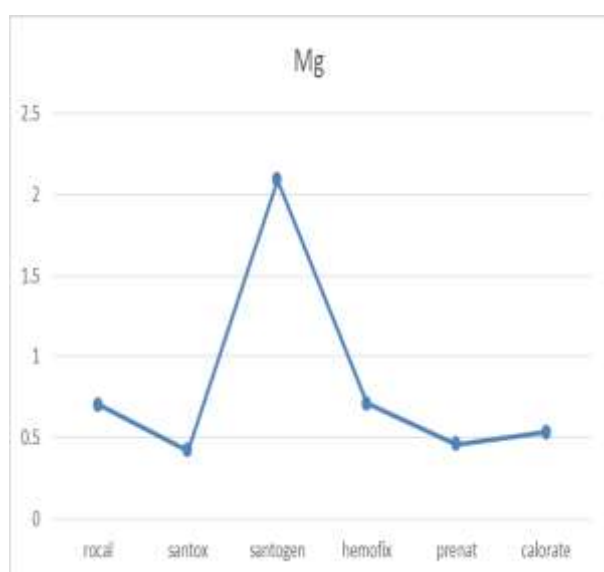
the intracellular uptake of calcium, particularly in bone. Calcium Orotate also helps in the maintenance of healthy cartilage. Furthermore, Orotate is involved in the synthesis of DNA (deoxyribonucleic acid) and RNA (ribonucleic acid). Of the various calcium supplements on the market, calcium orotate gets high marks because of the compound's ability to penetrate complex cell membranes so that it can be metabolized in cartilage.

RESULTS

Solution form of widely used mineral tablets lost minerals by microorganism after 1 week.

In atomic absorption spectroscopy, from the following drugs, following amount of minerals obtained-

	ppm (parts per million)					
	Mg	Ca	Zn	Fe	Mn	Cu
rocal	0.703	2.496	0.062			
santox	0.425		10		0.021	0.006
santogen	2.089	3.002	0.269	0.334	0.905	0.024
hemofix	0.714		.609x10	1.086x70	0.292	0.017
prenat	0.463		.547x10	0.041		
calorate	0.536	1.2x10				

**DISCUSSION**

Mineral content reduced significantly after 1 week from solution form of tablets.