OsteoSynergy

Bone density is supported by far more than calcium and vitamin D. Additional minerals and nutrients proven to support healthy bones include magnesium, boron, zinc, copper, silica, manganese and vitamin K, all included in optimal doses in the combination of Foundation Formula and OsteoSynergy.

Designed to Combine, OsteoSynergy should be used in combination with Foundation Formula for optimal bone strength and mineralization. There is a baseline quantity of several of our bone-supporting nutrients in the Foundation Formula and, as always, to avoid wasteful and potentially dangerous duplication of ingredients, we've formulated OsteoSynergy to be optimal only when used along with Foundation Formula.

The combination of these two formulas provides 600iu of vitamin D3, 800mg. of calcium either as calcium citrate or calcium ascorbate, both highly absorbable forms of this critical mineral. The combination also provides 400 mg. of magnesium as chelates of amino acids, 1 mg. copper, 6 mg. manganese and over 2 mg. boron. For other ingredients of Brain Synergy please see the complete **ingredients list**.

Related Abstracts

Environ Health Perspect. 1994 Nov;102 Suppl 7:59-63.

Biochemical and physiologic consequences of boron deprivation in humans.

Nielsen FH.

United States Department of Agriculture, Agricultural Research Service, Grand Forks, North Dakota 58202-9034.

Boron deprivation experiments with humans have yielded some persuasive findings for the hypothesis that boron is an essential nutrient. In the first nutritional study with humans involving boron, 12 postmenopausal women first were fed a diet that provided 0.25 mg boron/2000 kcal for 119 days, and then were fed the same diet with a boron supplement of 3 mg boron/day for 48 days. **The boron supplementation reduced the total plasma concentration of calcium and the urinary excretions of calcium and magnesium** and elevated the serum concentrations of 17 beta-estradiol and testosterone. This study was followed by one in which five men over the age of 45, four postmenopausal women, and five postmenopausal women on estrogen therapy were fed a boron-low diet (0.23 mg/2000 kcal) for 63 days, then fed the same diet supplemented with 3 mg boron/day for 49 days. The diet was low in magnesium (115 mg/2000 kcal) and marginally adequate in copper (1.6 mg/2000 kcal) throughout the study. **This experiment found higher erythrocyte superoxide dismutase, serum enzymatic ceruloplasmin, and plasma copper during boron repletion than boron depletion. The design of the most recent experiment was the same as the second study, except this time the diet was adequate in magnesium and copper. Estrogen**

therapy increased plasma copper and serum 17 beta-estradiol concentrations; the increases were depressed by boron deprivation. Estrogen ingestion also increased serum immunoreactive ceruloplasmin and erythrocyte superoxide dismutase; these variables also were higher during boron repletion than depletion for all subjects, not just those ingesting estrogen.(ABSTRACT TRUNCATED AT 250 WORDS)

Biol Trace Elem Res. 1994 Aug;42(2):151-64.

Effects of germanium and silicon on bone mineralization.

Seaborn CD, Nielsen FH.

United States Department of Agriculture, Grand Forks Human Nutrition Research Center, ND 58202.

The chemical properties of Ge are similar to Si. This study investigated whether Ge can substitute for, or is antagonistic to, Si in bone formation. Sixty male weanling **Sprague-Dawley rats** were randomly assigned to treatment groups of 12 and 6 in a 2 x 4 factorially arranged experiment. The independent variables were, per gram fresh diet, Si (as sodium metasilicate) at 0 or 25 micrograms and Ge (as sodium germanate) at 0, 5, 30, or 60 micrograms. Results confirmed that Ge does not enhance Si deprivation and provided evidence that Ge apparently can replace Si in functions that influence bone composition. **When Si was lacking in the diet, calcium and magnesium concentrations of the femur were decreased; this was reversed by feeding either Ge and/or Si.** Similar effects were found for zinc, sodium, iron, manganese, and potassium of vertebra. There were some responses to Si deprivation that Ge could not reverse; **Ge did not increase femur copper, sodium, or phosphorus or decrease molybdenum of vertebra, effects that were evoked by Si supplementation.**

Eur J Clin Nutr. 2000 Oct;54(10):749-56.

Maternal diet during pregnancy is associated with bone mineral density in children: a longitudinal study.

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OBJECTIVE: **To describe the association between maternal diet during the third trimester of pregnancy and bone mass in 8 y-old male and female children.** DESIGN: Longitudinal study. SETTING: Southern Tasmania between 1988 and 1996. SUBJECTS: One-hundred and seventy-three 8-y-old male and female children with adequate maternal dietary information taking part in a study of bone mineralization. **RESULTS: After adjustment for confounders, femoral neck bone mineral density (BMD) was positively associated with magnesium and phosphorus density of the maternal diet; lumbar spine BMD was positively associated with magnesium, phosphorus and potassium** and negatively associated with fat density while **total body BMD was positively associated with magnesium, potassium and protein** and negatively associated with fat density (all $P<0.05$). After further adjustment for other significant dietary factors, the only significant remaining associations observed were for phosphorus and fat at the lumbar spine, although the adjusted goodness of fit of the

models improved compared to those including one dietary variable. A child in the 'optimal' levels of dietary exposures had significantly higher adjusted BMD at all sites (femoral neck, +5.5%, lumbar spine, +12%, total body, +6.8%). Calcium intake was not associated with BMD at any site, possibly due to a high average intake.
CONCLUSIONS: This study reports a substantial association between in utero diet in a well-nourished population and later bone mass in their children. However, it does not allow identification of the dietary components of greatest importance, indicating that these results should be regarded as hypothesis-generating. Further longitudinal studies in other populations are required to confirm that dietary manipulation during pregnancy has a role to play in the early life prevention of osteoporosis.