FLUORIDE

Fluoride

- Role in prevention of cavities
- Aids in synthesis of **fluorapatite** crystals
- Resists acid and dental caries
- Fluoride inhibits bacterial growth that may cause cavities
- Fluoridated water (1ppm)

“Food” Sources of Fluoride

- Fluoridate water (~0.2 mg/cup)
- Tea
- Toothpaste
- Adequate intake is 3.1 -3.8 mg/day for adults
- Typical fluoridate water cSeafood, seaweed
- Toontamg/cupins 0.2

Toxicity of Fluoride

- Mottling of the teeth in children
- Limit toothpaste to pea size for children
- In high amounts can weaken teeth in children
- **Fluorosis**
  - Poor tooth structure
  - Discoloration of the teeth
- Upper Level is 10 mg/day

- Excessive intake of fluoride in adults is associated with hypercalcification of bones , especially of limbs pelvis and spine .
- There is also calcification of ligaments of spine and collagen of bones
- Known as skeletal fluorosis . As the disease progresses further the individual becomes crippled due to stiff joints known as genu valgum.

CHROMIUM

Chromium

- Role in Type II diabetes
- May increase the number of insulin receptors
- May increase the transport of glucose across the cell membrane
- Impaired glucose tolerance with low intake
- Elevated cholesterol and triglyceride with low intake

Food Sources of Chromium

- Egg yolk
- Bran, whole grain, cereal
- meat
- Beer
- Plant source dependent on soil content
- Adequate Intake is 25 - 35 ug/day for adults

Functions of Chromium

- Glucose uptake into the cell
- Enhances insulin action by boosting insulin receptor activity
- Enhances the conversion of glucose to fat

Chromium Deficiency

- Impaired glucose tolerance
- Elevated blood cholesterol and TG
- Sensitive measure of chromium status not available

Toxicity of Chromium

- No toxicity from foods
- Lung damage
- Skin allergies
- Ulcers, convulsions, kidney damage, liver damage, cancer, death

MOLYBDENUM

Molybdenum

- High intake will inhibit copper absorption
- Required by several enzymes
- Deficiency can leads to
  - Increased heart and respiration rate, mental confusion, Edema, weakness, coma
- RDA is 45 ug/day
- Average intake is 75-110 ug/day
- Toxicity seen in animal
- Upper Level is 2 mg/day

SILICON

Silicon/boron/nickel

- Boron
  - Metabolism of steroid hormones
  - Found in fruits, leafy vegetables., nuts
  - Upper Level is 20 mg/day
- Nickel
  - Activates enzymes
  - Found in nuts, beans, grains, chocolate
  - Upper Level is 1 mg/day

Silicon

- Involved in bone formation in small animals
- Found in plant foods, unrefined grains, cereals, vegetables
- No Upper Level set
- Deficiency could effect brain and bone formation

Ultraminerals

- Vanadium
  - Enhances enzyme activities
  - Found in shell fish, mushrooms, grain
  - Upper Level set at 1.8 mg/day
- Arsenic
  - Poisonous
  - Need in trace amounts
  - Gene expression of stress proteins
  - Found in fish, grains