

# MICRONUTRIENTS



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2007

**VITAMIN A** is a fat soluble vitamin

- \*  $\beta$  carotene is a precursor of vitamin A
- \* It is present in all green leafy vegetables and all



yellow and orange coloured fruits like papaya, ripe mangoes etc..and vegetables like pumpkin, carrots.

- \* Vitamin A is also present in foods of animal origin like butter, whole milk, curd, egg yolk, and liver.



- \* Intake of vitamin A rich foods from the adolescent age will enhance the reproductive health as vitamin A has a significant role in maintenance of the reproductive health.
- \* Vitamin A status is very important during pregnancy and has effect on maternal and child health therefore it is very important to consume vitamin A rich foods by pregnant and lactating women including all age groups.
- \* Vitamin A is important for the improvement of defensive mechanism in the body by fighting against infections thus providing resistance in children.
- \*  $\beta$  carotene converts in to vitamin A and it is important for the health of the eyes of small children.

- \* The deficiency of vitamin A leads to nutritional blindness (night blindness-inability to see in dim light)

### Consequences of vitamin A deficiency

- \* The early symptoms due to vitamin A deficiency among children can be recognized by identifying 'bitot spots'.



Bitot spots

- \* In severe deficiency cases, serious damage occurs in cornea.
- \* Corneal xerosis characterized by dryness and haziness can be completely reversed with vitamin A administration.
- \* In untreated cases the lesions progress rapidly resulting in corneal ulceration, keratomalacia and irreversible blindness.



Keratomalacia

### DIETARY IRON

- \* Dietary iron is an essential micronutrient for the formation of haemoglobin (Hb) in blood red cells.
- \* Hb plays an important role in transport of oxygen.
- \* The term 'haem' means 'iron' while 'globin' refers to 'protein'.
- Iron rich foods are green leafy vegetables, animal meat, liver etc.,
- Iron which is present in green leafy vegetables is non heme iron while the iron present in the animal foods is known as heme iron.

- During menstruation the iron loss will be around 15-30mg/cycle, therefore, the demand for iron in the girls is more.
- During pregnancy the stored iron will be utilized for foetal growth and development.
- Consumption of iron during pregnancy is very essential to maintain the pregnant women's health .
- Women require 500-600 mg of additional iron for their entire pregnancy period.
- During lactation period also women require more iron.
- Intake of Iron folifer tablets which are supplied through Primary Health Centres and Anganwadi Centres by the vulnerable population for 100 days help to overcome severe anaemia.

## IODINE

- \* Iodine deficiency disorders (IDD) are important micronutrient deficiency disorders of public health importance in India.
- \* Iodine is one of the essential micro-nutrients required for normal growth and development of the human brain and body.
- \* Iodine is available in all food items and water.
- \* Iodine occurs in food as iodide ions or as free inorganic iodine.
- \* 1/3 of iodine is absorbed by thyroid gland.
- \* Excess of iodine is excreted through urine.
- \* The requirement of iodine ranges from 100-150  $\mu\text{g}/\text{day}$ .

- \* Iodine deficiency leads to hypothyroidism and goitre



Iodine deficiency in pregnancy leads to:

- Premature abortions
- Improper fetal growth
- Poor mental development
- Growth retardation (Cretinism)



Cretinism

- \* Goitrogens are the substances that are present in cruciferous vegetables like cabbage, cauliflower, radish, knol khol, mustard seeds etc..

- \* Look for the logo 'smiling sun' on iodised salt packets



## Calcium

- The skeleton accounts for at least 99% of the body stores of calcium
- Gain in skeletal weight is most rapid during the adolescent growth spurt.
- About 45% of the adult skeletal mass is formed during adolescence
- Requirement of calcium for the growth of the skeleton is derived from the diet.
- More requirement and rapid deposition of Calcium occurs during early adolescence, between 10 and 14 years in girls and 12 and 16 years in boys.
- During peak adolescent growth, calcium retention is, on an average, about 200mg/day in girls and 300 mg/day in boys.

- Achievement of peak bone mass during childhood and adolescence is crucial to reduce the risk of osteoporosis in later years.
- Recommended calcium intake is possible by regular intake of several servings of dairy products, such as milk, *dahi* and cheese
- Finger millet ie., Ragi and drumstick leaves are good sources of calcium.
- Physical activity in the morning and exposure to morning sun which provides vitamin D is essential for building and retain bone strength in the body.
- Dietary intake of calcium, other vitamins or minerals, like vitamin D and phosphorous are needed for building up bones.



During pregnancy women need extra amount of calcium for the healthy growth of foetus.

### Some calcium rich foods




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*This was developed as part of the project: Assessment of nutrition knowledge and impact of nutrition education related maternal health on adolescent girls in urban slums of Hyderabad.*

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