

Essential Nutrients

Calcium, Iron and Vitamin B12





Why is Calcium important?

Function of Calcium

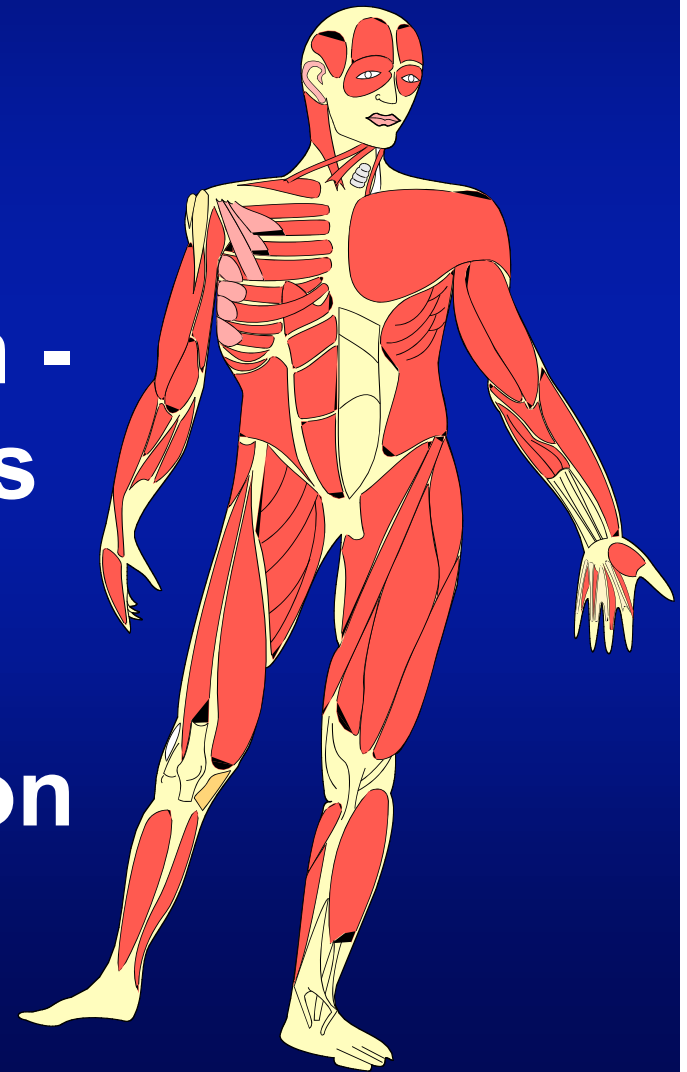
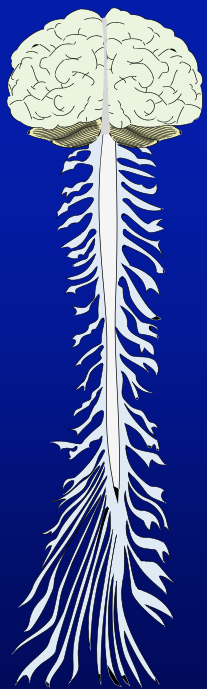
Essential for:

neural transmission -
nerve messages

cardiac function

muscular contraction

blood clotting



Where is Calcium stored?

Bone contains 99% of the body's calcium

Stores are built up during childhood and adolescence, peak bone mass achieved at 30-35 yrs of age.

Body fluids - contain 1% - used for essential functions

Bones release calcium into the bloodstream when required level drops.

Calcium Absorption

Dietary calcium is very well absorbed.

Vitamin D is required for active transport

Foods rich in calcium usually supply a wide variety of other nutrients too

Vegetarian Sources of Calcium

Remember: Protein and fat should be kept medium to low

Dairy Foods

Milk - reduced fat - 1 glass = 280 mg

Yoghurt - low fat 200 grams = 320 mg

How can osteoporosis be prevented?

Start a healthy diet early in life

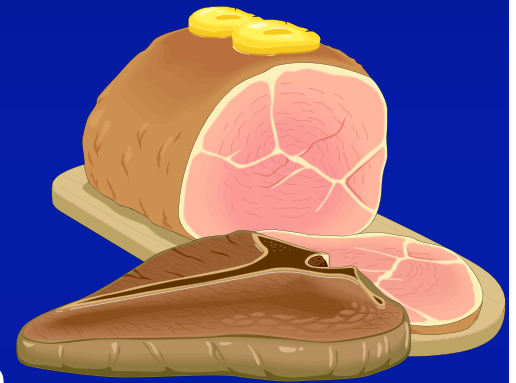
Consume a wide variety of calcium dense foods



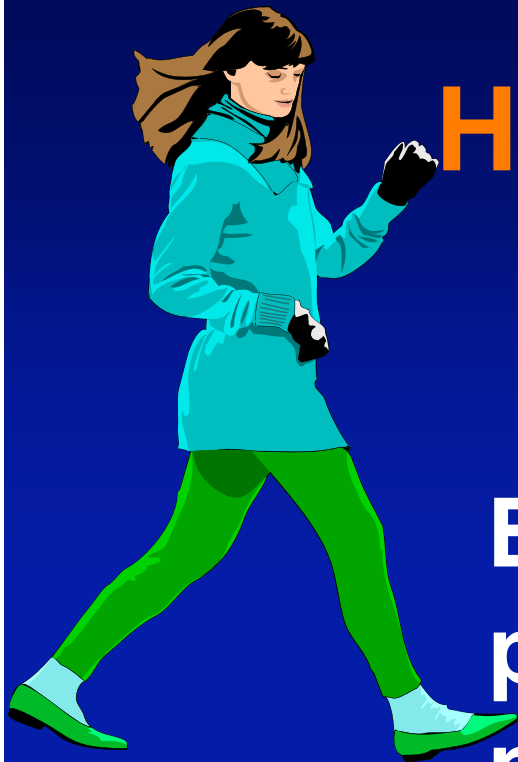
How can osteoporosis be prevented?

Restrict the intake of:

- sodium
- animal protein
- caffeine
- phosphates
- alcohol



How can osteoporosis be prevented?



Engage in regular physical activity - preferably in sunshine



No smoking

Group Activity Unit 8a

1. Calcium, why do we need it?
2. Calcium, where is it found?
3. List some factors for good absorption
4. What about calcium supplements?

IRON

Function of Iron

- **Formation of hemoglobin**
(Carries oxygen around the body)
- **Enzyme systems**
(energy production)



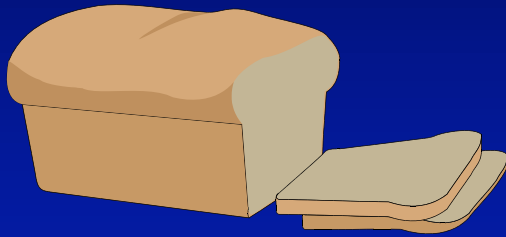
Two different types of iron

- Heme iron (animal foods)
- Non-heme iron (plant foods and egg yolk)

80% increase in absorption when
Vitamin C is present at the same meal



Vegetarian Sources



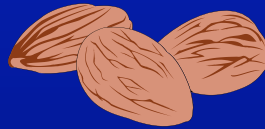
- Whole grain products

- Legumes

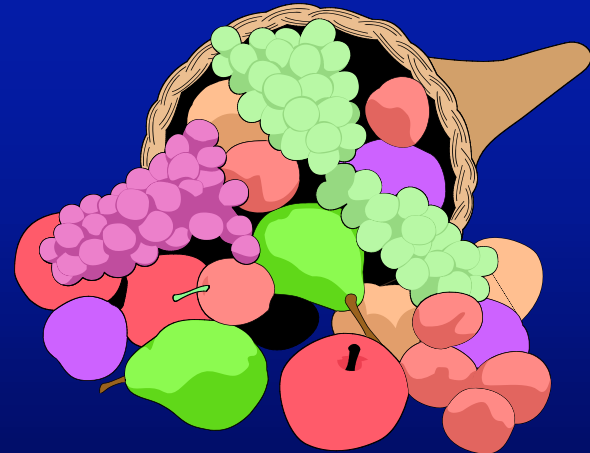
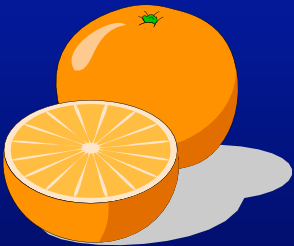


- Green leafy vegetables

- Nuts



- Fresh fruit and dried fruit



Can Vegetarians Get Enough Iron?

Yes!

If a variety of legumes,
whole grain foods, nuts, seeds,
fruit and vegetables are eaten.



Iron Absorption

- ✓ Eat foods rich in Vitamin C at most meals e.g. fresh fruit or vegetables
- ✗ Avoid large amounts of unprocessed bran - phytic acid
- ✗ Avoid drinks containing tannin and caffeine - tea and coffee - with your meals



Are you getting enough iron?

Menu One:

Breakfast

Fresh fruit -
3 pieces

Yoghurt -
(1 carton)

Lunch

Large salad with
cottage cheese
Fruit

Dinner

Steamed vegetables
White rice

**Iron content
= 6.8 mg**

Not enough to
meet the RDI for
women
12-16 mg

Are you getting enough iron?

Menu Two:

Breakfast

Rolled oats with
raisins

Wholemeal toast
Banana

Lunch

Large salad with beans
Wholemeal bread roll
Fruit

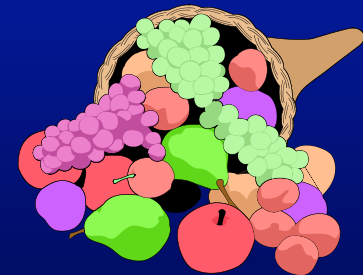
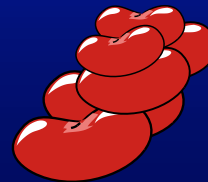
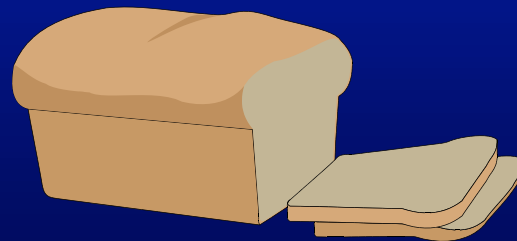
Dinner

Lentil & nut patties
Brown rice
Steamed vegetables

Iron content
=
18 mg

FINALLY

**For optimum health and vitality,
it is important to regularly eat a
variety of foods that supply iron.
And it is just as important to eat
plenty of foods high in vitamin C
to increase iron absorption.**



Iron

1. Why do we need it?
2. Vegetarian food sources of iron?
3. How can we maximise absorption?
4. What hinders absorption?

VITAMIN B₁₂

Essential Vitamin

Makes healthy red blood cells, involved in cell division

Required to make a protective layer around the nerve cells, the problem is very serious if there is damage to the spinal cord

DEFICIENCY OF VITAMIN B₁₂



Can lead to the development of several harmful conditions



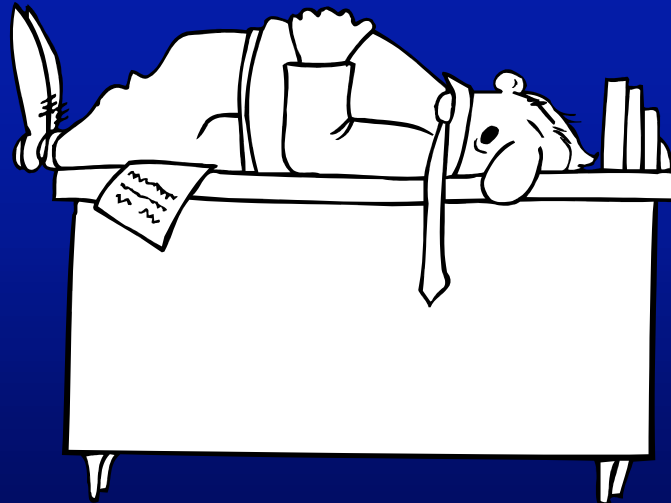
Reduced production of red blood cells



Nerve cell damage, can lead to progressive paralysis of the nerves and muscles

SYMPTOMS INCLUDE:

**Circulatory system symptoms:
Anemia causing severe tiredness
and weakness**



SYMPTOMS INCLUDE:

Nervous system symptoms:

**Numbness and tingling in
hands and legs**

**General deterioration of nerve cells
leading to paralysis, fatigue, depression,
irritability, memory loss and weight loss**

WHAT CAUSES THE DEFICIENCY?

- ❖ **Insufficient dietary Vitamin B₁₂**
- ❖ **Lack of intrinsic factor - essential for absorption of B₁₂**
- ❖ **Other absorption problems**

FOOD SOURCES OF B₁₂

- * Only found in animal flesh and animal products such as milk, cheese and eggs.
- * Spirulina and Tempeh and mushrooms claim to have Vitamin B₁₂. The type is inactive and is not useful to the human body. It may block the active B₁₂.

CAN VEGETARIANS GET ENOUGH?

- * Lacto-ovo vegetarians are protected from a dietary deficiency**
- * Total vegetarians should include fortified foods in the meal plan, such as fortified soy drink which has been fortified with B₁₂. Otherwise a supplement is recommended especially during pregnancy and lactation**

CAN YOU STORE VITAMIN B₁₂?

- * The liver is the primary site of storage**
- * Stores are sufficient for 3-5 years**
- * Total vegetarians should have their
Vitamin B₁₂ levels tested regularly by a
doctor**

IS VITAMIN B₁₂ AFFECTED BY COOKING?

- * This vitamin is quite stable
- * **Very little is destroyed during cooking**
- * Even when milk is pasteurized, or undergoes UHT only a very small amount is lost
- * **Significantly more B₁₂ is lost in evaporated milk**

INTERACTION WITH OTHER VITAMINS

- * Vitamin B₁₂ works closely with another vitamin called Folate
- * Hence some of the symptoms of Vitamin B₁₂ deficiency are closely linked with a Folate deficiency
- * B₁₂ activates Folate

Vitamin B12

1. Why do we need it?
2. What causes a deficiency?
3. Name some good vegetarian food sources of vitamin B12
4. Can vegetarians get enough