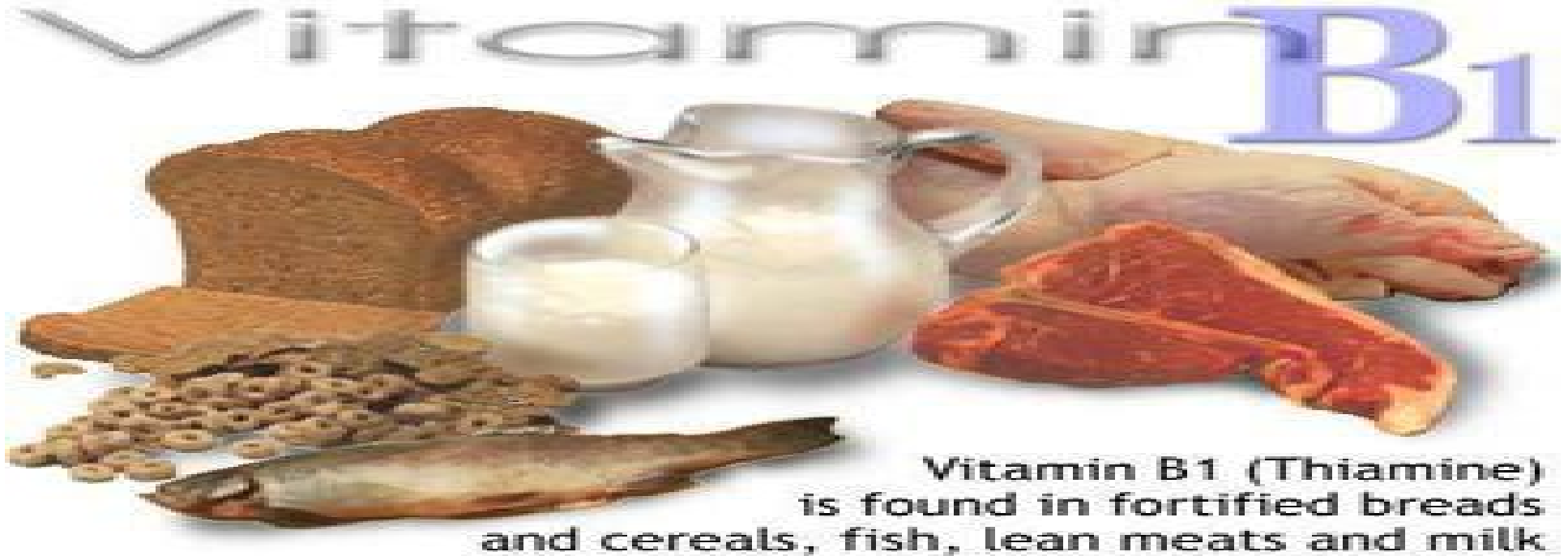


Water – soluble vitamins:

VITAMIN B1 (THIAMINE) –

Thiamine, known as vitamin B1, –
thiamine is soluble in water and
partly soluble in alcohol.



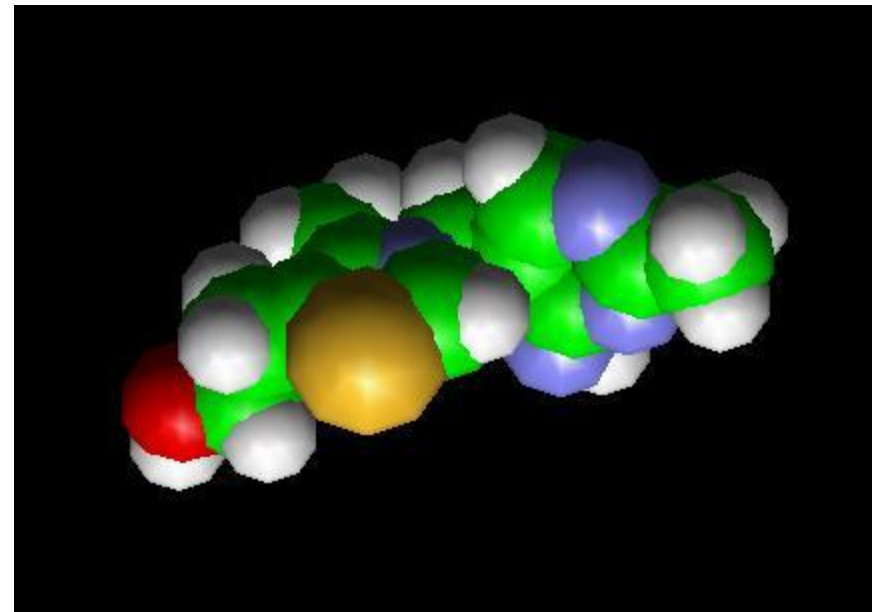
**Vitamin B1 (Thiamine)
is found in fortified breads
and cereals, fish, lean meats and milk**

Metabolism — Thiamine is absorbed —
in the small intestine .The maximal
absorption of thiamine is in the
jejunum and ileum .Thiamine
passes through the mucosal cells to
enter the blood stream, Bound to
albumin, it is carried by —
the portal circulation —
to the liver.. —



The highest concentrations are found in — the skeletal muscles, the liver, the heart, the kidneys, and the brain.

Thiamine's biologic half-life is — approximately 10 to 20 days; due to limited tissue storage, continuous supplementation is required .Thiamine and all of its metabolites are excreted in the urine.





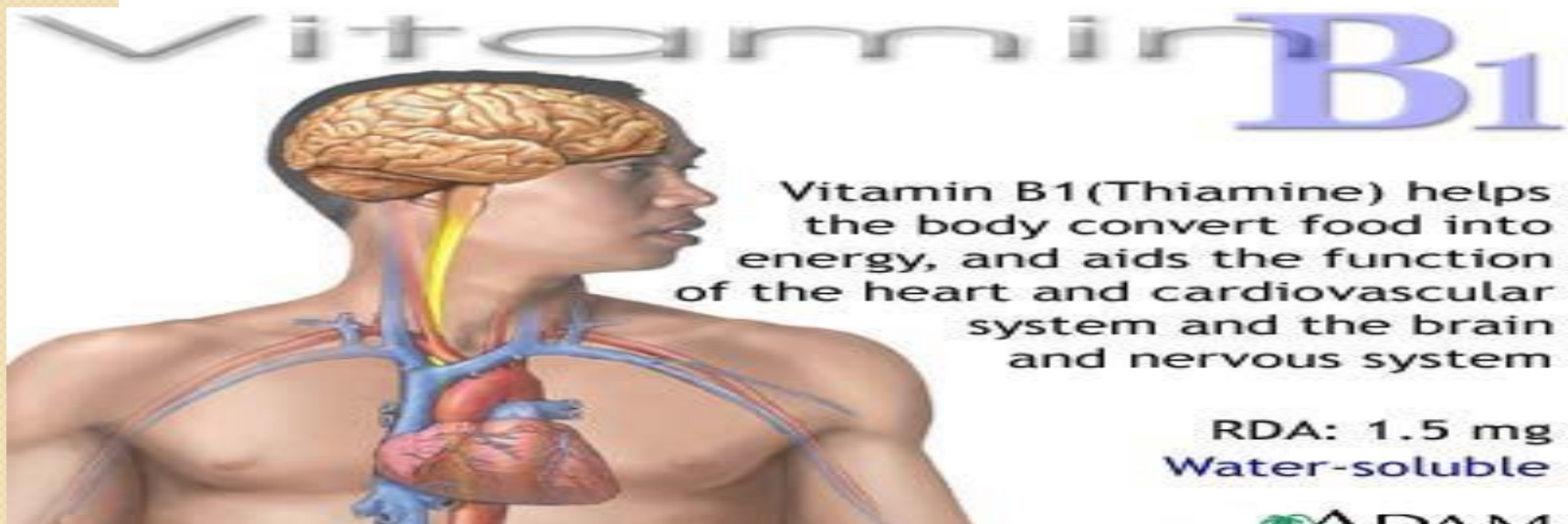
Function :

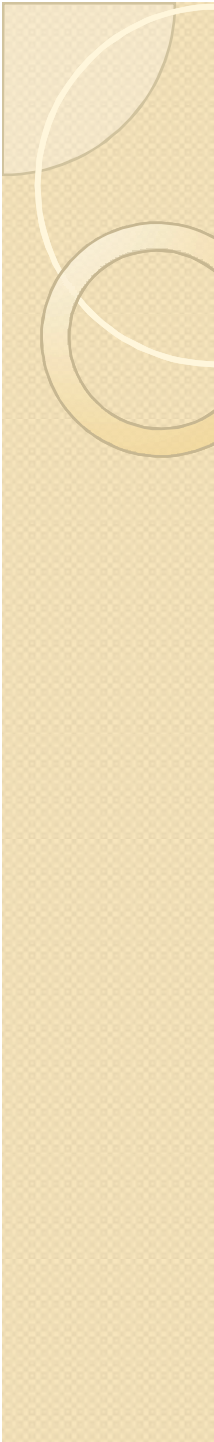
It form part of the coenzyme —
thiamine pyrophosphate (TPP)
which is involved in major
decarboxilation steps .

initiation of nerve impulse —
propagation that is independent of
its coenzyme functions . also it
needed for the metabolism of fat ,
CHO, and alcohol .

Deficiency —

Thiamine deficiency has been —
associated with three disorders:
Beriberi (infantile and adult)
Wernicke-Korsakoff syndrome &
Leigh's syndrome



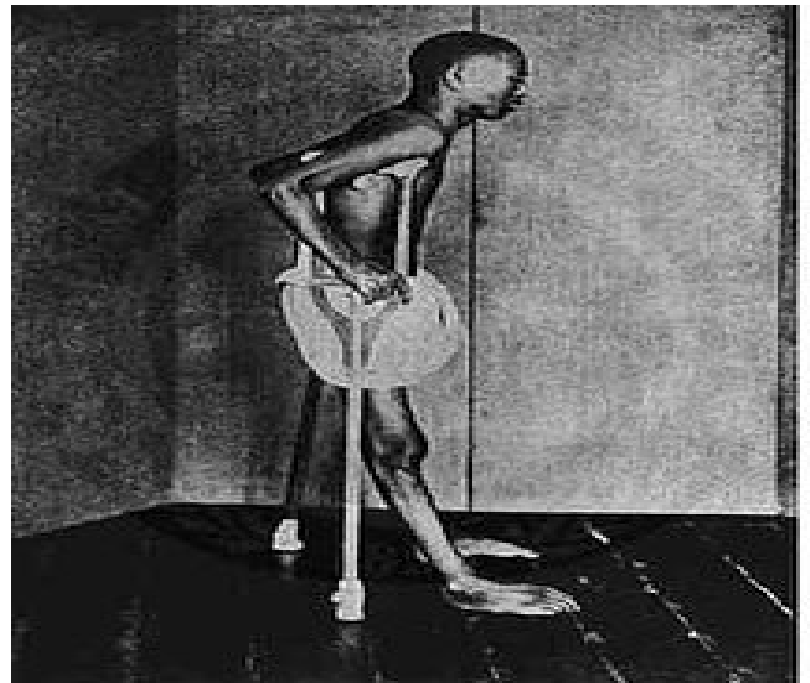


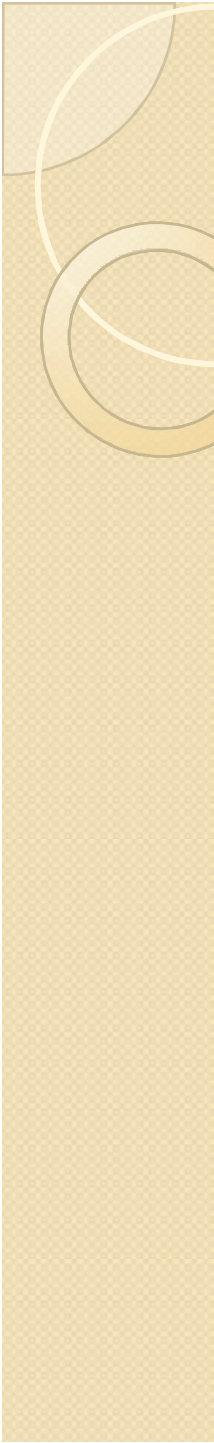
Infantile beriberi — becomes —
clinically apparent between the ages
of two and three months.

The clinical features are variable and —
may include a fulminant cardiac
syndrome with cardiomegaly,
tachycardia, cyanosis, dyspnea...



Adult beriberi — Adult beriberi is — described as dry or wet. Dry beriberi is the development of a symmetrical peripheral neuropathy and vomiting

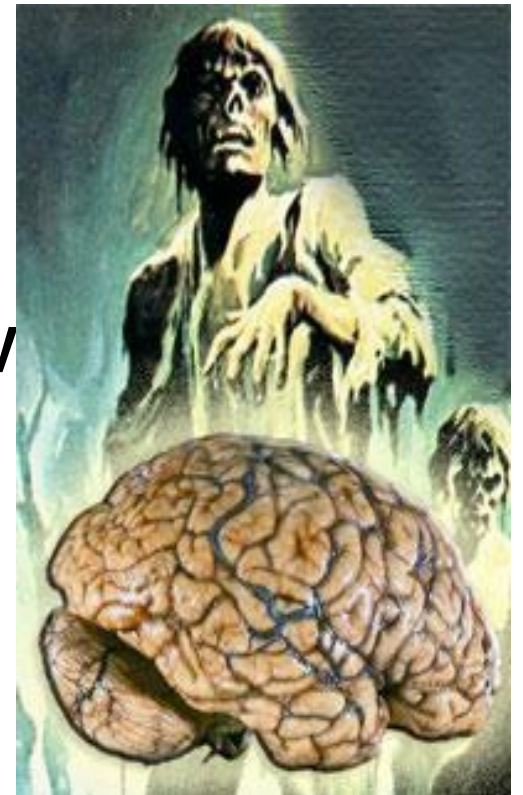




Wet beriberi includes a neuropathy, —
as well as signs of cardiac
involvement with cardiomegaly,
cardiomyopathy, congestive heart
failure, peripheral edema, and
tachycardia

Wernicke-Korsakoff syndrome — —
Wernicke's disease is a triad of
nystagmus, ophthalmoplegia, and ataxia,
along with confusion.

Korsakoff's psychosis is —
impaired short-term memory. —
This combination is almost exclusively
described in chronic alcoholics
with thiamine deficiency —



Leigh's syndrome — Leigh's —
subacute necrotizing
encephalomyopathy

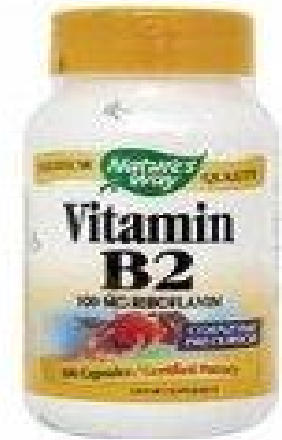
It is manifested with ataxia, —
dysarthria, movement disorders,
muscle atrophy, and weakness.



Toxicity — No real syndrome of excess —
thiamine exists since the kidneys can
rapidly clear almost all excess thiamine
Daily Values — 2mg/d for men & 1.54 —
mg/d for woman .
Good food sources : —
cereal products —
(breakfast cereals —
and bread) , yeast , nuts ,
pork & other meats, —
vegetables& milk . —



Riboflavin (vitamin B2)



FUNCTION : —

- * promotion of normal growth .
- * assist synthesis of steroid , red blood cell and glycogen —
- * maintenance of mucous membranes , skin , eyes and nervous system
- * aiding Fe absorption —

Deficiency : —

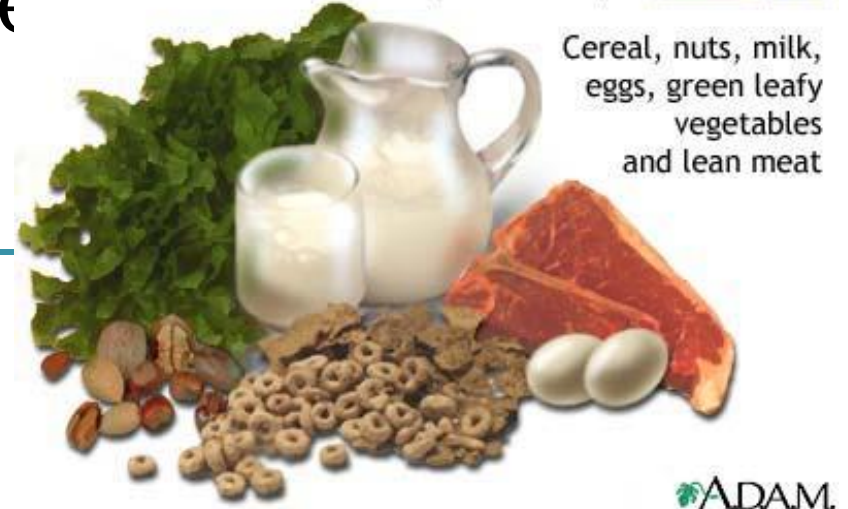
Lesions of the mucosal surfaces of mouth , —
angular stomatitis

Glossitis , surface lesions of genitalia , —
seborrhoeic skin lesion & vascularization of the cornea

Good food sources of Riboflavin : —
Eggs , milk and milk product , liver —
and kidney
,Yeast extract , fortified breakfast —
cereals

Average daily intake
men is 2.11mg\ d &
female 1.60 mg\ d —

Vitamin **B₂**
Food sources of Riboflavin (vitamin B₂):



Vitamin B6 pyridoxine



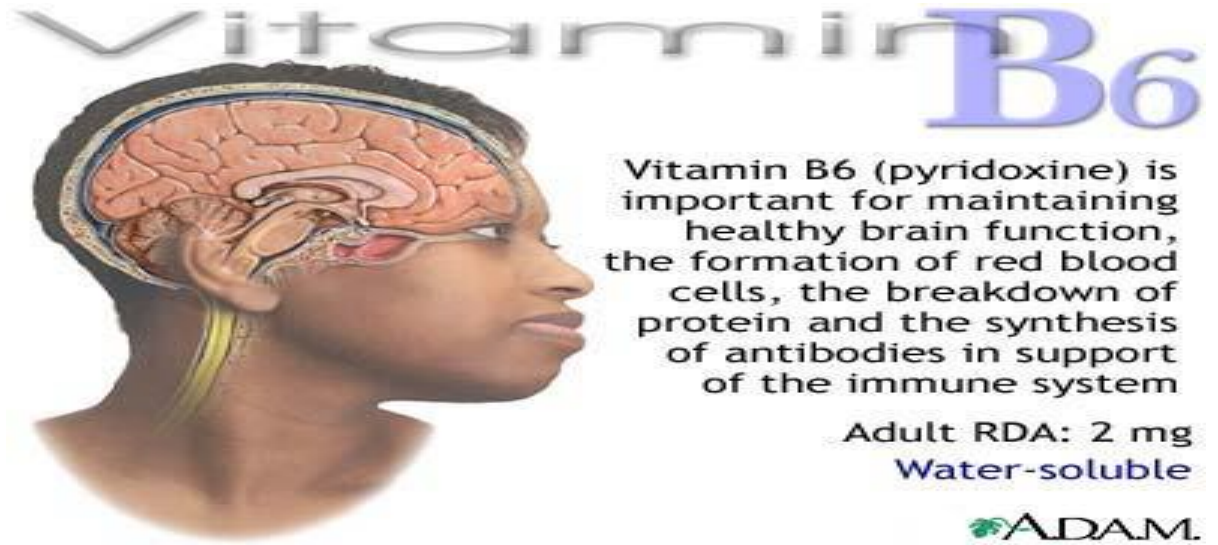
Function : —

- *Transamination of amino acids to — produce Ketoacids and synthesis of non — essential amino acids

- *decarboxylation to yield biologically — active amines , e.g, neurotransmitters

- * synthesis haemoglobin. —

Vitamin B6 is also involved in the — conversion of glycogen to glucose in muscle, and in hormone metabolism.



Deficiency : —

Sever deficiency of vitamin B6 is rare . patient —
suffering malabsorption , receiving dialysis or
alcoholic are at risk to deficiency . clinical signs
include :

Lesion of the lips and corners of the mouth and —
inflammation of the tongue , Neuropathy ,
anaemia (due to poor haem synthesis)

Due to the importance of vitaminB6 in amino —
acid metabolism requirement are linked to
protein intake ..

Good food sources of vitamin

B6 : Meat , cereals , fortified cereals , –
bananas , nuts , eggs, fish

Vitamin B6

Food sources of vitamin B6 (pyridoxine) include beans, legumes, nuts, eggs, meats, fish breads and cereals



ADAM.

Cobalamin B12

* recycling of folate coenzymes —

* Normal myelination of nerves —

Synthesis of methionine from homocysteine —

Deficiency : pernicious anaemia (—
megaloblastic) & \ or neurologic problem .

The most common cause of deficiency is —
malabsorption due to atrophy of the
gastric mucosa



Good food sources of vitamin B12: —
vitamin B12 does not found in plant
food . meat and meat product , eggs
,milk and dairy products , fish ,yeast
products , breakfast cereals (
fortified)



VITAMIN C (ASCORBIC ACID)

Ascorbic acid is absorbed in the — distal small intestine

Vitamin C

Citrus fruits, green peppers, strawberries, tomatoes, broccoli and sweet and white potatoes are all excellent sources of vitamin C



Actions

anti-oxidant capabilities also —
stabilize a number of other
compounds, including vitamin E and
folic acid.

- * Fatty acid transport —
- * Neurotransmitters —
- * Prostaglandin —
- metabolism —
- * Collagen synthesis —



Deficiency



ascorbic acid deficiency occurs mostly in — severely malnourished individuals, drug alcohol abusers, or those living in poverty. Scurvy : largely due to impaired collagen synthesis with disordered connective tissue. Symptoms (ecchymoses, bleeding gums, petechiae, coiled hairs, hyperkeratosis, , arthralgias, and impaired wound healing. weakness, malaise, joint swelling, arthralgias, edema, depression,

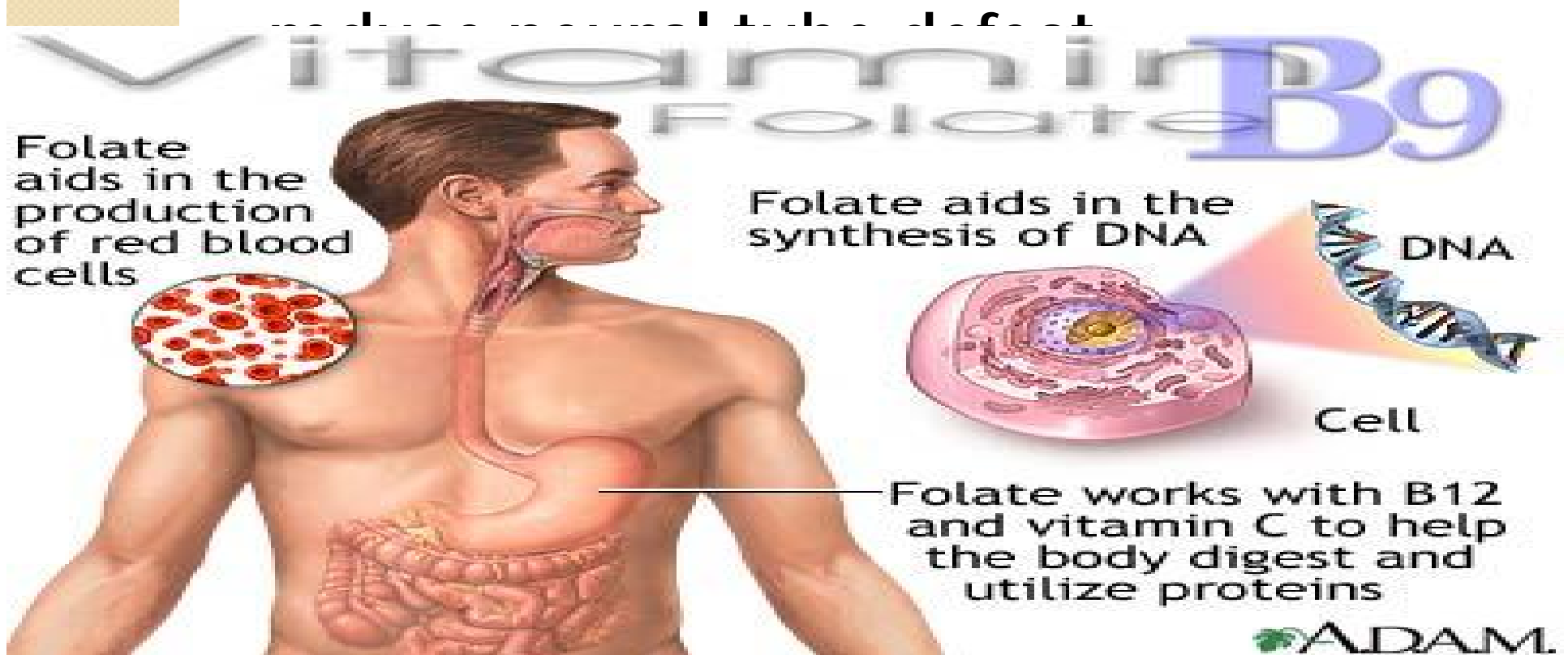
Daily Value — The DV for ascorbic acid — is 60 mg per day for most adults; pregnant or lactating women and the elderly have requirements up to 125 mg/day.

Good food sources of vitamin C : Kiwi — fruit , citrus fruit , sweet potato , broccoli, mango.



Folate (folic acid)

*it is essential for the synthesis of – DNA & RNA , folate supplement in early pregnancy has been show to



Good food sources of folate : –

– Brussels sprouts , spinach, fortified bread and breakfast cereals, cabbage , cauliflower , kidneys ,beans , peas ,most nuts , brown rice , milk . average daily intake = 200 Mg\day for adults . to prevent NTD in pregnancy = 400Mg\day until 12 week of pregnancy . to prevent



Vitamin B3 NIACIN (nicotinamide , —
nicotinic acid Function : are involve in
numerous oxidoreductase reaction
including glycolysis, fatty acid metabolism,
tissue respiration and detoxification.

Deficiency : pellagra characterize by 3D: —
dermatitis , diarrhea , dementia.

Food sources :beef,chicken,eggs,milk and —
wheat flour, seeds.

15 to 20 mg per day for adult males, and 13 —
to 15 mg per day for adult females

Vitamin B₃



Food sources of Niacin (vitamin B3) include dairy, poultry, fish, lean meat, nuts and eggs



Vitamin B₃



An inability to absorb niacin (vitamin B3) or the amino acid tryptophan may cause pellagra, a disease characterized by scaly sores, mucosal changes and mental symptoms

