Name of the student: .....***Date: 08/11/2020***

Vitamin C:

Ascorbic acid also commonly, known as vitamin C.

- ✓ Vitamin C is soluble in water.
- ✓ Ascorbic acid is primarily found in fruits and vegetables.
- ✓ The empirical formula of Ascorbic acid is $C_6H_80_6$.
- ✓ Vitamin C is wasted in a little stroke of heat.
- ✓ Vitamin C is not stored in the body.
- ✓ Vitamin C is found extensively in all citrus fruits.
- ✓ Fresh vegetables and fruits contain more vitamin C than the ripe ones.
- ✓ Vitamin C is a powerful antioxidant.

Antioxidants are compounds that inhibit oxidation. Oxidation is a chemical reaction that can produce free radicals, thereby leading to chain reactions that may damage the cells of organisms.

Q. Why should we eat Vitamin C daily?

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Scurvy:

Scurvy is a disease caused by a severe deficiency of vitamin C; hence it is also called the chronic vitamin C deficiency disorder.

Symptoms of Scurvy:

The deficiency of vitamin C disorders usually appears after 8 to 12 weeks. Fatigue, irritability, lethargy, loss of appetite, low-grade fever, weakness and weight loss are few early signs of Scurvy. Other symptoms include:

- ➢ Nausea
- ➢ Anemia

- Headache
- Exhaustion
- Bulging eyes
- Chest pain
- Bleeding gums
- Blurred vision
- Corkscrew hairs
- Sensitivity to light
- Shortness of breath
- Slow wound healing
- Dry and eye irritation
- Myalgia, or muscle pain
- Painful joints and muscles
- Gastrointestinal bleeding
- Tender and swollen joints
- Depression or mood swings
- Tooth decay or loss of tooth
- Small red spots on the skin

Causes of Scurvy:

The main cause of Scurvy is an insufficient intake of vitamin C or ascorbic acid in our diet.

Treatment:

- This disorder can be cured by taking vitamin C supplements and by increasing the daily intake of vitamin C in the diet.
- Patients are also advised to consult a dietitian to alter their diet based on their medical condition and to reduce the use of drugs, tobacco products and intake of alcohol.

Q. Describe the major benefits of ascorbic acid.

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Vitamin D:

Vitamin D (also referred to as "calciferol") is a fat-soluble vitamin.

- The body produces vitamin D in response to sun exposure.
- Vitamin D is found abundant in edible oil, milk and milk products, different fish liver oil, egg yolk, butter, ghee, fats and hilsha fish.
- Vitamin D helps to regulate the amount of calcium and phosphate in the body.

Vitamin D is available in two forms—vitamin D2 and vitamin D3.

1) Low levels of vitamin D3 can have drastic impacts on human health and are abundantly found on the skin of animals.
2) Compared to other vitamins, vitamin D3 has a great impact on bone health, insulin control, low blood pressure, cancer prevention, etc.

A lack of vitamin D can lead to bone deformities such as rickets in children, and bone pain caused by a condition called osteomalacia in adults.

Rickets:

Rickets is a condition that results in weak or soft bones in children.

Causes:

Vitamin D is required to absorb calcium from food. Lack of calcium and vitamin D or inability to absorb the same causes rickets.

Symptoms:

The symptoms of rickets are as follows—

- Reduced growth and short height
- Fractures in bones
- Softening of bones
- Pain in the bones of arms, legs, pelvis, and spine
- Swelling up of bone joint of hands and legs
- Deformities in teeth
- Bending of ribs
- Deformities in the skeleton like bowlegs

Treatment:

This condition can be treated under proper guidance if the underlying cause is diagnosed early on. It can also be treated without any major bone deformities; however, certain conditions might need surgical intervention.

- ✓ Rickets can be treated by eating a diet rich in vitamins and minerals, especially vitamin D, consuming calcium and phosphorus rich food.
- ✓ Vitamin D supplements need to be given to infants of the breastfeeding age.
- ✓ Enough exposure of the skin to the sunlight improves the condition.
- ✓ If rickets is caused due to a genetic disorder, the patient is prescribed vitamin D hormones and phosphorous medications.
- ✓ Braces (support) might be required in case of skeletal deformities to position the bones correctly as the child grow.

Osteomalacia:

Osteomalacia is a condition that results in weak or soft bones in adults.

Causes:

The causes of osteomalacia are varied, but ultimately result in a vitamin D deficiency.

Symptoms:

- ❖ Diffuse joint and bone pain (especially of spine, pelvis, and legs)
- ❖ Muscle weakness
- ❖ Difficulty walking, often with waddling gait
- ❖ Hypocalcaemia
- ❖ Compressed vertebrae and diminished stature
- ❖ Pelvic flattening
- ❖ Weak, soft bones
- ❖ Easy fracturing
- ❖ Bending of bones

Treatment:

- ▪ Nutritional osteomalacia responds well to administration of 2,000-10,000 IU of vitamin D3 by mouth daily.
- ▪ Vitamin D3 (cholecalciferol) is typically absorbed more readily than vitamin D2 (ergocalciferol).

- Osteomalacia due to malabsorption may require treatment by injection or daily oral dosing of significant amounts of vitamin D3.

Prevention:

- Prevention of osteomalacia rests on having an adequate intake of vitamin D and calcium.
- Vitamin D3 Supplementation is often needed due to the scarcity of Vitamin D sources in the modern diet.

Q. Vitamin D deficiency disease in adults is different from that in children. Analyze.