

### **S3 FOODS AND NUTRITIONS**

#### **WATER**

Water is essential to life. It accounts for  $\frac{2}{3}$  of the body weight. It forms the main part of the cell liquid cytoplasm and the surrounding liquid extracellular fluid (ECF). The blood, secretions, digestive juices and lymph are mainly composed of water. Even the bone is 25% water.

#### **Composition of water**

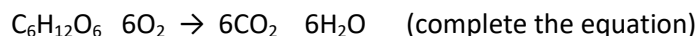
Water is composed of hydrogen and oxygen in the proportion of  $H_2O$ .

#### **Functions of Water in the body.**

1. Water is the medium of transporting substances from one part of the body to another. For example oxygen, carbon dioxide, blood cells, nutrients, waste matter, hormones and enzymes.
2. It distributes the heat generated by metabolism, keeping the body at the temperature necessary for all body functions-37%.
3. It keeps lining membranes of organs moist, e.g. pleura, bronchii, joints and eyes.
4. It dissolves food during digestion, forms secretions for enzymes and assists absorption.
5. Its ability to dissolve substances enables chemicals to mix readily with one another, so that hydrolysis takes place.
6. It is necessary for the removal of waste from the body, e.g. urea is excreted by the kidneys.
7. The body is cooled by perspiration, which takes heat from the skin for evaporation.

#### **Water sources in the body**

1. The main source in the diet is beverages e.g. milk, tea, coffee
2. Water is also obtained from food. Green vegetables and citrus fruits are 90% water. Dried foods, sugar, oils and fats have a low water content, but most dried foods are rehydrated to soak back the amount lost in drying.
3. Water formed within the body e.g. if absorbed nutrients are oxidized within the body to produce energy they are eventually broken down into carbon dioxide and water. i.e. in oxidation of glucose



#### **Properties of water.**

1. Pure water has no colour, taste or smell.
2. The pH value of water is neutral, i.e. it is neither acid nor alkaline.

3. It is very solvent and thus capable of dissolving many substances.
4. It readily absorbs and retains heat.
5. It freezes at 0<sup>0</sup>C and boils at 100<sup>0</sup>C.

**Ways how water is lost from the body.**

- Through diarrhea
- vomiting
- during fever when temperature is high

**How to incorporate water into your diet.**

1. Have a glass of water after waking up in the morning.
2. Drink water with every meal, regardless of other beverages you may be drinking.
3. For every caffeinated beverage you drink, have a glass of water. Caffeine dehydrates and make you excrete more water than you take in.
4. Always have water readily available at the table or your work place
5. At home keep a glass of water near and drink from it often.
6. Drink 250ml of water for every 15 minutes you exercise.

**ROUGHAGES(DIETARY FIBRE OR CELLULOSE)**

Dietary fibre consists of the undigested and unavailable carbohydrates such as cellulose. It is very important for good health.

**Functions of dietary fibre( Roughages)**

1. It absorbs water and makes the residue of foods in the large intestines bulky and soft and is more easily pushed along the intestines by peristalsis.
2. It helps in muscular actions of intestines and prevents constipation.
3. Holds water and give bulk effect.
4. Roughages may also give satiety since it also adds bulk to the food mix. Satiety refers to a feeling of fullness or satisfaction as after a meal or quenching one's thirst.
5. Roughage also help control the amount of food being consumed.

6. Roughage also through fibre tends to check obesity as it increases satiety rate by prolonging chewing and swallowing movements.

7. Reduces hemorrhoids i.e painful swelling and outer growth of the rectum bones resulting in blood loss. It does this by increasing the diameter of the intestinal lumen hence propelling contents more readily.

#### **Deficiency or having insufficient dietary fibre in the diet**

-If there is insufficient dietary fibre to absorb water to make the faeces bulky and soft, the muscles of the colon have to contract more than usual to make the faeces pass a long. This results in the faeces being small, hard and difficult to expel. This causes abdominal discomfort and a feeling of nausea. This condition is known as constipation.

-If constipation is prolonged the inner lining of the colon may become distorted, sometimes inflamed and painful. This condition is known as diverticular disease.

- Haemorrhoids (piles) and hernias. These may be caused by increased effort required to remove hard faeces in constipation sufferers.

So avoid eating refined foods(foods whose high content has been removed during food processing in factories.) these foods include; white flour, white bread, white sugar, white (polished ) rice. Instant puddings and desserts.

#### **Excess of dietary fibre in the diet**

-May cause stomach aches and may deplete certain mineral

-High intake may lead to a condition known as large bowel volvulus.

#### **-The main sources of dietary fibre are**

1. cereal grains especially bran, fruits and vegetables
2. nuts and pulses(bans and peas)
3. apples, pears and potatoes provide useful amounts if eaten with their skins.

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