Water, Vitamins, & Minerals

Intro to Water, Vitamins & Minerals

1. **What is the main function of vitamins and minerals?**

   To regulate **BODY FUNCTIONS**

2. **What foods are many of the vitamins and minerals we need found in?**

   FRUITS AND VEGETABLES

Intro to Water, Vitamins & Minerals

3. **Because different fruits and vegetables have different vitamins and minerals, how can we ensure that we get all the different vitamins and minerals that we need?**

   Eat a **VARIETY** of fruits and vegetables

4. **Which vegetables have the most vitamins and minerals?**

   RED, ORANGE AND DARK GREEN

Intro to Water, Vitamins & Minerals

5. **How many calories are in Water, Vitamins and Minerals?**

ZERO! They may not provide any energy, but they are ESSENTIAL in keeping our bodies running!

Quick Review of Nutrients:

Nutrient	Calories Per Gram
Carbohydrates	4
Lipids	9
Protein	4
Vitamins	0
Minerals	0
Water	0

Vocabulary

1. **Deficiency**: *Not enough of something (shortage)*
2. **Toxicity**: *Too much of something (can become toxic/poisonous)*
3. **Water-Soluble**: *Dissolves in water*
4. **Fat-Soluble**: *Dissolves in fat*
5. **Macro**: *Large / Big amount*
6. **Micro or Trace**: *Small / Tiny amount*
7. **Electrolyte**: *Minerals that help maintain fluid balance in the body*

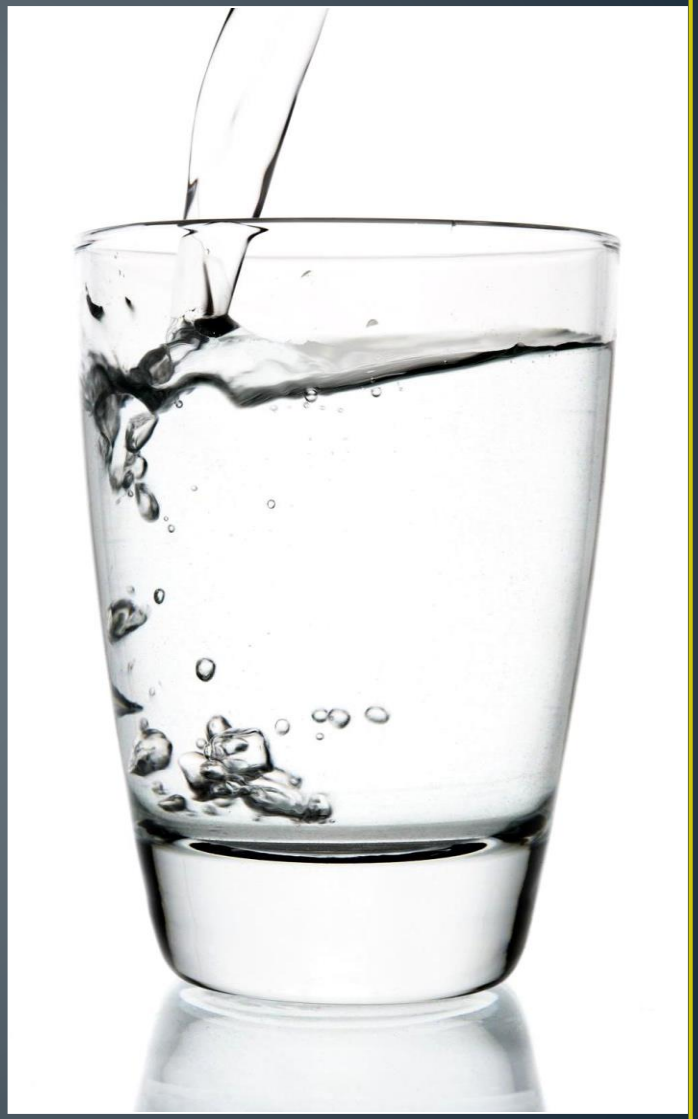
WATER

Functions of Water

1. **Functions of Water:**
    a. Carries water soluble **VITAMINS**
    b. Regulates body **TEMPERATURE** through perspiration
    c. Carries **WASTE** products through and out of the body
    d. Prevents **DEHYDRATION**

2. **How much water should we drink every day?**
    At least **8 CUPS** a day (or **64** fl. oz.)

    *Water is the MOST important nutrient our body needs! If you're thirsty, you're already dehydrated!



Dehydration

1. Dehydration happens when the water in your body drops below the level needed for normal body functions.

2. Common causes of dehydration:
   - -Vomiting or diarrhea
   - -Excessive urinating
   - -Excessive sweating
   - -Fever

3. Signs of dehydration:
   - -Increased thirst
   - -Dry mouth
   - -Swollen tongue
   - -Weakness
   - -Dizziness
   - -Confusion
   - -Sluggishness
   - -Fainting
   - -Inability to sweat
   - -Heart palpitations
   - -Decreased urine output
   - -Dark urine

Are YOU Hydrated?

If your urine matches the colors numbered 1, 2, or 3, you are HYDRATED!

If your urine matches the colors numbered 4 to 8 you are DEHYDRATED and need to drink more fluid!!

FYI: Hyponatremia is over-hydration. Balance in all things

Hydration Before, During and After Physical Fitness

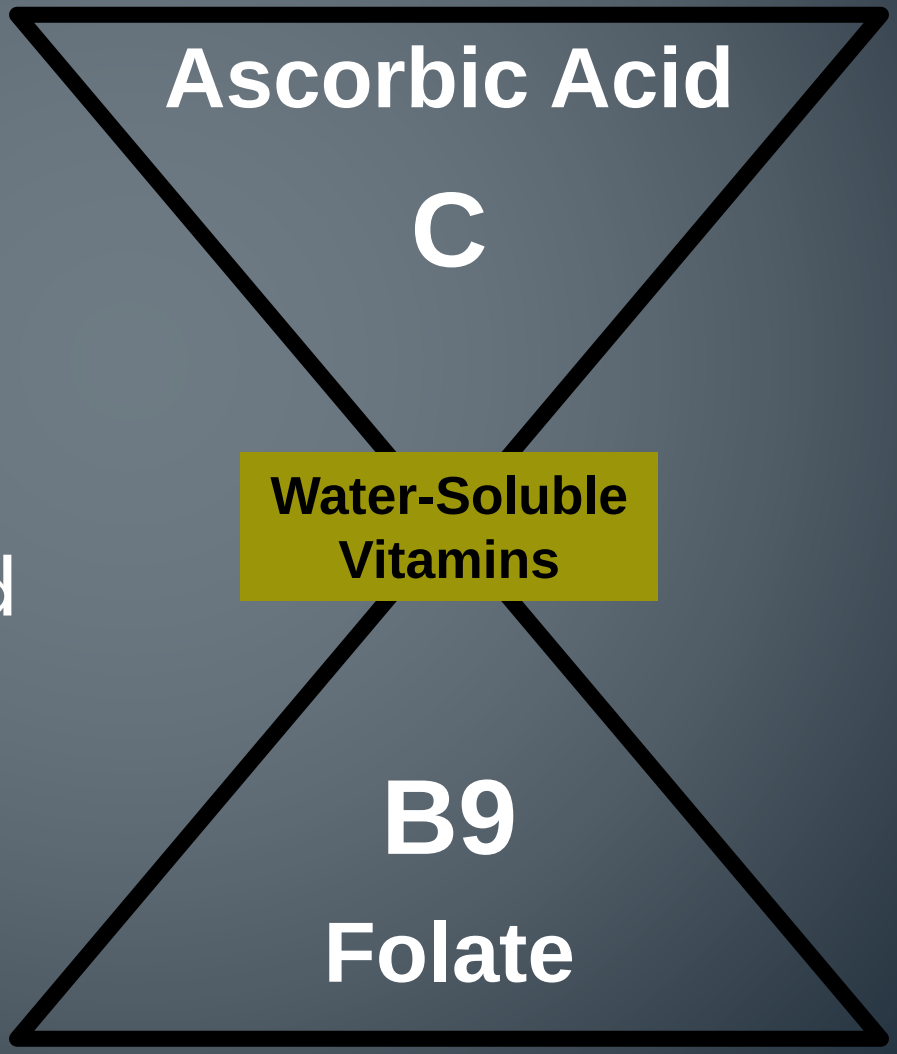
1. For short duration (less than 60 min) **water** is a good choice to drink before, during and after exercise.
2. For moderate to high intensity activities (more than 60 min.), **sports drinks** will help replace carbohydrate loss and electrolyte balance.
3. Drink according to thirst during the day and include fluids with meals.
4. Drink **8-20 oz**. of water an hour before exercise.
5. Continue drinking water during exercise, up to 16-24 oz. of fluid per hour (4-6 oz. every 15 min.).

VITAMINS

How Do Vitamins Work?

Water-Soluble Vitamins

- *Water-soluble* means these vitamins dissolve in *and* are carried by water



Vitamin C (*Ascorbic Acid*)

Function:	**Protects the body against infection**
Food Source:	**Citrus fruits, strawberries, broccoli and tomatoes**
Deficiency:	**Scurvy (Breakdown of collagen, bleeding gums and skin hemorrhages)**
Toxicity:	**Kidney stones, interferes with Vitamin E.**

Scurvy

Swollen and Bleeding Gums

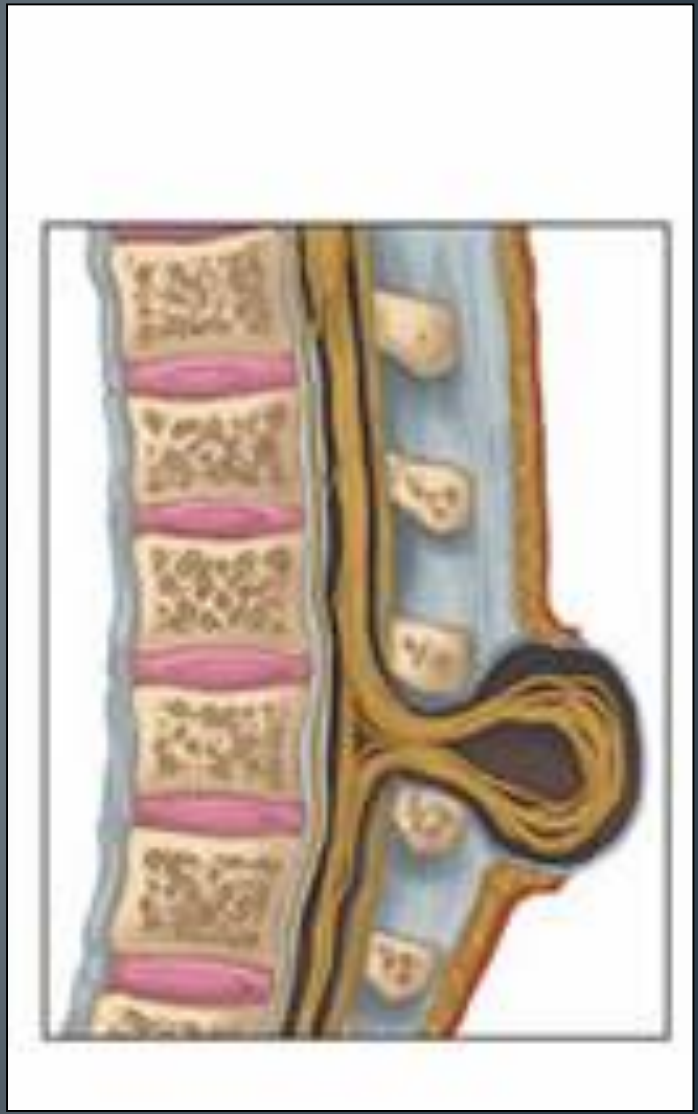
Spots on Skin

B9 (*Folate/Folic Acid*)

Function:	**Helps the body make new cells**
Food Source:	**Dark green leafy vegetables**
Deficiency:	**Spina Bifida** (Neural tube defect that affects the spinal cord during fetal development)
Toxicity:	**Masks B12 Deficiency**

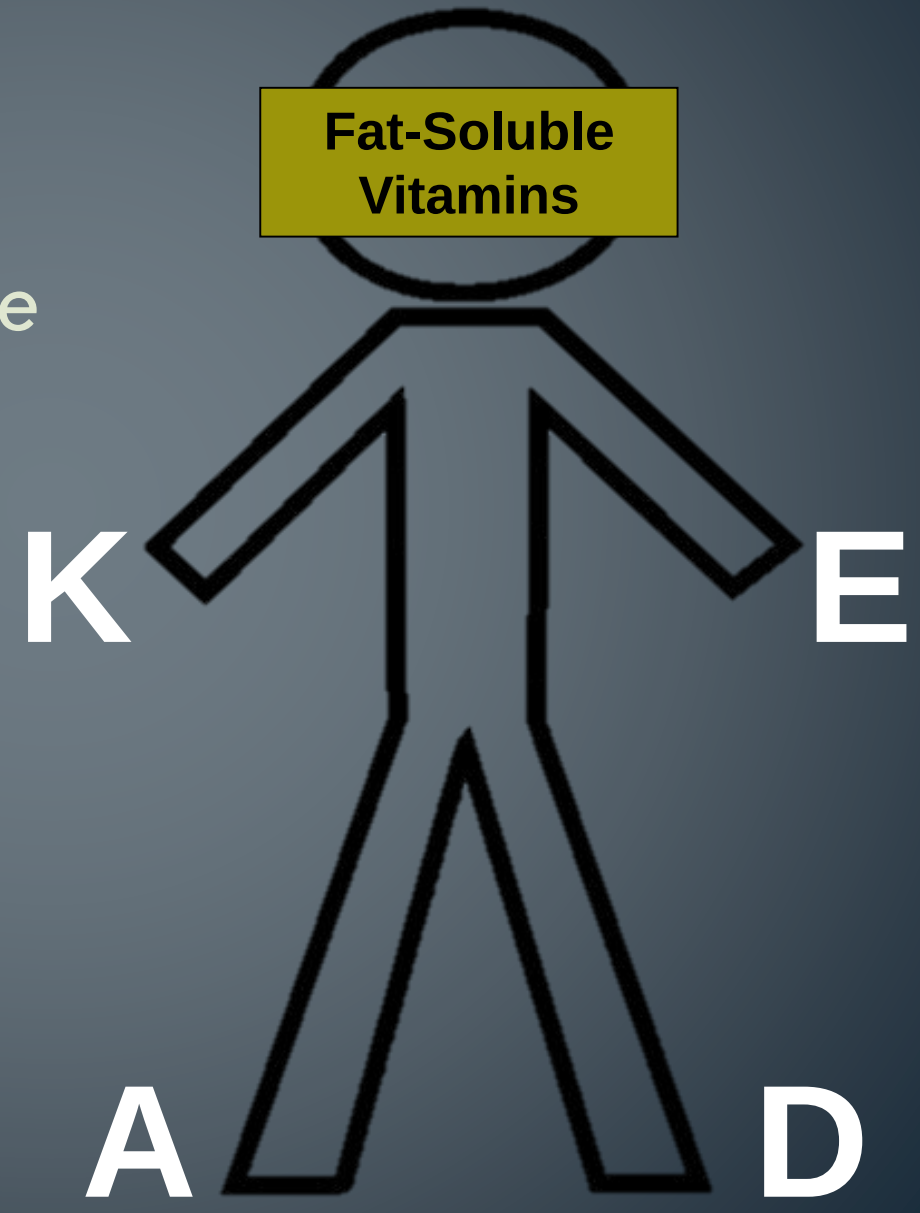
Spina Bifida

The spinal cord begins to develop within the first 28 days of pregnancy. Since folate makes new cells, it is vital that the mother's body already has a supply of folate in her system to prevent this tragic condition.



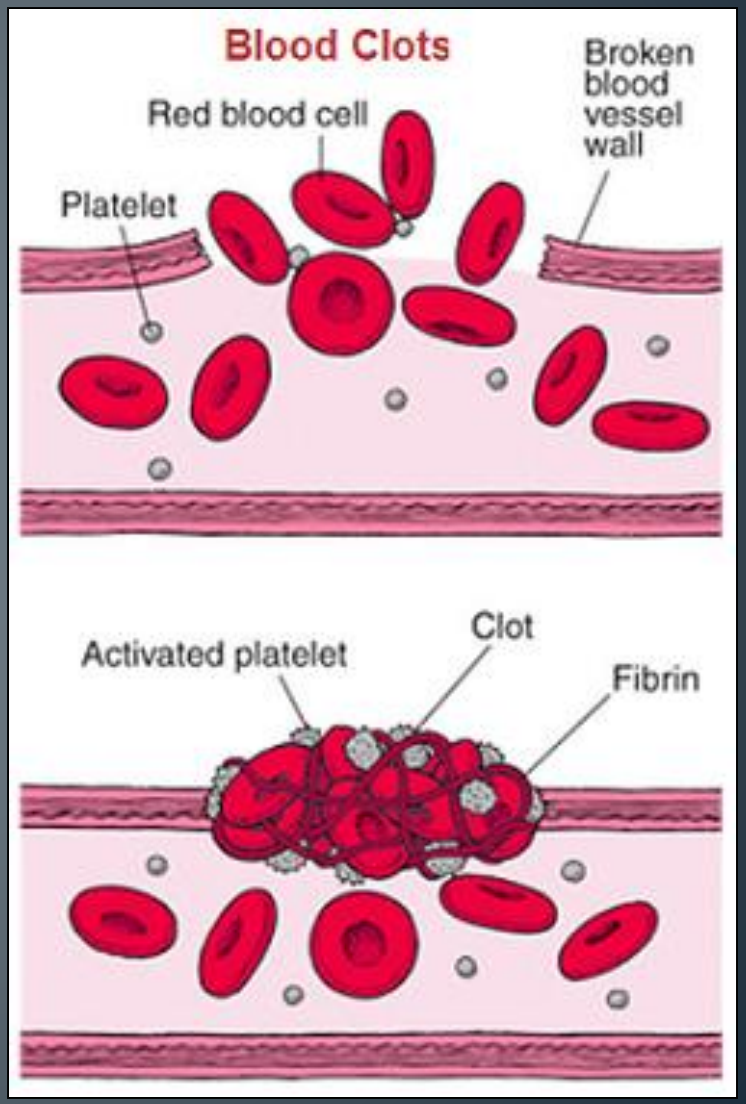
Fat-Soluble Vitamins

- Remember, *fat-soluble* means these vitamins dissolve in *and* are carried by fat
- Remember KADE?...



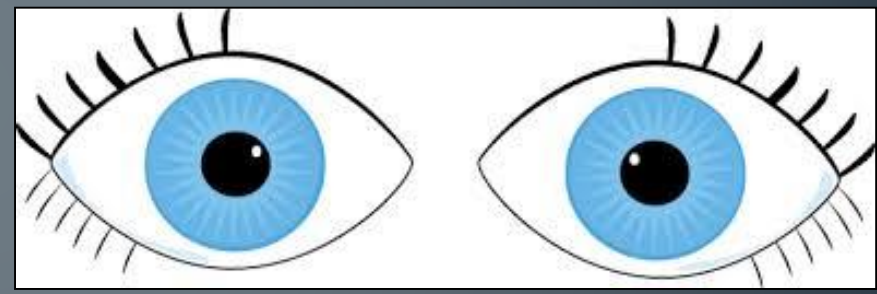
Vitamin K

Function:	**Helps blood clot normally**
Food Source:	**Dark green leafy vegetables** (spinach, kale, collard greens, parsley, etc.)
Deficiency:	**Bleeding and Bruising**
Toxicity:	**Jaundice-breakage of red blood cells**



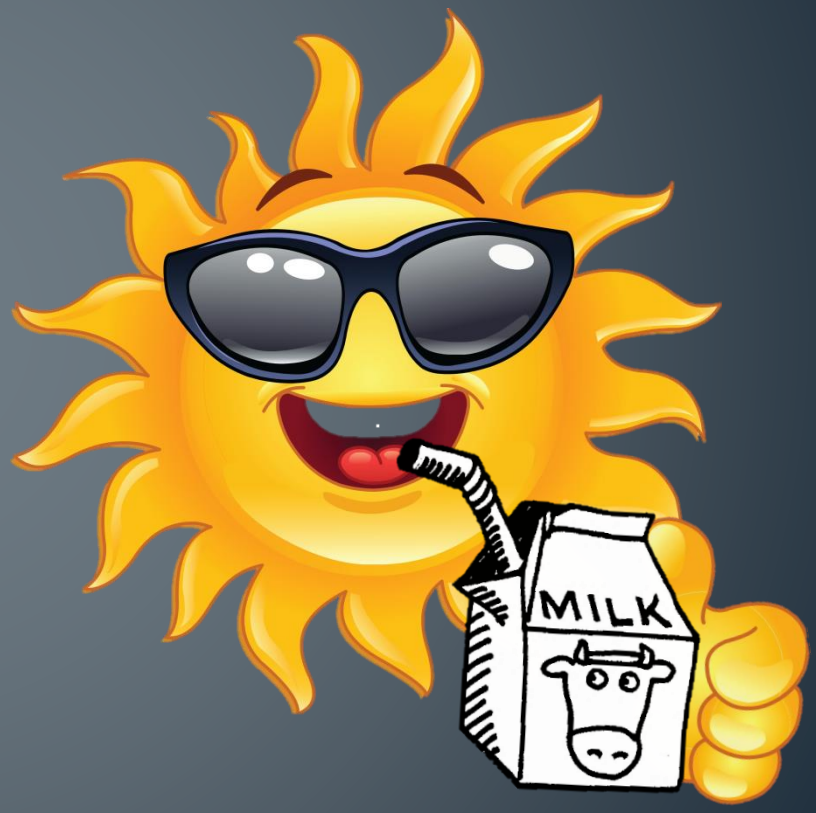
Vitamin A

Function:	**Promotes good vision, hair and skin**
Food Source:	**Red, orange and dark green vegetables**
Deficiency:	**Night Blindness**
Toxicity:	**Loss of appetite, blurred vision, joint pain**



Vitamin D ("The Sunshine Vitamin")

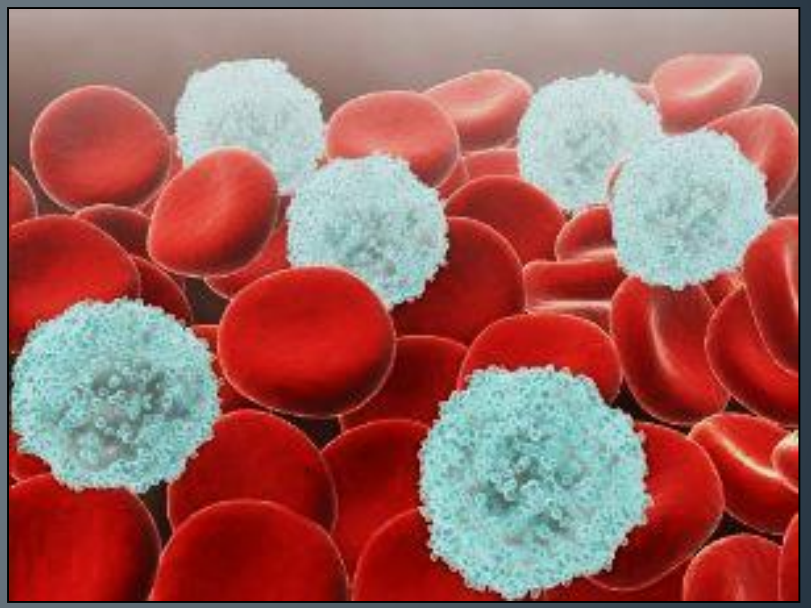
Function:	**Builds and maintains bones and teeth**
Food Source:	**Milk/Dairy Products & Sunlight**
Deficiency:	**Rickets (Bowed Legs)**
Toxicity:	**Nausea and vomiting, kidney damage**



Rickets

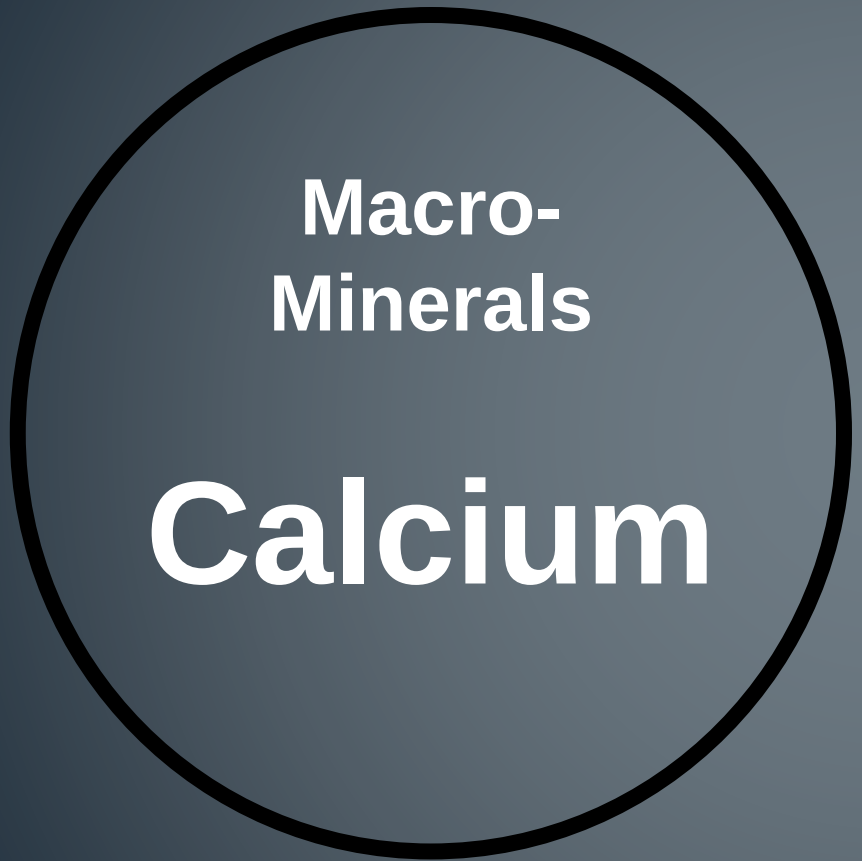
Vitamin E

Function:	**Protects the membranes of white and red blood cells**
Food Source:	**Vegetable Oils, Fruits and Vegetables**
Deficiency:	**Poor nerve connection and neurological problems**
Toxicity:	**Headaches, brain hemorrhages, muscle weakness**



MINERALS

Macro/Micro Minerals



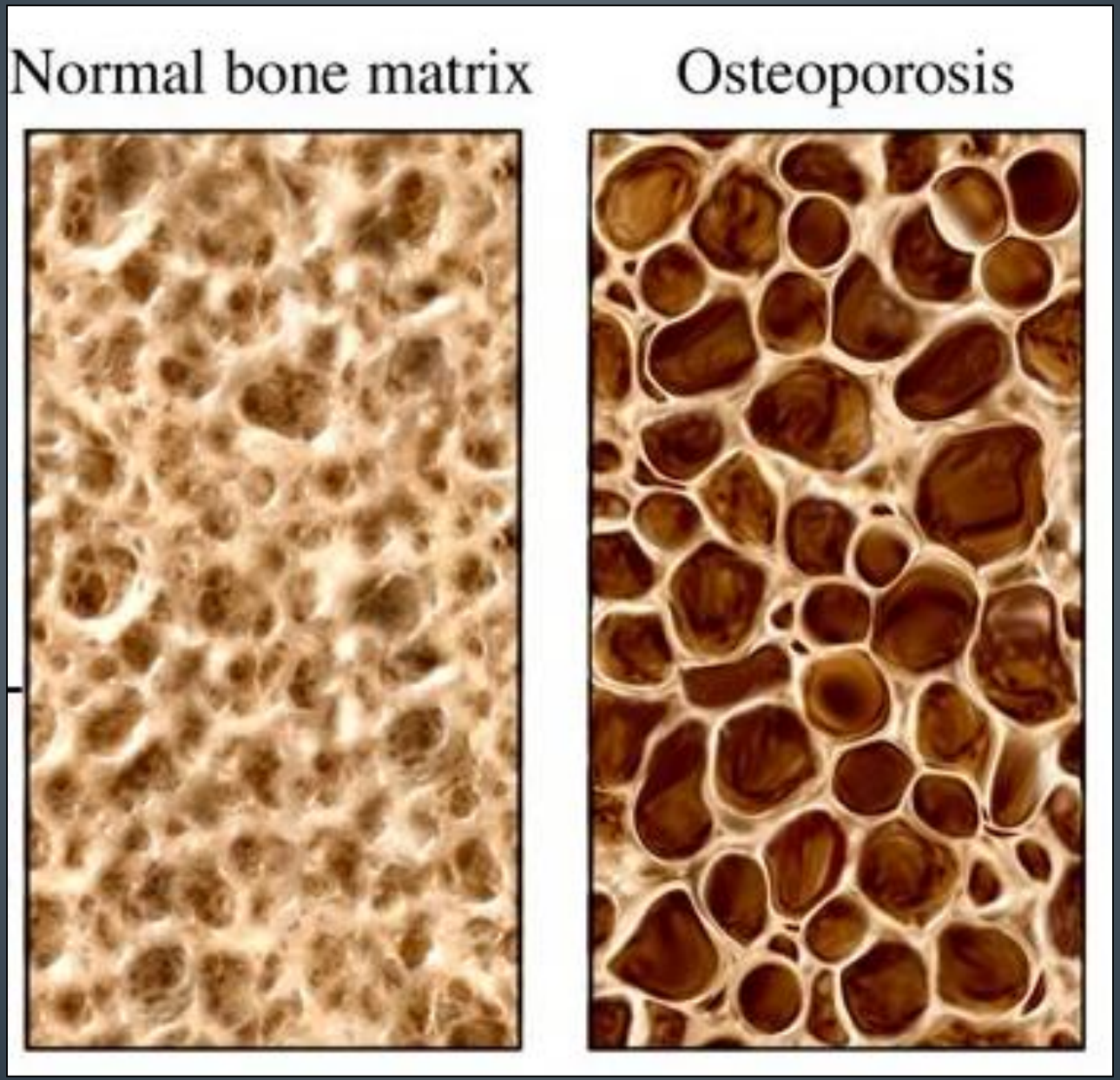
- *Macro* means you need a large amount of these minerals

- *Micro/Trace* means you need a small amount of these minerals

Calcium

Function:	**Strengthens bones and teeth**
Food Source:	**Milk/Dairy Products, Whole Grains, Dark Green Leafy Vegetables**
Deficiency:	**Osteoporosis** (Bones become weak and brittle due to mineral loss)
Toxicity:	**-Kidney stones**

Osteoporosis

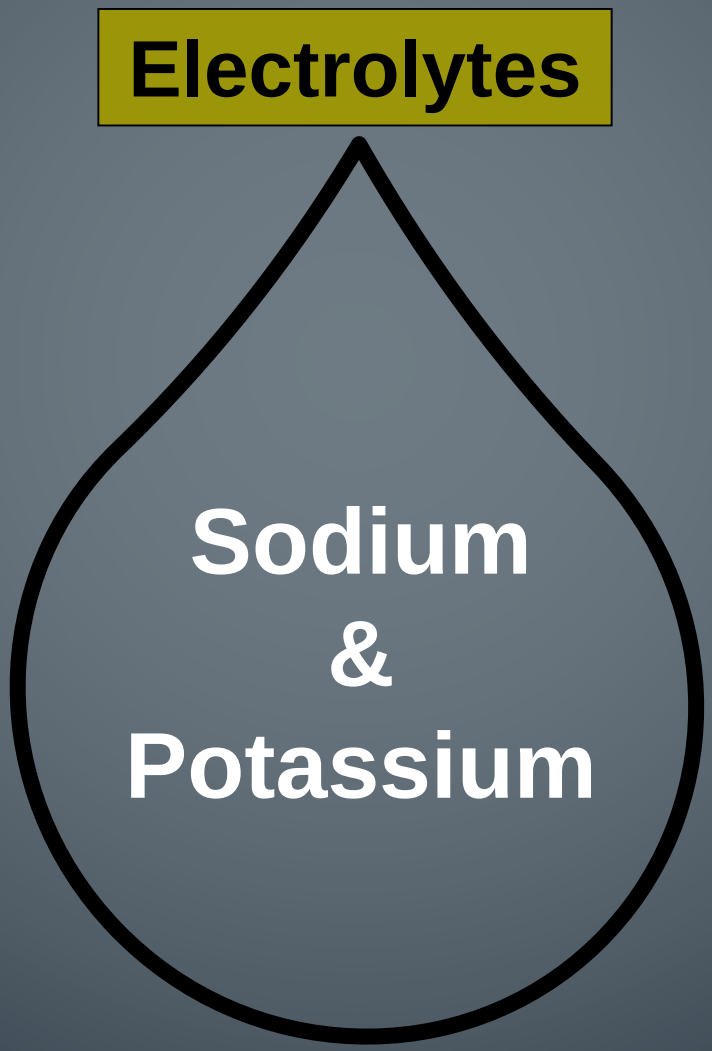


Iron

Function:	**Helps make red blood cells, helps our muscles store and use oxygen**
Food Source:	**Animal products, meat, dark green leafy vegetables**
Deficiency:	**Anemia** (Low red blood cell formation)
Toxicity:	**Heart disease, elevated LDLs**

Electrolytes

- *Electrolytes* helps maintain fluid balance in the body

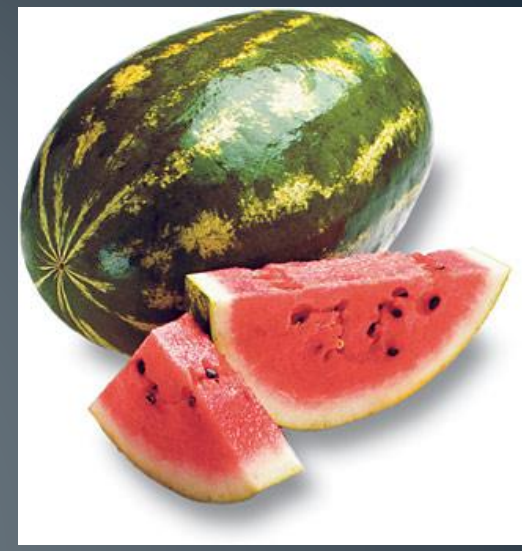


Sodium & Potassium

Function:	**Maintains fluid balance in the body**
Food Source:	**Salt, fruits and vegetables**
Deficiency:	**Muscle cramps, irregular heart beat, seizures**
Toxicity:	**High blood pressure**

Fruits

Nutrition



1. Fruits are 75 – 95% water
2. Low in fat, sodium and protein
3. Excellent source of **fiber** (especially the skins!)
4. Vitamins & Minerals Fruits Provide:
   - Vitamin C (Citrus, melons, strawberries)
   - Vitamin A (Deep yellow and green fruits)
   - Potassium (Bananas, raisins, figs)

Nutrition

5. Choose **whole** or cut up fruits more often than fruit juice.

6. **Air**, **heat** and **water** can destroy nutrients in both fruits and vegetables.

7. Always **wash** fruits and vegetables to remove pesticides that might remain on the skin.

Guidelines for Selecting Fruits and Vegetables

- Firm
- Free From Decay
- Crisp
- Smooth
- Dense
- Free From Bruises
- Good Color
- Good Smell
- In Season (Will Be Cheaper and Higher Quality)

Purchasing and Storing Fruits

- Purchasing
  - Most fruits are sold by weight or by count
  - Fruits are packed in crates, bushels, cases, lugs, or flats
  - Seasonal fruits and vegetables are lower in cost, plentiful and have better quality.
  - They will last about one week in the refrigerator.

1. Storing Fruits In:
   - **Cold (Refrigerator)**
   - **Dry**
   - **Give Them Space**

Ripening

1. Ripening happens when **starches** found in the fruit break down into **sugar**

- This leads to deterioration or spoilage:
  - Color Lightens
  - Texture Softens
  - Decreases in Acidity
  - Increases in Sweetness

Browning

1. **Browning** occurs when the cut surfaces of food reacts with oxygen.

2. This is called **OXIDATION.**

3. To prevent this, cover cut fruits with a liquid containing **Ascorbic Acid,** (Vitamin C).

Vegetables

Nutrition

1. They are low in calories, fat and sodium. They are considered "**Nutrient Dense**".

2. Eat more **red**, **orange** and **dark green** vegetables from the Vegetable Group.

3. Vegetables provide the following Vitamins and Minerals:
   - Vitamin A
   - Vitamin C
   - Vitamin D
   - Potassium
   - Folic Acid
   - Calcium
   - Magnesium

Best Cooking Methods for Preserving Nutrients

1. The two BEST methods are:
   a. **Microwaving**
   b. **Steaming**

- You can also:
  - Bake
  - Stir-Fry
  - Simmer
  - Sauté

or just eat them RAW!

Worst Cooking Methods for Preserving Nutrients

2. The cooking methods that **DESTROY** the most nutrients include:
    a. Boiling
    b. Deep Frying

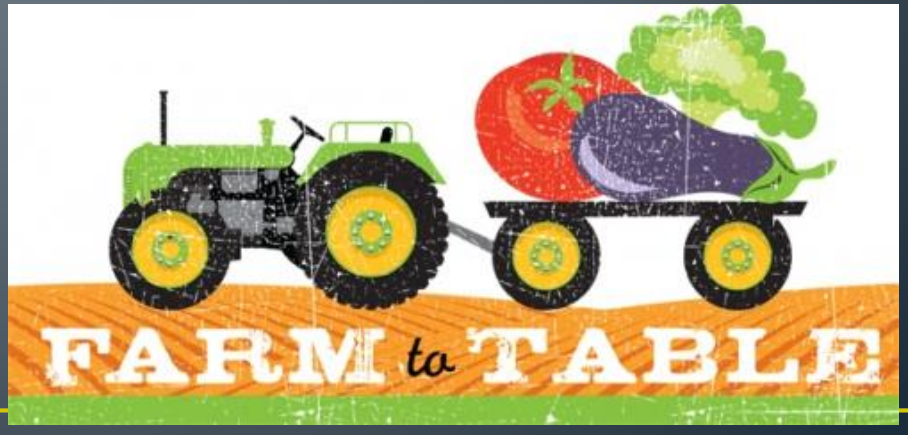
Five Ways to Preserve Nutrients When Cooking Fruits and Vegetables

1. Cook in **larger** pieces
2. Use **small** amounts of water
3. Cook only until "**fork" tender**
4. Cook **quickly**
5. **Save the water** used to cook in for soups and gravies (most nutrients dissolve into the water)

Farm to Table

Food doesn't start at the supermarket!

- **Farm**: use of good agricultural practices
- **Processing**: monitor at critical points
- **Transportation**: use clean vehicles and maintain the cold chain
- **Retail**: follow the food code guidelines
- **Table**: always follow the four C's of safety- clean, cook, control cross-contamination and chill



Farm to Table