

Biochemical Tests

- **Blood urea nitrogen (BUN)**
 - may indicate renal failure, insufficient renal blood supply, or blockage of the urinary tract
- **Serum creatinine**
 - indicates amount of creatinine in blood
 - used to evaluate renal function

Biochemical Tests

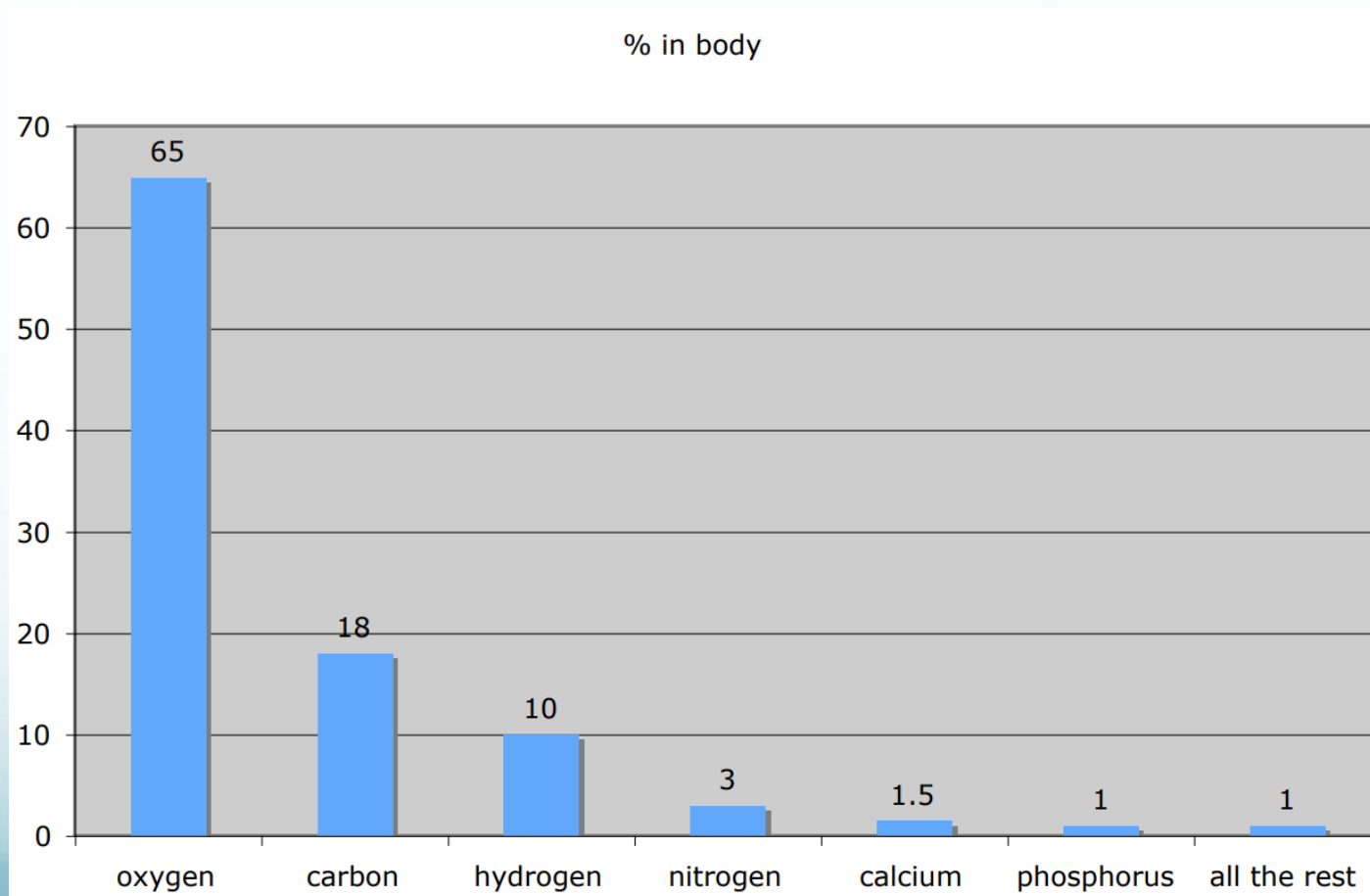
- **Creatinine** excretion
 - indicates amount of creatinine excreted in urine over a 24-hour period
 - used in estimating body muscle mass
 - muscle mass depleted, as in malnutrition; level will be low

Biochemical Tests

- Other tests
 - Hemoglobin (Hgb)
 - Hematocrit (Hct)
 - Red blood cells (RBCs)
 - White blood cells (WBCs)
 - Lipid profile (high & low-density lipoprotein, serum triglycerides)
 - Urinalysis

Elements of Life

- Carbon (C), Oxygen (O), Hydrogen (H), and Nitrogen (N) are the primary elemental ingredients for life.

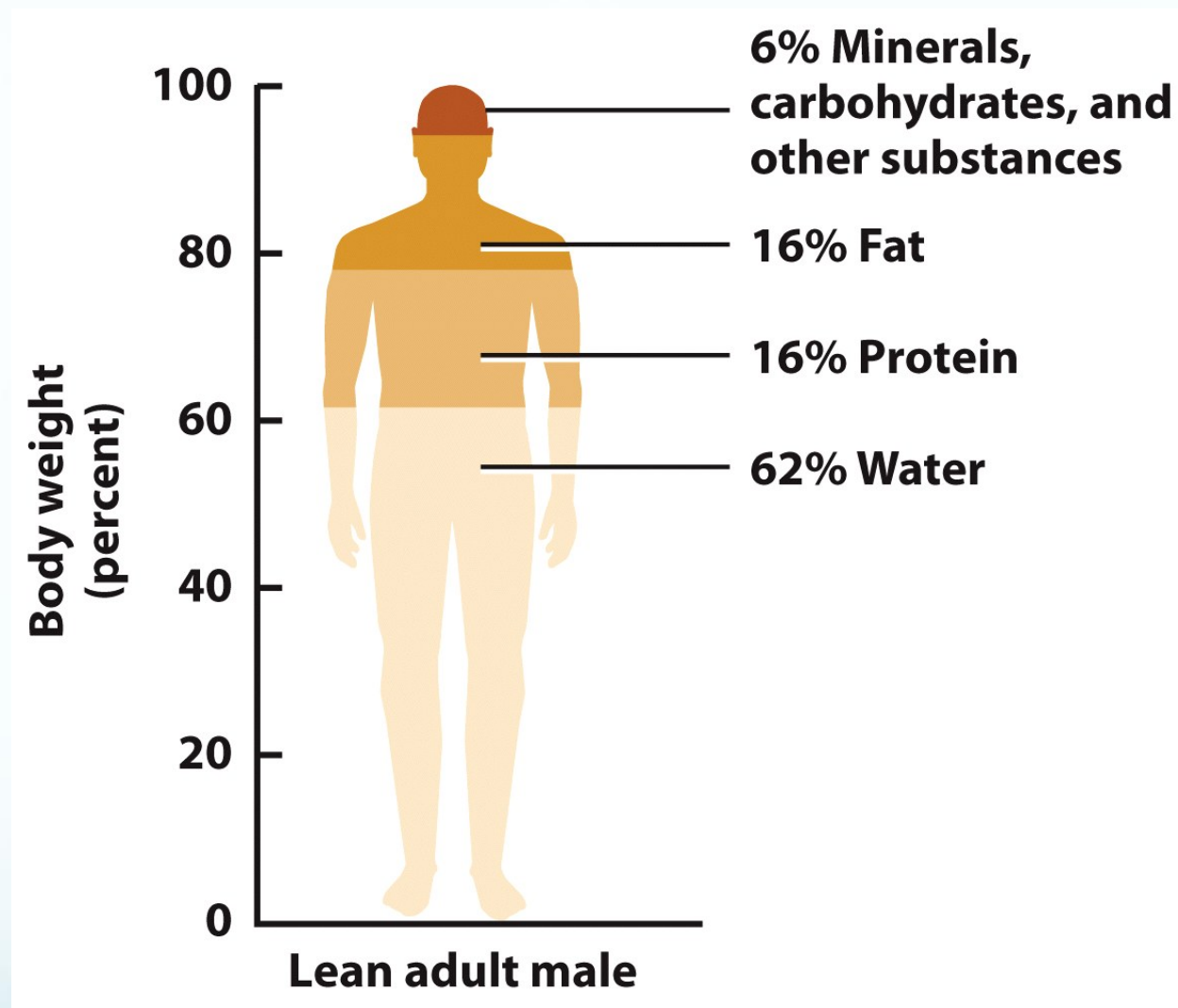


Elements of Life

- Sulfur (S)
- Iron (Fe)
- Sodium (Na)
- Zinc (Zn)
- Chlorine (Cl)
- Magnesium (Mg)
- Silicon (Si)
- Potassium (K)
- Plus the trace elements like chromium (Cr) and molybdenum (Mo)

Water

- Water is the **smallest and simplest** of our food molecules yet is the basis for all life.
- Water is a **major molecule of our bodies** comprising anywhere from 60-75% depending on the specific tissue.



Nutrients:

Provide energy

Form body structure

Regulate physiological processes

Water

- All foods contain **at least some water**
- *Free water*
 - Held inside cells
 - Maintains properties of free water
 - May be removed by pressure
- *Bound water*
 - Is part of molecule structure
 - Reduced mobility
 - Does not retain properties of free water

Water Activity

- More *bound water*, then *less water activity*
- *Water activity*
 - Ratio of the vapor pressure of water in a food at a specified temperature to the vapor pressure of pure water at same temperature
- **Foods more perishable** if higher water activity
 - Microorganisms need water!
 - To **reduce water activity**
 - Dry
 - Freeze
 - Add sugar or salt

Uses of Water in Food Prep

- Universal solvent
- Heat transfer
- Freezing
- Cleansing agent
- Promotion of chemical changes
 - Ionization of salt
 - Baking powder
- Water and pH
- Hydrolysis reactions

Nature of Water

- H_2O
- Two hydrogen atoms bonded with *covalent* bonds to one oxygen atom
- Is dipolar
 - Negative on oxygen side
 - Positive on hydrogen sides
- Hydrogen bonds

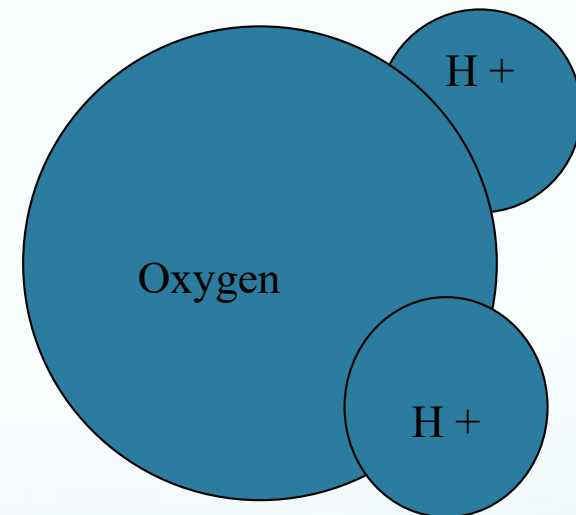


TABLE 35-1**Daily Water Balance in a 65-kg Man Calculated to Illustrate Minimal Required Drinking Water Intake**

<u>Water Intake</u>		<u>Water Loss</u>	
SOURCE	LITERS	ROUTE	LITERS
Preformed water	0.85	Insensible—lungs	0.30
Metabolic water	0.37	Insensible—skin	0.40
Drinking—minimum	0.22	Feces	0.10
		Urine	0.64
Total	1.44	Total	1.44