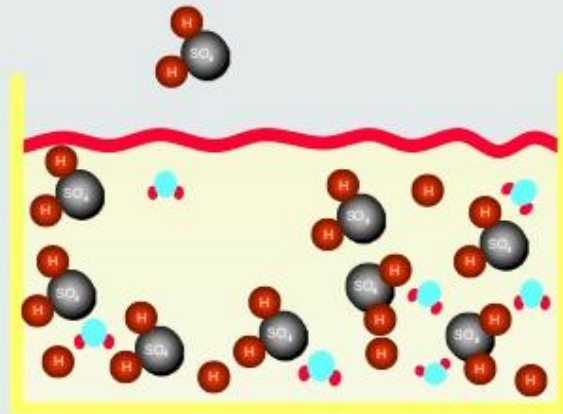


ACIDS

- ❖ Hydrogen containing substances which dissociate in solution to release H^+
- ❖ Any ionic or molecular substance that can act as a proton (H^+) donor.
 - ❖ Strong acid : HCl , H_2SO_4 , H_3PO_4 .
 - ❖ Weak acid : H_2CO_3 , CH_3COOH .



Metabolic Sources of Acids

- **VOLATILE ACIDS (20,000mEq/day):**

- Produced by oxidative metabolism of CHO, Fat, Protein
- Average **15000-20000** mmol of CO₂ per day
- Excreted through **LUNGS** as CO₂ gas

- **FIXED ACIDS (1 mEq/kg/day)**

- Acids that do not leave solution, once produced they remain in body fluids until eliminated by **KIDNEYS**

Eg: Sulfuric acid, Phosphoric acid, Organic acids

- ✓ Are most important fixed acids in the body
- ✓ Are generated during catabolism of:

- ▣ amino acids(oxidation of sulfhydryl groups of cystine, methionine)
- ▣ Phospholipids(hydrolysis)
- ▣ nucleic acids

ACIDS

- *Physiologically important acids include:*

- **Carbonic acid (H₂CO₃)**
- **Phosphoric acid (H₃PO₄)**
- **Pyruvic acid (C₃H₄O₃)**
- **Lactic acid (C₃H₆O₃)**

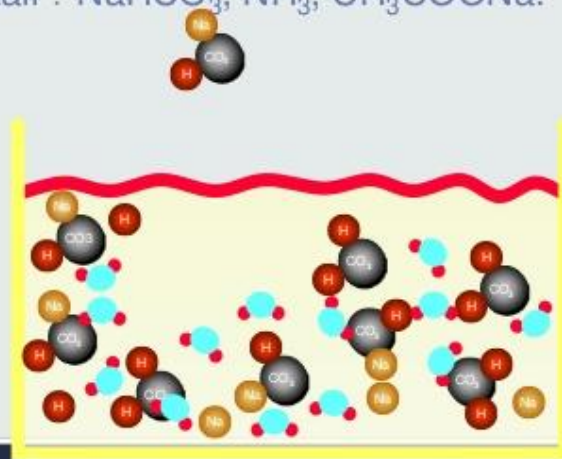
Lactic acid
Pyruvic acid

Phosphoric acid

Bases

➤ Bases can be defined as:

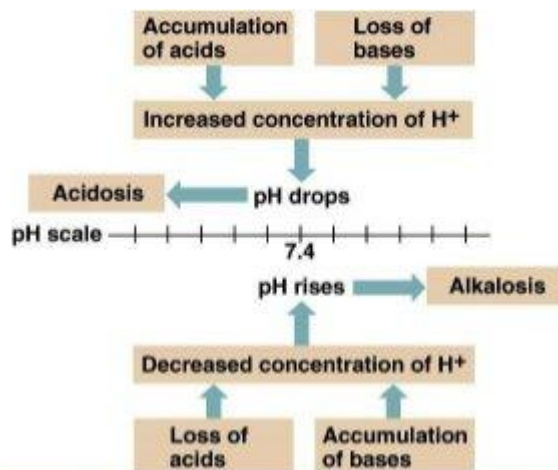
- ♥ A proton (H^+) acceptor
- ♥ Any ionic or molecular substance that can act as a proton acceptor.
 - ♥ Strong alkali : NaOH , KOH .
 - ♥ Weak alkali : NaHCO_3 , NH_3 , CH_3COONa .



Bases

- *Physiologically important bases include:*
 - Bicarbonate (HCO_3^-)
 - Biphosphate (HPO_4^{-2})

Biphosphate



Buffer

- Ability of an acid-base mixture to resist sudden changes in pH is called its buffer.
- Buffer is a solution of weak acid and its corresponding salt.
- Buffer resists a change in pH when a small amount of acid or base is added to it.
- By buffering mechanism a strong acid (or base) is replaced by a weaker one.