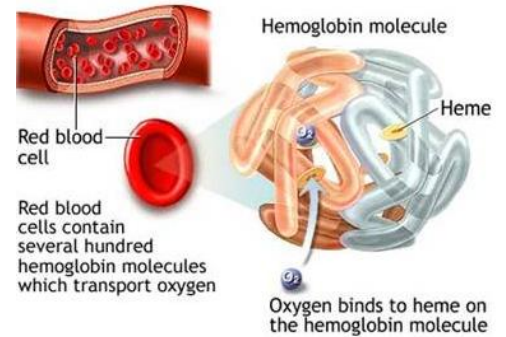


Oxygen and Carbon Dioxide Transport

(Text Pg 124 – 125)

How is oxygen transported in the blood?

- 2% dissolved in plasma
- 90 – 98% bound to hemoglobin (Hgb) = oxy-hemoglobin
- Each Gram of hemoglobin in the blood has the capacity to bind **1.34ml** of O₂
- The average concentration of hemoglobin in the blood is **16 mg/100ml** of blood.

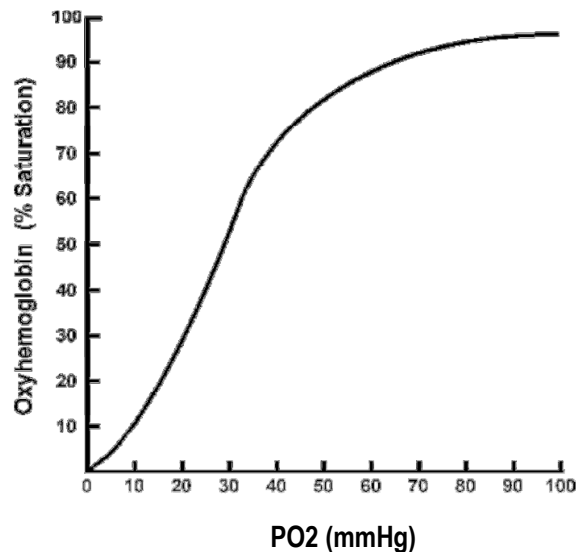


∴ THE AVERAGE O₂ CARRYING CAPACITY IN BLOOD IS 21.4 ML O₂/100ML OF BLOOD.

$$\text{O}_2 \text{ CARRYING CAPACITY} = (\text{HGB}) \times 1.34\text{ML}$$

Oxy-hemoglobin Dissociation Curve:

- The relationship that describes the influence of PO₂ on the saturation of hemoglobin.
 - the lower the PO₂, the less O₂ will bind to hemoglobin.
- PO₂ of 60 mmHg is considered adequate for saturation of Hgb.
 - What is the percentage saturation? _____
- PO₂ < 60 mmHg = large reductions in saturation of Hgb.
 - What is the percentage saturation at a PO₂ of 40? _____



How is Carbon dioxide transported in the blood?

- 1) ~ 5 – 10 % dissolved in the plasma
- 2) 90 – 95% diffuses into the RBC's
 - ~ 20% of which forms carboxy-hemoglobin (only when the O₂ concentration is low)
 - ✓ **At the tissue:** As O₂ leaves CO₂ binds to Hgb
 - ✓ **At the lungs:** New O₂ forces CO₂ off Hgb
 - ~ 70 – 75% as Bicarbonate Ions (HCO₃⁻) (**BICARBONATE BUFFER SYSTEM**)
 - ✓ CO₂ transforms into bicarbonate ions in the RBC's

Carbonic Acid Bicarbonate Buffer System

