

HUMAN ANATOMY & PHYSIOLOGY-II- BP201T**UNIT: 3****CLASS: 4****TOPIC: TRANSPORT OF RESPIRATORY GASES**

Respiration involves inhalation of oxygen and exhalation of carbon di oxide. During respiration O₂ and CO₂ gases are transported by the blood. The oxygen enters the lungs to reach the alveoli. The alveoli and the capillaries lie in close to one another. Both the alveoli and the capillaries are one cell thick. The air and blood barrier is about one micrometre thick. So the oxygen easily pass from alveoli to capillaries to reach the blood. In the same manner carbon di oxide to be exhaled enters the alveoli from the blood. The oxygenated blood travels to heart and distributed throughout the body

EXCHANGE OF GAS/ TRANSPORT OF RESPIRATORY GAS

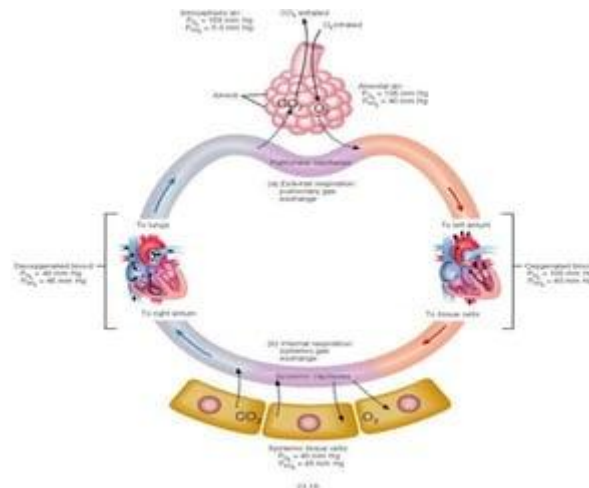
Exchange of gas occurs when a difference in the partial pressure exist across a semipermeable membrane. Gas moves by diffusion from the region of higher concentration to the lower concentration until the equilibrium attained. Diffusion of oxygen and CO₂ depends on the pressure difference.

There are two kind of respiration based in the gas exchange they are

- External respiration • Internal respiration

EXTERNAL RESPIRATION – PULMONARY RESPIRATION

Exchange of gases by diffusion between the alveoli and blood across the respiratory membrane. Each alveolar sac is surrounded by network of capillaries (one cell thick). Pulmonary artery brings venus blood (Impure blood) – contains high level of CO₂ and low level of Oxygen. based on concentration gradient (Partial Pressure) CO₂ diffuse to alveoli until equilibrium attains. By the same O₂ is diffused from alveoli to the blood until equilibrium attains. While passing through the alveoli blood flows slowly – so as to increase the time available for gas exchange. When blood leaves from alveoli the CO₂ and O₂ levels are equilibrium in both capillary and alveoli



INTERNAL RESPIRATION – TISSUE RESPIRATION

Exchange of gases by diffusion between the blood and tissue across the capillary membrane. The blood present in the capillary tube is rich in Oxygen—less in CO_2 level. based on concentration gradient O_2 diffuses to tissue until equilibrium attains. By the same CO_2 is diffused from tissue to the blood until equilibrium attains. While passing through the capillary—blood flows slowly – so as to increase the time available for gas exchange. When blood leaves from tissue the CO_2 and O_2 levels are equilibrium in both capillary and tissue

PARTIAL PRESSURE:

Atmosphere:

PO_2 - 105mm Hg

PCO_2 - 40mm Hg

Left Atrium:

PO_2 - 100mm Hg

PCO_2 - 40mm Hg

Right Atrium:

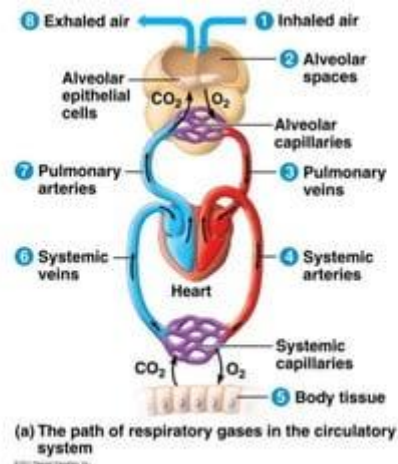
PO_2 - 40mm Hg

PCO_2 - 45mm Hg

Tissue:

PO_2 - 40mm Hg

PCO_2 - 45mm Hg



ARTIFICIAL RESPIRATION: “A method which allows the air to move in and out of the lungs in case of inadequate/ ceased natural breathing”

Different methods: Artificial lung, Pulmotor, Mechanical respirator

Or

Mouth to mouth, Mouth to nose method

RESUSCITATION METHOD:

Manual Methods: • Mouth to mouth respiration • Prone pressure method (by Schafer) • Arm Lift chest Pressure method • Arm lift back pressure method (by Holger – Nielsen) • Tilting/ Eve Rocking Method • Instrumental Method

• Bragg Paul's method • Continuous insufflation method • Tank respirator • Resuscitator