

وَقُلْ رَبِّ زِدْنِي عِلْمًا



RESPIRATORY SYSTEM

HAYAT BATCH



SUBJECT : Biochemistry

LEC NO. : 3

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Respiratory System

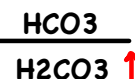
PH of buffers :

- * The dissociation of weak acids is a reversible reaction
- * The relationship between pH , pKa concentration of acid and conjugate base (or salt) is expressed by the **Henderson - Hasselbalch equation**
- * The Second Line of Defense is **respiratory regulation** of PH , This is achieved by changing the pCO₂ or carbonic acid
- * The CO₂ diffuses from the cells into the extracellular fluid and reaches the lungs through the blood
- * Rate of respiration is controlled by chemoreceptors in the respiratory center which are sensitive to changes in the pH of blood
- * ↓ Ph (acidosis) → Respiratory rate is stimulated → **Resulting in hyperventilation** →

Eliminate CO₂ → lowering the H₂CO₃ level

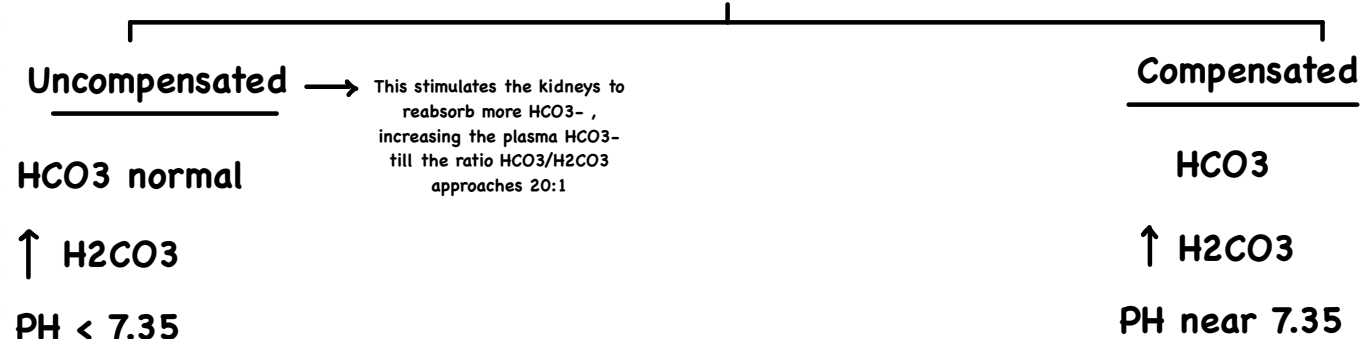
* Acidosis : pH < 7.35

* **Respiratory acidosis** : caused by increased plasma H₂CO₃ due to failure of the lungs to excrete CO₂ at the proper rate as in : **pneumonia** , **emphysema...** and inhibition of the respiratory center as in **morphine poisoning** .



كل ال ratio رح تقل

Respiratory acidosis



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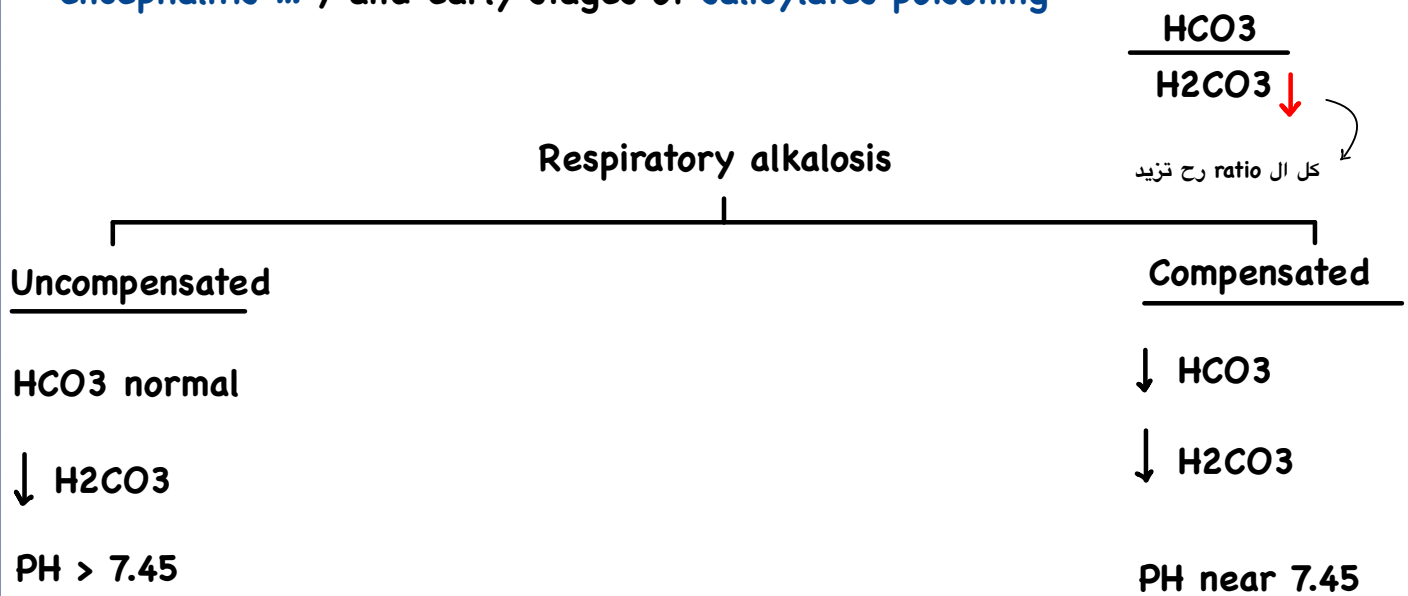


Respiratory System

* Alkalosis : PH > 7.45

results from → the loss of excessive quantities of acids from the body also absorption or formation of bases inside the body

* **Respiratory alkalosis** : caused by decreased plasma H₂CO₃ due to increased loss of CO₂ through the lungs leading to **hyperventilation** as in : **fevers** , **encephalitis** ... , and early stages of **salicylates poisoning**



• في سؤال اعطته الدكتورة واجب و هي الحل :

PH = 7.37
 PCO₂ = 33
 HCO₃ = 17



بما انه ال pH = 7.37 فهو طبيعي بس رايح لل acidotic side
 و ال CO₂ نازل عن ال range الطبيعي و الي هو (45-35) معناته alkalosis
 و ال HCO₃ كمان نازل عن الطبيعي (26-22) معناته compensated
 بس مش respiratory alkalosis لأنه لو كان هيك لازم ال Ph تكون بال alkalotic side

فهاد يعتبر **metabolic alkalosis with full compensation**

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