

The importance of understanding pH scale w.r.t. biological systems

Reference: Bettelheim & March

1. pH of blood normally 7.35 – 7.45
2. If pH drops to < **7.35**, it leads to a condition known as **acidosis**.
3. At **pH > 7.45**, condition is known as **alkalosis**.
4. Both abnormal conditions.
 - Acidosis leads to depression of the acute nervous system
 - Mild case → fainting
 - Severe case → coma
 - Alkalosis leads to over-stimulation of the nervous system, muscle cramps, and convulsions.

If acidosis or alkalosis persists for a sufficient period of time, or if the pH gets too far away from the 7.35 – 7.45 range, the patient dies.

Respiratory acidosis caused by hypoventilation (obstruction breathing, asthma, pneumonia; holding your breath produces mild acidosis

- pH of blood decreases b/c CO₂ is unable to escape fast enough, remains in the blood, and decreases the [HCO₃⁻]/[H₂CO₃] ratio

Respiratory alkalosis ;----hyperventilation; pH increases; rapid breathing, excessive loss of CO₂