




Fermentation

When oxygen is *not present*, glycolysis is followed by a different pathway called **fermentation**.

Fermentation releases energy from food molecules by producing ATP in the absence of oxygen

Anaerobic: does not require oxygen

Fermentation	
inputs	outputs
glucose  ADP + 	2 lactate or 2 alcohol and 2 CO ₂  net

There are two main types of fermentation:

1. **Alcoholic fermentation:**

produces ethanol (alcohol)
and carbon dioxide

- yeast

Glucose → alcohol + CO₂ + ATP



2. **Lactic Acid Fermentation:**

pyruvic acid accumulated in cells
can be converted into lactic acid

- Bacteria, animals

Glucose → lactic acid + ATP



Unicellular organisms also lactic acid as a waste product during fermentation.

