Lactic Acid Fermentation vs. Alcoholic Fermentation

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Lactic Acid Fermentation - General Reaction

- Chemical formula for lactic acid fermentation:
  - $\text{C}_3\text{H}_4\text{O}_3 + \text{C}_{21}\text{H}_{27}\text{N}_7\text{O}_{14}\text{P}_2 \rightarrow \text{C}_3\text{H}_6\text{O}_3 + \text{C}_{21}\text{H}_{27}\text{N}_7\text{O}_{14}\text{P}_2$
  - Pyruvic acid + NADH $\rightarrow$ Lactic acid + NAD$^+$

- In this type of fermentation, 2 ATP molecules are used and 2 are produced.
Lactic Acid Fermentation - Organisms capable of doing it

- **Lactic acid fermentation** is a biological process by which glucose and other six-carbon sugars (also, disaccharides of six-carbon sugars, e.g. sucrose or lactose) are converted into cellular energy and the metabolite lactate.

- There are several uses of this type of fermentation, one of them to produce bacteria and another use to make yogurt.

- Organisms capable of doing it:
  - Any organism with muscle cells (humans, tigers, gorillas, etc)
Lactic Acid Fermentation - Location

- It occurs in the cytoplasm. Considering it is an anaerobic reaction, it does not require oxygen.
Alcoholic Fermentation - General Reaction

- Chemical formula for lactic acid fermentation:
  - \[ C_3H_4O_3 + C_{21}H_{27}N_7O_{14}P_2 \rightarrow \text{Alcohol} + C_{21}H_{27}N_7O_{14}P_2 \]
  - Pyruvic acid + NADH → Alcohol + Carbon Dioxide + NAD$^+$

- In this type of fermentation, 2 ATP molecules are used and 2 are produced.
Alcohol Fermentation - Organisms capable of doing it

- Ethanol fermentation, also called alcoholic fermentation, is a biological process which converts sugars such as glucose, fructose, and sucrose into cellular energy, producing ethanol and carbon dioxide as a side-effect.
- There are several uses of this type of fermentation, one of them to make beer, wine, and bread.
- Organisms capable of doing it:
  - Yeast
Alcoholic Fermentation - Location

- It occurs in the cytoplasm. Considering it is an anaerobic reaction, it does not require oxygen.