Source of Metabolic Energy

1.Fermentation:

Fermentation is characterized by substrate phosphorylation (an enzymatic process in which a pyrophosphate bond is donated directly to ADP by a phosphorylated metabolic intermediate (such as glucose, lactose or arginine). The formation of ATP in fermentation is not coupled to the transfer of electrons. For example, the fermentation of glucose ($C_6H_{12}O_6$) yields a net gain of two pyrophosphate bonds in ATP & produces two molecules of lactic acid ($C_3H_6O_3$).

Without oxygen, pyruvate (pyruvic acid) is not metabolized by cellular respiration but undergoes a process of fermentation. The pyruvate is not transported into the mitochondrion, but remains in the cytoplasm, where it is converted to waste products that may be removed from the cell. This serves the purpose of oxidizing the electron carriers so that they can perform glycolysis again and removing the excess pyruvate.