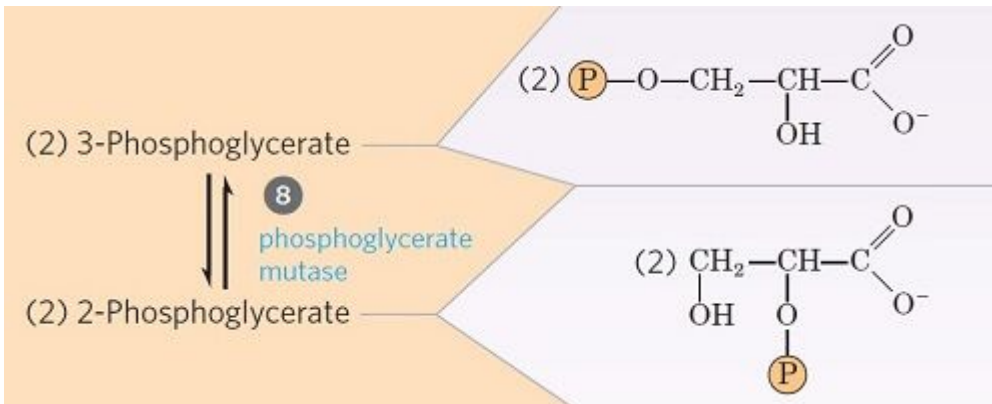


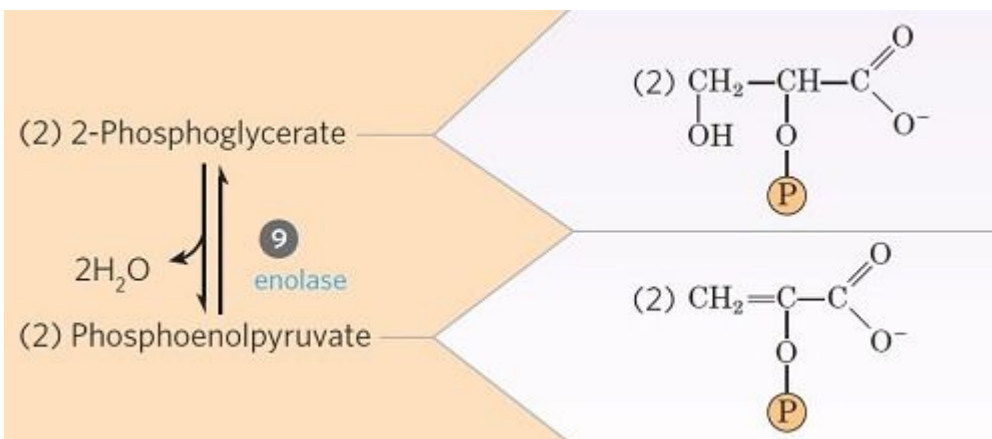
- Since two moles of 1, 3-bisphosphoglycerate are formed from one mole of glucose, two ATPs are generated in this step.

Step 8- Isomerization of 3-phosphoglycerate



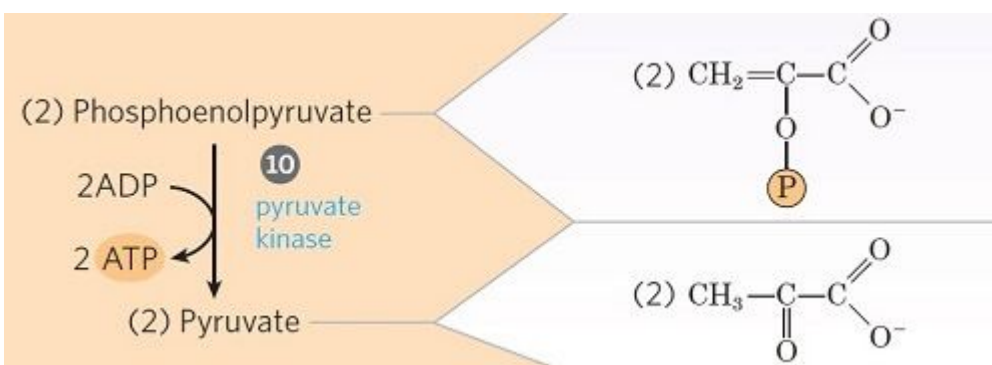
- The 3-phosphoglycerate is converted into 2-phosphoglycerate due to the shift of phosphoryl group from C3 to C2, by the enzyme phosphoglycerate mutase.
- This is a reversible isomerization reaction.

Step 9- Dehydration 2-phosphoglycerate



- In this step, the 2-phosphoglycerate is dehydrated by the action of enolase (phosphopyruvate hydratase) to phosphoenolpyruvate.
- This is also an irreversible reaction where two moles of water are lost

Step 10- Transfer of phosphate from phosphoenolpyruvate



- This is the second energy-generating step of glycolysis.
- Phosphoenolpyruvate is converted into an enol form of pyruvate by the enzyme pyruvate kinase.
- The enol pyruvate, however, rearranges rapidly and non-enzymatically to yield the keto form of pyruvate (i.e. ketopyruvate). The keto form predominates at pH 7.0.
- The enzyme catalyzes the transfer of a phosphoryl group from phosphoenolpyruvate to ADP, thus forming ATP.

The overall process of glycolysis results in the following events:

1. Glucose is oxidized into pyruvate.
2. NAD^+ is reduced to NADH.
3. ADP is phosphorylated into ATP.