

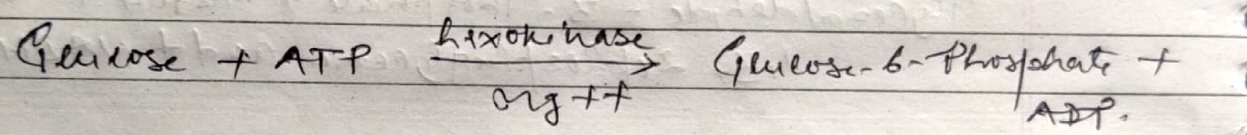
Glycolysis

It's Anaerobic breakdown of 6-carbon chain glucose in to two 3 carbon chain pyruvic acid in cytoplasm.

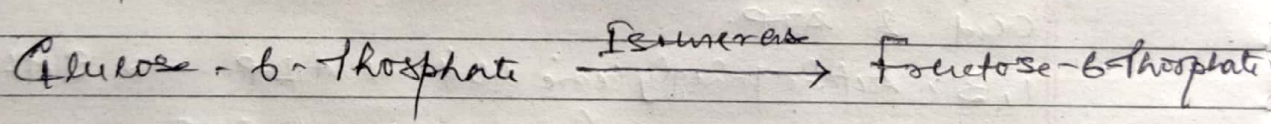
- It completes in various steps, worked out by Embden & Meyerhof, hence also known as "Embden - Meyerhof Pathway".

- The overall reactions are as follows.

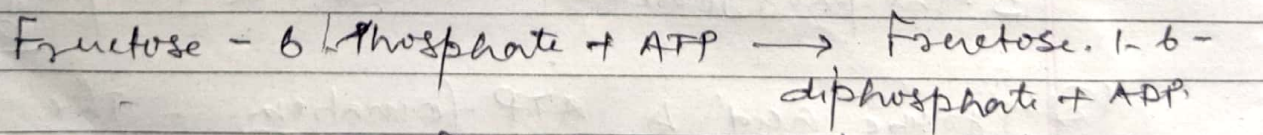
① Phosphorylation: Glucose is phosphorylated by ATP to form Glucose-6-phosphate. The enzyme is Hexokinase (or Glucokinase) & it requires Mg⁺⁺.



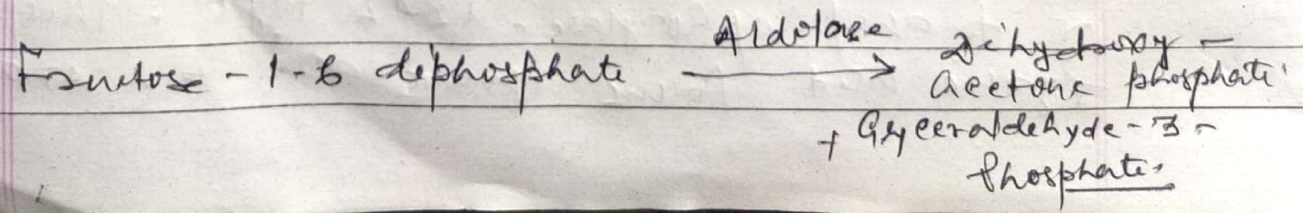
② Isomerisation - Glucose-6-phosphate is isomerised by to form Fructose-6-phosphate. Enzyme is Phosphoglucose isomerase.



③ Phosphorylation - Fructose-6-phosphate is phospho-related with ATP, in presence of Phosphofructokinase & Mg⁺⁺.



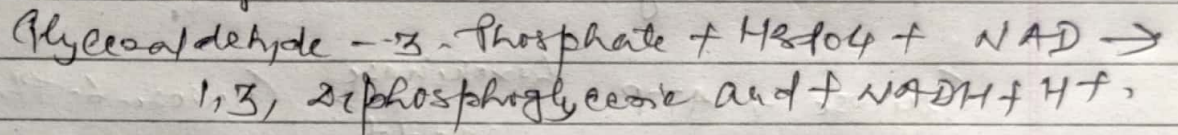
④ cleavage: Fructose-1,6 diphosphate is cleaved in to two Trioses / or 3-carbon chains by Aldolase enzyme.



Dehydroxyacetone phosphate is immediately iso-
-merised in to Glyceraldehyde-3-phosphate by
triosephosphate isomerase.

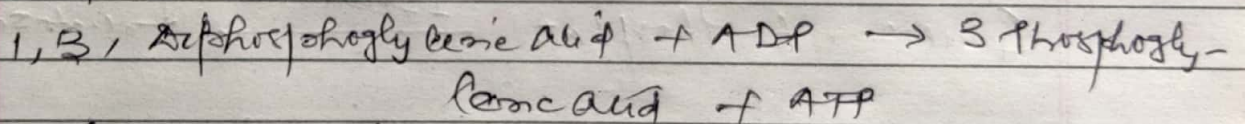
Dehydroxyacetone phosphate $\xrightarrow{\text{Isomerase}}$ Glyceraldehyde 3-
phosphate
Thus, there's net production of two
- molecules of Glyceraldehyde-3-phosphate.

(5) Oxidation - Glyceraldehyde-3-phosphate is
oxidised in to 1,3, 2-phosphoglyceric acid. It
Occurs in presence of NAD, Inorganic phosphate
& dehydrogenase.

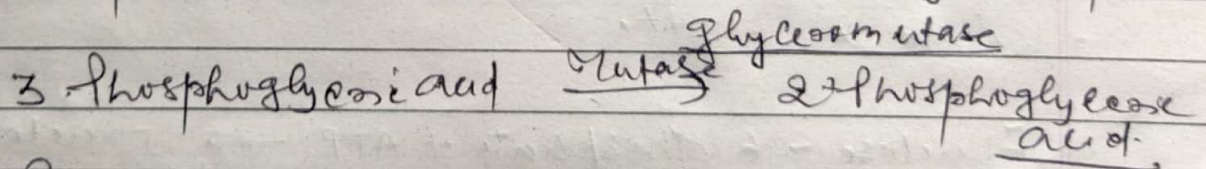


(6) Transphosphorylation + ATP formation.

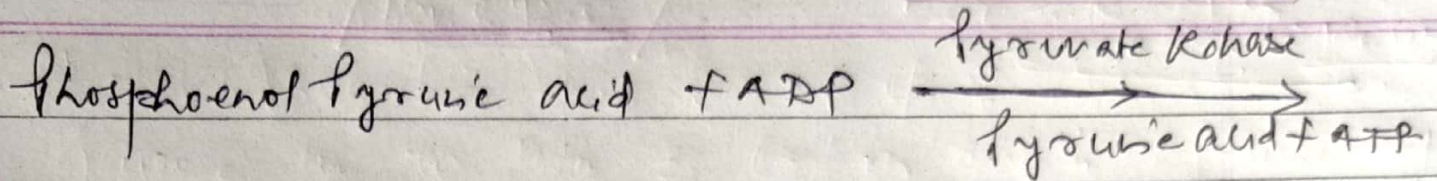
In presence of Transphosphorylase ADP & Mg⁺⁺
1,3 2-phosphoglyceric acid forms 3-phosphoglyceric
acid & ATP.



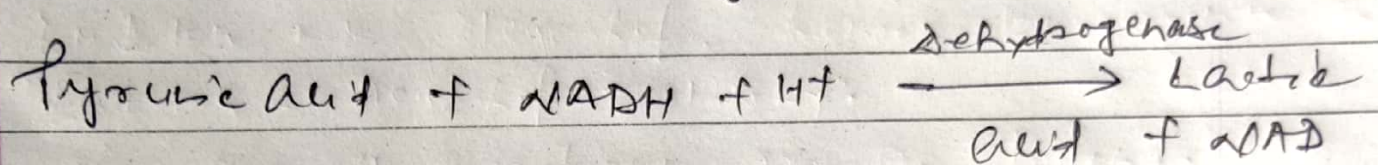
(7) Conversion of 3-phosphoglyceric acid into 2-phosphoglyceric acid. It's catalysed by phospho-
glyceromutase



(8) Pyruvic acid & ATP formation - The
2-phosphoglyceric acid undergoes dehydration
by Pholase to form Phosphoenol pyruvic acid
In presence of Pyruvate kinase / H_2O ,
or transphosphorylase, ADP & Mg⁺⁺. Phosphoenol-
pyruvic acid forms pyruvic acid + 2 ATP.



In absence of O_2 , Pyruvic acid is converted into lactic acid by Lactic dehydrogenase.



In presence of O_2 gas - Pyruvic acid is converted into Acetyl. Co.A. which enters into Krebs cycle.