

Introduction : →

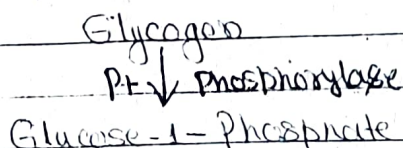
The process of glycolysis has been worked out by three German Biochemists, Embden, Meyerhof and Parinas (1923) & therefore, known as Embden-Meyerhof Parinas Pathways after the name of its discoverers.

In the process of glycolysis (Gr. Glykys - Sweet, Lysis - destroy), the 6 carbon chain glucose or glycogen is hydrolysed into two molecules of 3 carbon chain pyruvic acid molecules.

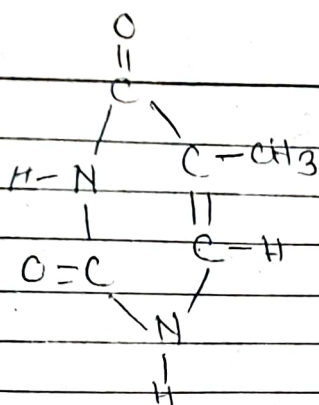
The process of glycolysis takes place in the cytoplasm and it does not require any amount of oxygen, hence it is also known as Anaerobic respiration.

Starting from Glycogen : →

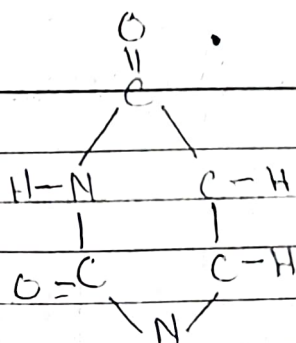
- A. Glycogen in presence of phosphorylase enzyme converted into Glucose-1-Phosphate. This process is known as Phosphorylysis. The enzyme phosphorylase was first prepared from Rabbit muscle in the year 1943. Its molecular weight is 50,000.



- B. Glucose-1-Phosphate converted into Glucose-6-Phosphate in presence of enzyme Phospho-Gluco-mutase. Leloir showed that Phospho-Glucomutase + glucose-1-6 diphosphate as a co-factor which is derived from Glucose-1-Phosphate by a Kinase. This co-factor is found in all tissues.



Thymine



Uracil

The following histochemical methods are generally used for the demonstration of Nucleic acids.

1. Fuelgen method for DNA
2. Methylene green - Pyronin method for DNA & RNA
3. Gallocyanin-Chromalum method for RNA & DNA
4. NAH (Naphthol acid Hydrazide) Fuelgen method for DNA
5. Acridine orange method for RNA & DNA
6. Deoxyribonuclease extraction for DNA
7. Ribonuclease extraction for RNA

✓ [1] THE FUELGEN METHOD FOR DNA:- (Fuelgen Schiff's rxn)

The technique first introduced by "Fuelgen" and "Rosenbeck" (1924) is considered to be specific for DNA. It is the most reliable method available for the demonstration of DNA.

MECHANISM:-

- ① It depends on the treatment of fixed tissues @ mild (acid) hydrolysis (e.g. HCl at 60°C) which "Fuelgen" showed.
- ② It ~~reveals~~ ^{unveils} aldehyde groups ⁱⁿ the deoxyribose sugar of DNA.
- ③ The tissues are washed and ^{transformed} to a solⁿ of Schiff's reagent.
- ④ The chemical explanation of rxn was proposed by "Stacey et al" (1946).

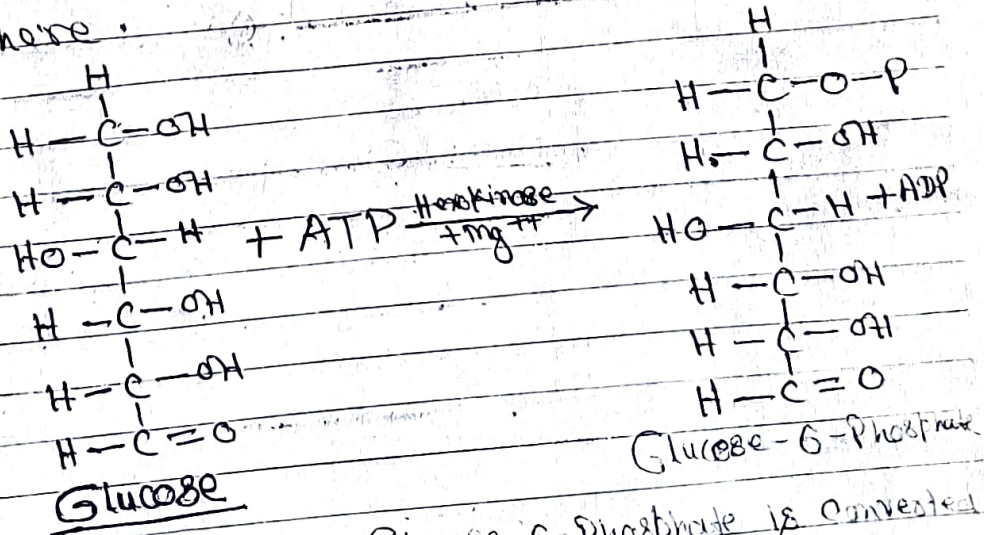
Glucose-1-Phosphate

Mg^{++} ↓ Phosphoglucomutase
Glucose-6-Phosphate

Phases of Glycolysis : $\rightarrow$ Glycolysis is divided into two phases : —

[A] Preparatory Phase : $\rightarrow$ In this phase glucose is broken & low energy phosphate bond is formed & loss the energy. It is divided into four stages : $\rightarrow$

[I] Phosphorylation : $\rightarrow$ Glucose, in presence of enzyme Hexokinase and Mg^{++} converted into Glucose-6-Phosphate. ATP is required here.



[II] Isomerisation : $\rightarrow$ Glucose-6-Phosphate is converted into Fructose-6-Phosphate in the presence of enzyme phosphoglucose isomerase. No co-factor is required here.

