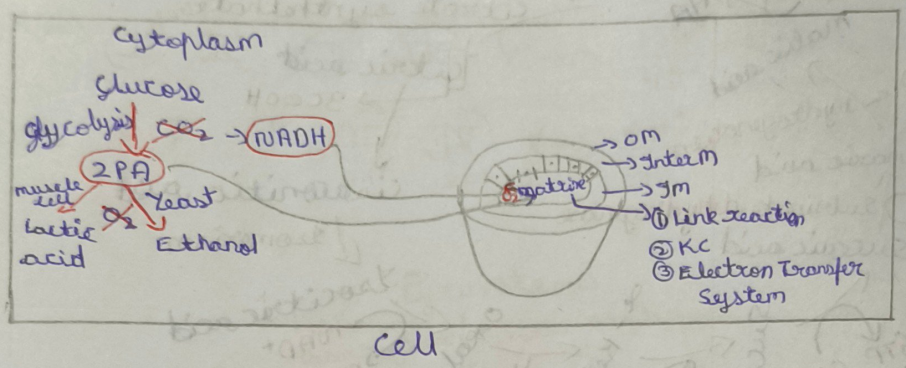
Lesson-09

Respiration In Plants

- The cell take up the O_2 and oxidise the food to give energy (ATP) is called respiration
- Cellular respiration
- Respiratory substrate
- The organism which can only live in presence of O_2 is obligate (compulsory) aerobes
- The organism which can survive without oxygen is called o anaerobes
- Facultative (optional)



Cell

Glycolysis

Glucose breaking

- The breaking of glucose in cytoplasm in the absence of O_2

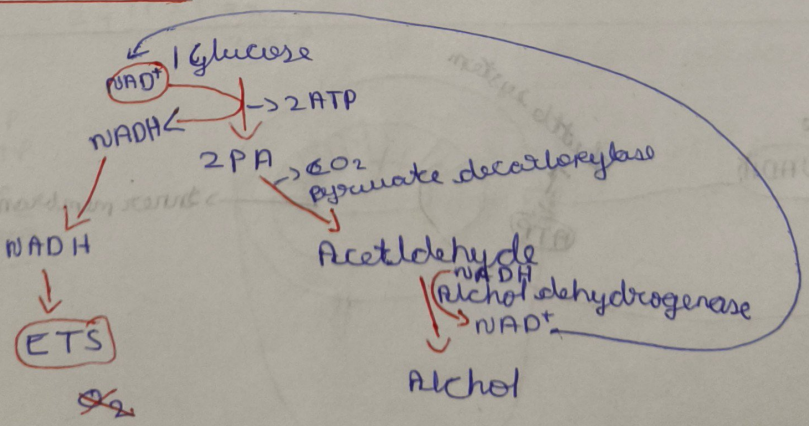
Glucose (6C)

Step 1
Step 2
Step 3
Step 4

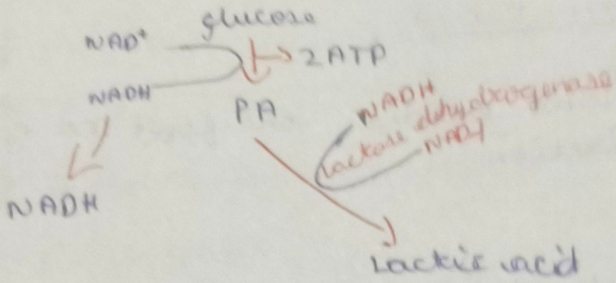
Total 8 ATP are released during glycolysis
Total 4 ATP are directly released.

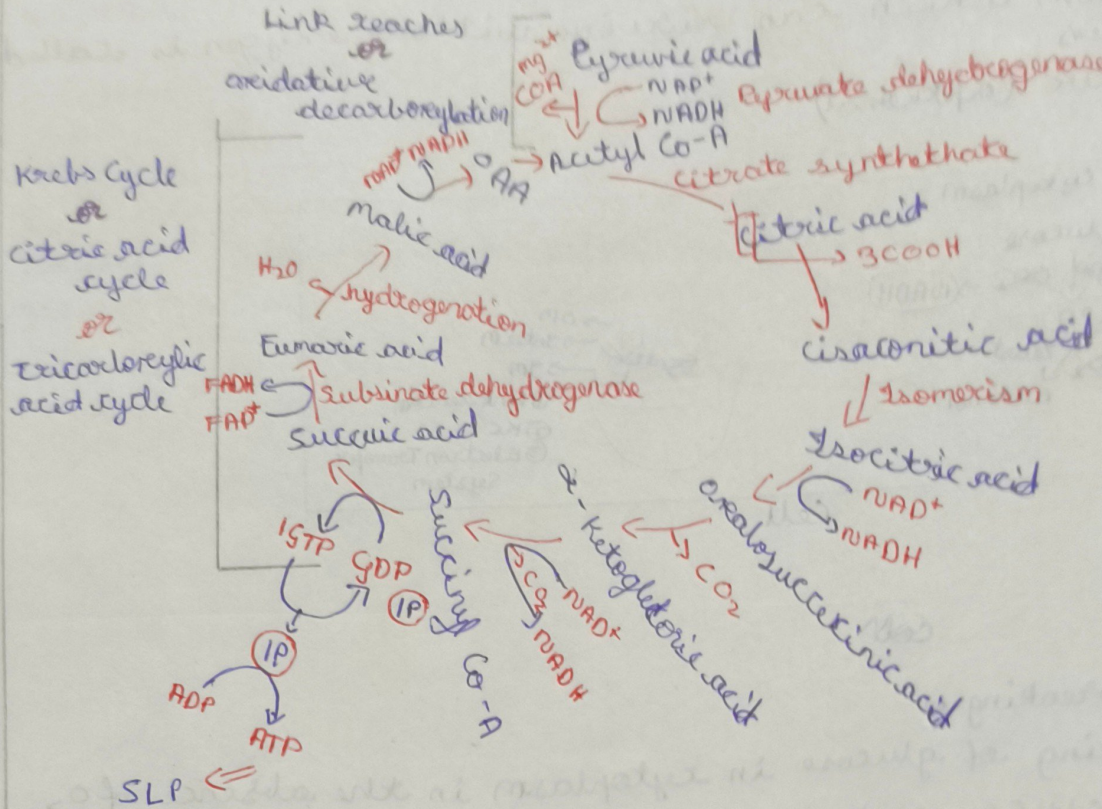
- Anaerobic respiration is also called fermentation.
- Anaerobic Respiration
- It is of 2 types :-

i Alcholic fermentation :-



ii Lactic acid :-

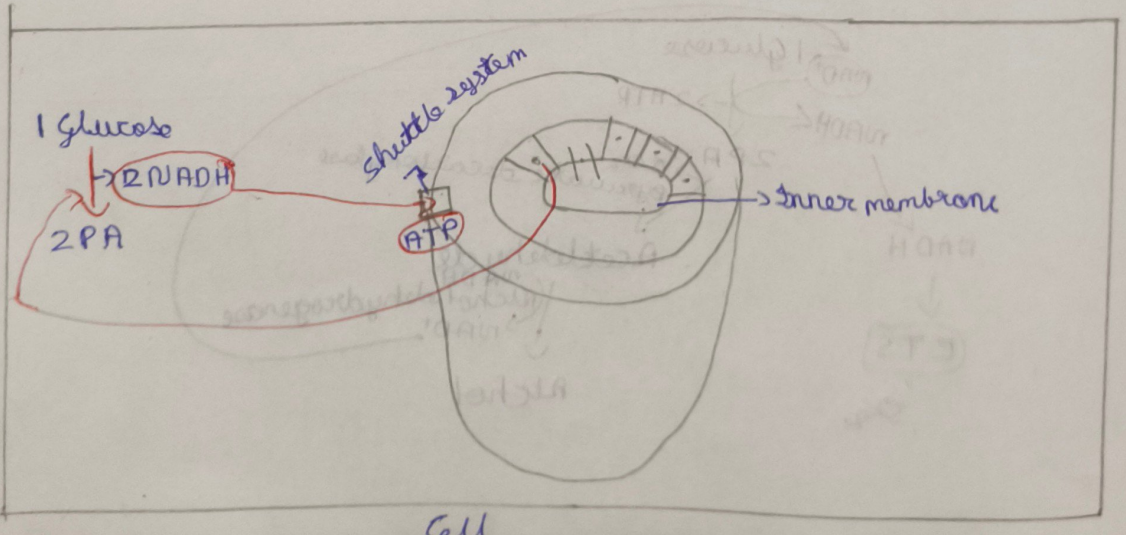


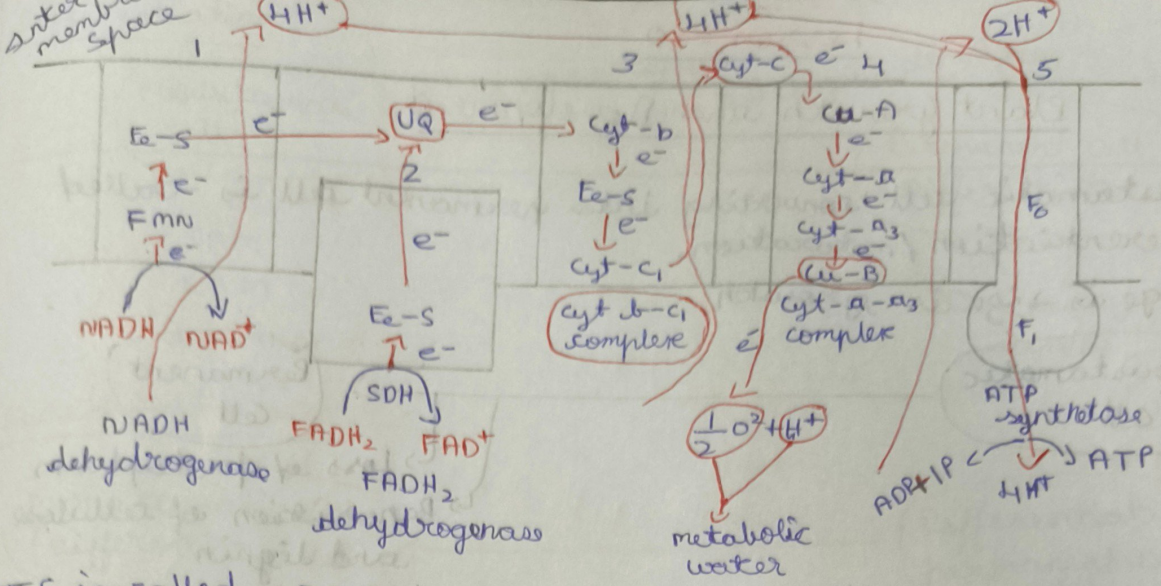


Respiration

- Glycolysis ⇒ 2NADH (6ATP) + 2ATP ⇒ 8 ATP
- Link reaction ⇒ 2NADH ⇒ 6ATP
- Krebs Cycle → 6NADH + 2FADH$_2$ + 2ATP ⇒ 24ATP
  - 6NADH → 18ATP
  - 2FADH$_2$ → 4ATP

38ATP

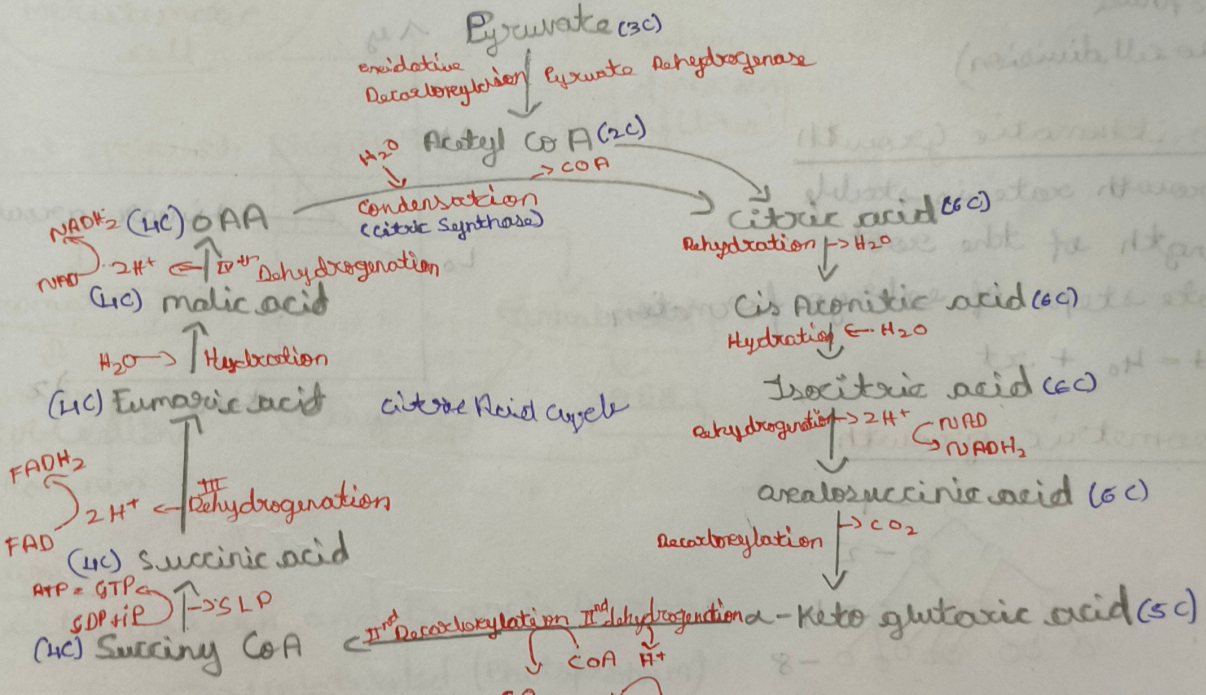




- ETS is called e⁻ carries / oxidation phosphorylation

1 NADH ⟹ I (4H+) X III (4H+) IV (2H+) V ⟹ 10H+ / 4H+ ⟹ 2.5 ⟹ 3 ATP

1 $FADH_2$ ⟹ X II III (4H+) IV (2H+) V ⟹ 6H+ / 4H+ ⟹ 1.5 ⟹ 2 ATP



1 $NADH_2$
3 $NADH_2$
1 $FADH_2$
1 GTP

4 $NADH_2$ × 3 = 12 ATP
1 $FADH_2$ × 2 = 2 ATP
1 GTP = 1 ATP
15 ATP

8 $NADH_2$ × 3 = 24
2 $FADH_2$ × 2 = 4
2 GTP × 1 = 2
30 ATP