

3) Oxidation of TP

Dehydrogenation. H transferred to hydrogen-carrier molecule NAD - reduced NAD formed

4) Production of ATP

Enzymes convert each TP molecule into pyruvate (3C)
2 ATP regenerated from ADP in this process

Glucose phosphorylated $\rightarrow$ Splits to form 2 TP $\rightarrow$ Dehydrogenation of TP = reduced NAD

$\rightarrow$ TP converted to pyruvate, and 2 ATP produced here

> Pyruvate = Acid

> Each glucose molecule = 2 TP molecules. Everything from this point is therefore multiplied by 2

Energy yields from glycolysis:

- 1 glucose = Net gain of 2 ATP (4 produced, 2 used in phosphorylation)
2 NAD⁺ 2 reduced NAD
2 pyruvate molecules

- No special organelles/membranes are needed for glycolysis - all required enzymes are found in the cytoplasm
- Oxygen not needed
- In anaerobic respiration, pyruvate then converted to lactate/ethanol (re-oxidises NAD so glycolysis can continue).

Pyruvate molecules produced during glycolysis possess potential energy that is released using oxygen in the Krebs cycle.

But pyruvate must first be oxidised in the link reaction

(in eukaryotic cells, Krebs/link takes place in matrix of mitochondria).

LINK REACTION

- Pyruvate actively transported into mitochondrial matrix
- It is oxidised by removing hydrogen. Reduced NAD formed
- Acetyl group formed (2C), combines with coenzyme A = acetyl coenzyme A produced
- CO₂ formed from each pyruvate

from glycolysis. This means more anaerobic respiration must occur to release same amount of ATP = more CO_2 released.

3.4.4

BIOL

Aerobic respiration

Oxygen needed

Produces CO_2 + water

Lots of ATP generated

Anaerobic respiration (fermentation in plants)

Oxygen not present

Produces lactate in animals / ethanol + CO_2 in plants / fungi.

only a little ATP produced

Preview from Notesale.com
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3.4.4

measuring rate of respiration

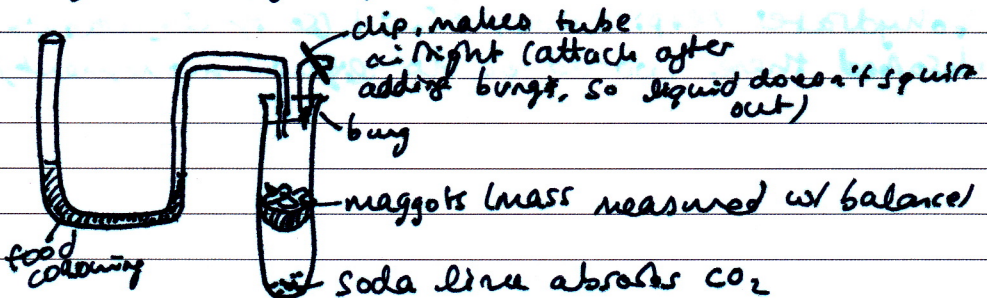
control = dead

(larvae of

same mass

no respiration)

BIOL



• $\uparrow$ Temp = $\uparrow$ pressure in tube = liquid pushed other way, so keep T constant!

Maggots respire, using up O_2 . Any CO_2 released absorbed. Pressure in tube falls so liquid moves through respirometer.