

## High Yield Hints – ATP in Glycolysis and Krebs's Cycle

### ATP during Glycolysis

Net gain of ATP is 8. One glucose gives 2 Pyruvic acids.

1 Pyruvic acid gives 2 ATP molecules.

1 reduced NAD generates 3 ATP molecules.

So total 5 ATP molecules are produced per Pyruvic acid.

So net gain is  $5 \times 2 = 10$  ATP

Of these 2 ATP is used for phosphorylation.

Each ATP carries about 60 k.cal energy which is about 10 % of total energy present in the glucose. The remaining 90 % energy is available in the pyruvic acid.

### Krebs's cycle

The net products from the 2 pyruvic acids are 6 NADH, 2 FADH<sub>2</sub>, and 2 ATP.

10 NADH<sub>2</sub> + 2 FADH<sub>2</sub> + 4 ATP are formed per glucose molecule.

10 NADH<sub>2</sub> produces 30 ATP and 2 FADH<sub>2</sub> produces 4 ATP during electron transport chain. Net gain 34 ATP.

Net gain from NADH<sub>2</sub>, FADH<sub>2</sub> is 34 ATP

Net gain from Glycolysis 2 ATP

Net gain from glycolysis 2 ATP

Total ATP from each glucose 38 ATP

ATP used to transport NADH<sub>2</sub> 2 ATP

**So net gain of ATP 36 ATP**

### Energy level

Glycolysis 8 ATP

Acetyl CoA formation 6 ATP

Krebs's cycle 24 ATP

**Total 38 ATP**

### ATP from Hydrogen acceptors

4 NADH <sub>2</sub>	X 3 ATP	12 ATP
1 FADH	X 2 ATP	2 ATP
1 GTP	X 1 ATP	1 ATP
	<b>Total</b>	<b>15 ATP</b>

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