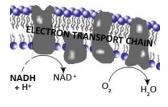
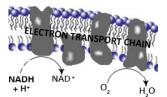
Generation of ATP

The reoxidation of NADH to NAD+ occurs by transfer of 2H to the carriers of the cytochrome chain.



Generation of ATP



The pair of H atoms are then transferred to O₂ to form H₂O

The process results in the synthesis of 3 ATP from 3ADP and 3P_i

Energy yields of TCA cycle

- 3 enzyme reactions produce NADH and H⁺
- 1 enzyme reaction produces FADH 2
- 1 enzyme reaction produces GTP

• ATP yields = 3 x 3 ATP 3 x 2.5 1 x 2 ATP 1 x 1.5 1 GTP 1 x GTP

Total 12 ATP 10 ATP

old numbers

Irreversibility of key stages

3 enzyme steps are highly exergonic & irreversible:

- citrate synthetase
- isocitrate dehydrogenase
- ketoglutarate dehydrogenase

Rate of TCA cycle regulated by feedback inhibition of key enzymes

isocitrate dehydrogenase ADP activates
NADH inhibits

ketoglutarate dehydrogenase NADH inhibits

succinyl CoA inhibits

new numbers

citrate synthetase NADH inhibits succinyl CoA inhibits

