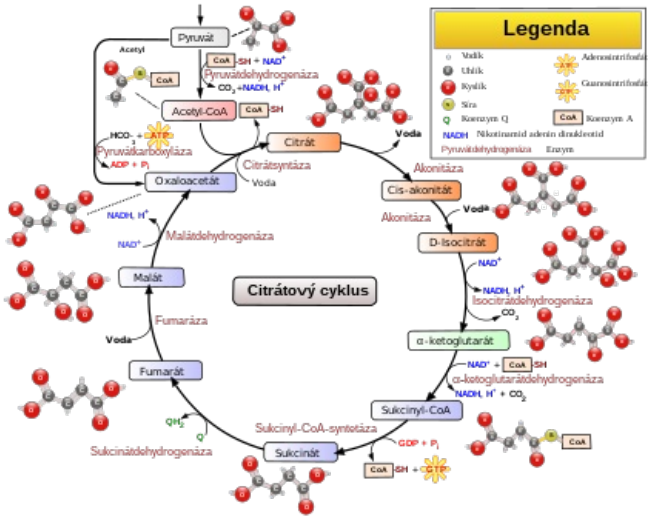
Regulation of Krebs cycle

The regulatory points (enzymes) of the Krebs cycle are:

1. Citrate synthase
2. Isocitrate dehydrogenase
3. α-ketoglutarate dehydrogenase

The regulatory factors of the Krebs cycle are:

1. NADH / NAD^+ ratio – respiratory control
2. ATP / (ADP a AMP) ratio – energy control
3. Krebs cycle substrate availability - substrate control



Krebs cycle

NADH / NAD^+ ratio – respiratory control

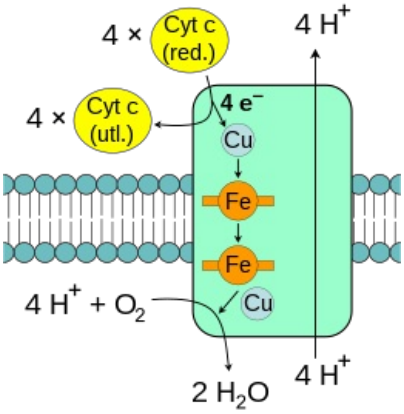
The continuation of the Krebs cycle is the respiratory chain, where reduced cofactors are reoxidized. If **NADH + H + and $FADH_2$** accumulate (NADH / NAD + ratio increases), α-ketoglutarate dehydrogenase and isocitrate dehydrogenase are inhibited.

ATP / (ADP a AMP) ratio – energy control

If there is enough energy, α-ketoglutarate dehydrogenase and isocitrate dehydrogenase are inhibited.

- ATP is their inhibitor.
- ADP and AMP, on the other hand, are activators.

Krebs cycle substrate availability - substrate control



Substrate control is found at the level of citrate synthase, which produces as much citrate as we supply it with oxaloacetate and acetyl-CoA .

Krebs cycle activity is also related to O_2 availability. Even though none of the reactions in the cycle require O_2 , oxygen is needed for the respiratory chain because it serves as the final electron acceptor. In the respiratory chain, the following are reoxidized:

$$NADH \rightarrow NAD^+$$
$$FADH_2 \rightarrow FAD$$

If the cell lacks O_2 , the concentration of NAD^+ and FAD decreases, and subsequently the activity of the Krebs cycle also decreases.

Template:Navbox - přeměna látek a energie v buňce