# The role of fatty acids in the regulation of oxidative phosphorylation

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Our study on saponin-treated rat heart muscle fibers has revealed a new function of the fatty acid oxidation system in the regulation of the outer mitochondrial membrane permeability for ADP. We found that oxidation of fatty acids - palmitoyl-L-carnitine, palmitoyl-CoA+carnitine and octanoyl-L-carnitine dramatically decreased (to 30-40 μM ) a very high value of apparent $K_m^{ADP}$ specific to pyruvate (300-400 μM ADP, respectively). Our data suggest that oxidation of fatty acids induces an increase in the outer mitochondrial membrane permeability for ADP. As was demonstrated in our study, this effect was not related with the disturbance of mitochondrial outer membrane integrity. It seems that unknown changes in mitochondrial properties are induced, which make mitochondria more permeable for ADP. The precise mechanism of this phenomenon as well as mitochondrial morphological changes remain to be elucidated in further experiments.