Abstract

Iron ions are essential components of numerous cell processes. Their utilisation is strictly regulated, since any impairment can have devastating effect on the cell. In living organisms, iron ions are bound to proteins, for storage, transportation, or as a vital part of catalytic centers of enzymes. Transportation of iron ions between different compartments is important for the correct function of the cell. It was recently shown on yeast, how a mitochondrial transporter of iron ions is essential for the synthesis of iron-sulfur clusters of enzymes. This work aims to describe the localization and function of a homologous protein of a parasitical organism *Trypanosoma brucei*, which causes African trypanosomiasis, also known as sleeping sickness. This parasite is entirely dependent on uptake of iron ions from its host and therefore the utilization of iron ions is studied as a potential therapeutic target.

This work is focused on the characterization of protein Mcp17, which is assumed to function as a transporter of iron ions into the mitochondria of *T. brucei*. Utilizing expression of marked Mcp17, the transporter was confirmed to be localized on the mitochondrial membrane of the cell. Measuring of enzyme activity of selected enzymes indicated that cells with inhibited expression of the gene *mcp17* exhibited significantly decreased enzyme activities of enzymes that contained iron-sulfur cluster as a co-factor.

(In Czech)

Keywords: *Trypanosoma brucei*, metabolism, iron ions