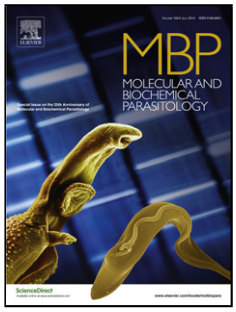

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The intermembrane space protein Erv1 of *Trypanosoma brucei* is essential for mitochondrial Fe-S cluster assembly and operates alone

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Highlights

- TbErv1 functions without Mia40 homologue and any other interaction partner
- TbErv1 have a role in Fe-S cluster assembly in the organelle
- TbErv1 seems to have a role in the mitochondrial translocation

Abstract

Sulfhydryl oxidase Erv1 is a ubiquitous and conserved protein of the mitochondrial intermembrane space that plays a role in the transport of small sulfur-containing proteins. In higher eukaryotes, Erv1 interacts with the mitochondrial import protein Mia40. However, *Trypanosoma brucei* lacks an obvious Mia40 homologue in its genome. Here we show by tandem affinity purification and mass spectrometry that in this excavate protist, Erv1 functions without a Mia40 homologue and most likely any other interaction partner. Down-regulation of TbErv1 caused a reduction of the mitochondrial membrane potential already within 24 hrs to less than 50% when compared with control cells. Depletion of TbErv1 was accompanied by accumulation of trCOIV precursor, with a concomitant reduction of aconitase activity both in the cytosol and mitochondrion. Overall, TbErv1 seems to have a role in the mitochondrial translocation and Fe-S cluster assembly in the organelle.

Keywords: *Trypanosoma*; Erv1; Fe-S cluster assembly; mitochondrion