Abstract

Iron-sulphur clusters are small ubiquitous cofactors of proteins present in all cells. These proteins participate in many important processes such as gene expression or respiratory chain. *In vivo* synthesis of iron-sulphur clusters requires complex biosynthetic pathways. In eukaryotic cells these pathways are localized inside mitochondria and plastids and in the cytosol. Cytosolic synthesis depends on a product of the mitochondrial pathway. Mitochondria of anaerobic protists in most cases went through reductive evolution, which is associated with the reduction of mitochondrial iron-sulphur cluster biosynthetic pathway. In many cases, these organisms acquired alternative pathways via lateral gene transfer, which act either as a complement to the mitochondrial pathway, or as its complete functional substitution. Replacement of the mitochondrial pathway might have been a key event for secondary loss of mitochondria.

**Key words:** Iron-sulphur clusters, anaerobic protists, ISC, CIA, SUF, mitochondrion