

Abstract

This thesis is focused on the existing data referring to role of mitochondria in the pathogenesis of several important diseases. It introduces mitochondrial proteins, their role and metabolism, dysfunction of which is behind pathogenetic processes. The thesis also summarizes possible mitochondrial damage, its progress and consequences, which can lead to diseases or aggravate their process.

It also pays attention to the role of mitochondria during oncogenesis as well as important neurodegenerative disorders such as Alzheimer's or Parkinson's disease, Charcot-Marie-Tooth disease, amyotrophic lateral sclerosis or autosomal dominant optic atrophy. The thesis mentions the role of disrupted mitochondrial dynamics in type 2 Diabetes.

In conclusion the thesis mentions the role of mitochondria and their damage in relation to infection by the parasites *Toxoplasma gondii* and *Trypanosoma cruzi*.