

## P187. THE IMPORTANCE OF IRON METABOLISM IN MITOCHONDRIA

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Iron serves as essential components play critical roles not only biochemical but also physiological functions in the system. Because it plays an important role in oxidative metabolism, cell growth, transport of oxygen to tissues, DNA, RNA and protein synthesis due to act on the structure and function of enzymes used in the catalysis of essential reactions. Mitochondria, known as the powerhouse of the cell, play an important role due to synthesis of iron sulfur clusters, prosthetic groups and heme occurs in this organelle. Reactive oxygen species (ROS) are formed by mitochondria in all aerobic organisms as a product of normal metabolism. Production of ROS increase not only in case of oxidative damage but also the presence of an iron value which above the physiological limits. For example,  $\beta$  talasemi patients increased iron load during therapy which is a result of excessive hemolysis, increased intestinal iron absorption and frequent blood transfusions, causes organ damage and dysfunction. Iron homeostasis is provided by iron regulatory proteins (IRPs) in body. For example, IRP1 is sensitive to a variety of oxidative stress signals. Oxidative stress and oxidative damage play an important role in early stages in many pathophysiological processes such as neurodegeneration and specific cancers. For this reason, iron homeostasis as an important factor in many diseases and iron levels within the mitochondrion must be tightly regulated. The relationship between each other mitochondrial dysfunction, iron accumulation, and oxidative stress will be briefly summarized in this review.

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