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## Biology of ferritin in mammals: an update on iron storage, oxidative damage and neurodegeneration.

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### Abstract


Iron is an abundant transition metal that is essential for life, being associated with many enzyme and oxygen carrier proteins involved in a variety of fundamental cellular processes. At the same time, the metal is potentially toxic due to its capacity to engage in the catalytic production of noxious reactive oxygen species. The control of iron availability in the cells is largely dependent on ferritins, ubiquitous proteins with storage and detoxification capacity. In mammals, cytosolic ferritins are composed of two types of subunits, the H and the L chain, assembled to form a 24-mer spherical cage. Ferritin is present also in mitochondria, in the form of a complex with 24 identical chains. Even though the proteins have been known for a long time, their study is a very active and interesting field yet. In this review, we will focus our attention to mammalian cytosolic and mitochondrial ferritins, describing the most recent advancement regarding their storage and antioxidant function, the effects of their genetic mutations in human pathology, and also the possible involvement in non-iron-related activities. We will also discuss recent evidence connecting ferritins and the toxicity of iron in a set of neurodegenerative disorder characterized by focal cerebral siderosis.

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