Regulation of iron homeostasis by beta-amyloid precursor protein in health and disease.

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Alzheimer's Research UK

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Research Abstract

Iron is essential for the normal function of the body but when this metal is not guarded it can be converted to a potentially harmful product. The balance between disposing of and retaining iron is fundamental for keeping a healthy cell. The ageing brain and circulatory system are particularly vulnerable as are patients with a broad range of disorders, including Alzheimer’s and cardiovascular disease. The main role of a ‘ferroxidase’ is to convert any potentially harmful iron into a less hazardous form. ‘beta-amyloid precursor protein’ (APP), has a role in this iron balance. Of the 3 main APP forms, the smallest is a ‘ferroxidase’ whereas increasing the size varies its effectiveness. Proposed research will determine if the balance between APP form length, or other known changes, are able to alter iron content in health and disease models.

Prospective outcomes will strengthen our understanding on iron balance within the body and provide an explanation for increased iron accumulation in age-related diseases. There is currently no effective therapeutic for these diseases as current treatments only provide temporary alleviation. Increased understanding of the molecular and cellular mechanisms underlying these diseases will lead to better drug design in the future.

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