

Hair in Parkinson's disease patients exhibits differences in Calcium, Iron and Zinc concentrations measured by flame atomic absorption spectrometry ? FAAS

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Imbalances in metals have emerged as playing a role in the pathophysiology of Parkinson's Disease (PD). Monitoring of metal levels could serve as a biomarker of presence, or future development, of this disease. To this end, we evaluated the ability of flame atomic absorption spectrometry (FAAS) to assess the concentrations of Ca, Fe and Zn in hair of PD patients and to investigate if there was an association with age and disease duration. Hair samples were collected from 26 clinically-diagnosed PD patients, and 33 healthy individuals. Concentrations of Ca and Fe were lower in PD patients when compared to control, whereas, a higher concentration of Zn was detected in PD patients. Levels of Ca and Fe did not vary with age nor with the duration of PD. While Zn did not present variation with duration of the disease, there was a correlation with age as PD patients older than 65 years exhibited a higher concentration of Zn than controls. We conclude that FAAS is useful for detecting differences in Fe, Ca and Zn in hair samples of patients with PD. Hair samples required for this method are easy to collect, and the technique relies on a simple method of digestion of the organic matrix. The ease of use of FAAS should allow for more frequent monitoring of metallic levels in patients in a variety of small clinical situations, thereby offering the hope of allowing systematic tracking of metal levels as the disease progresses, or prior to the defining motor symptoms. © 2018 Elsevier GmbH

Analytical methods

Metals unbalance

Neurochemistry

Neurodegenerative disease

Neurotoxicity

calcium

iron

zinc

calcium

iron

levodopa

zinc

adult

age

aged

Article

atomic absorption spectrometry

clinical article

controlled study

disease duration

female

flame atomic absorption spectrometry

hair analysis

human

male

Parkinson disease

priority journal

case control study

chemistry

hair

metabolism

middle aged

Parkinson disease

procedures

very elderly

Aged

Aged, 80 and over

Calcium

Case-Control Studies

Female

Hair

Humans

Iron

Levodopa

Male

Middle Aged

Parkinson Disease

Spectrophotometry, Atomic

Zinc