Chemical quantification of bioessential metals in biological samples and implications in neurodegeneration and oxidative stress

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The study of trace elements and their functions in living organisms and biological systems requires methods to quantify each metal in cells or tissues. Numerous analytical techniques have been developed and adapted to qualify and accurately quantify the metal-ion content in biological matrices. Particularly, the elemental analysis of the most abundant trace metals Fe, Cu and Zn inside mammalian cells in culture or from tissues plays an important role in the determination of the influence of these metals on diseases as well as on the metabolism of the cell. Because of this importance, the correct method to analyze trace metals must be chosen for the success of the biological research. Here we will describe how researchers can use analytical methods to access this fundamental question in biology, and how trace metals can interfere in pathologies as neurodegenerative diseases and oxidative stress.

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