
METALLOMIC APPROACHES: INVESTIGATING THE EFFECT OF METALLODRUGS IN DISEASE TREATMENT

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Most of major-to-ultratrace elements in the human body play essential roles as metalloproteins, metalloenzymes or other metal-containing biomolecules ('metallomes') and have been related to specific diseases (e.g. Se, S & Pt - cancer, Al - Alzheimers, V - diabetes & Cd - Auch-auch). Novel hyphenated mass spectrometry methods (profiling methods) for such elements in disease models are urgently required. If successful, such methods will assist in the development of therapeutic approaches further towards clinical trials.

In this tutorial the potential of the parallel combination of elemental and molecular mass spectrometry to investigate the effect of metalldrugs in disease models will be demonstrated through its application to study element speciation (*i*) *in vivo* experiments of vanadium supplementation in relation with diabetes research and (*ii*) *in vitro* experiments of Se supplementation in relation with cancer research. Important topics such as the complexity of element speciation analysis in complex micro bio-clinical samples and the lack of "speciated" reference materials, needed for quality control of the speciation measurements, will be discussed.