

## Development of analytical methods for the application of metallomics in plasma of diabetic rats

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Although the metal ions constitute only a small proportion of body tissue, they are essential as structural components and, in many vital processes; they have major structural and functional roles. Metalloproteomics is defined as functional and structural characterization of metalloproteins on a genomic scale. The aim of this study was to compare metal ions (Cu, Mg, Se and Zn) present in spots of plasma gels (pool, strips with pH 4-7 polyacrylamide gels at 10% w/v) in normal (G1), diabetic (G2) and diabetic treated with insulin (G3) rats (n=8/group) by two-dimensional electrophoresis. After the electrophoretic runs, the spots were cut with the aid of the tip of a probe and digested for the elimination of the organic fraction. The determinations of the concentrations of the elements were made by atomic absorption spectrometry with flame (Cu, Se and Zn) and oven graphite (Mg). We analyzed 179, 204 and 197 spots in the G1, G2 and G3 respectively. The qualitative determination of metal ions of interest indicated to G1, G2 and G3 that 87 (48.60%), 154 (75.49%), 48 (23.36%) contained Cu; 33 (18.43%), 47 (23.03%), 141 (71.57%) Mg; 148 (82.68%), 108 (52.94%), 155 (78.68%) Se and 19 (10.61%), 7 (3.43%), 69 (35.02%) Zn. The quantification of metal ions (ppb) was also performed directly in plasma, indicating for G1, G2 and G3 the presence of 84.06, 59.40, 82.74 Cu; 2.141, 2.122, 2.115 Mg; 157, 250, 146 Se and 2340, 2377, 4.129 Zn respectively. The next step is to understand how these ions are coordinated to protein, as well as to clarify the difference in the presence of ions in the same protein in relation to different groups.

### Biography

Camila Pereira Braga is a Nutritionist from UNESP, Brazil. She holds a Master's in Biological Sciences (Pharmacology), with project developed in the area of biochemistry and metabolism in the Department of Chemistry and Biochemistry-UNESP. Currently she is a student of Ph.D. and develops project in the area of proteomics, metalloproteomics, biochemistry in diabetic rats, under guidelines of Professor Pedro de Magalhães Padilha.

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