9TH INTERNATIONAL SYMPOSIUM ON METAL IONS IN BIOLOGY AND MEDICINE

Book of Abstracts

METAL IONS ROLE IN LIFE AN INTEGRATED VIEW

2006 May 21 – 24
Lisbon, Portugal

Organização:

Universidade de Coimbra

INSTITUTO SUPERIOR TÉCNICO

9th INTERNATIONAL SYMPOSIUM ON METAL IONS IN BIOLOGY AND MEDICINE

May, 21-24, 2006

Centro de Congressos da Universidade Católica
Lisboa, Portugal

Capa: Concepção do Gabinete de Imagem da Universidade de Coimbra

Titulo: Metal Ions Role in Life: An Integrated View

Impressão e acabamentos:
Redhorse – Indústria Gráfica, Lda
Rua Casal dos Vagares – Alto de S. João
Tel: 230702210
Fax: 239701239
3030-141 Coimbra

P-57

NICKEL BINDING TO CAP43 PROTEIN: AN NMR STUDY

Maria Antonietta Zoroddu, Massimiliano Peana, Serenella Medici

University of Sassari, Department of Chemistry, Via Vienna 2, 07100 Sassari, Italy;
Email: zoroddu@uniss.it

Cap43 has been reported to be specifically induced by nickel compounds in a variety of cell lines. Although the function of the Cap43 protein (MW 43,000) is not clear, it does appear to be induced in response to an increase in intracellular concentration of Ca^{2+}, caused by nickel ion exposure in cultured human cells, for this reason it is named Cap43: *Ca*lcium *p*rotein *43*,000. Cap43 protein is commonly expressed at low levels in normal tissues, but it is overexpressed in a variety of cancer cells. The high level of expression in a cancerous status combined with the elevated stability of Cap43 protein makes it an excellent cancer marker. A possible way to better understand the molecular mechanisms implicated in toxicity and carcinogenicity of nickel compounds is to study the characteristics of the proteins expressed by the genes specifically induced by these carcinogens.
For this reason we focused our attention to investigate the interaction ability of nickel to Cap43 protein. The peculiarity of Cap43 is its new mono-histidinic motif consisting of ten amino acids (*TRSRSHTSEG*) repeated three times in the C-terminus. We have analyzed, for Ni(II) binding, the 30-amino acid C-terminal sequence of the protein, *TRSRSHTSEG-TRSRSHTSEG-TRSRSHTSEG*, by the use of different NMR techniques such as 1D, NOESY, TOCSY and ROESY experiments.
Our results support the existence of an interesting binding site for Ni(II) at the C-terminal domain of Cap43 protein.