XIII Congresso 28 a 29 - setembro - 2005
Interno de Iniciação Científica da UNICAMP
Ginásio Multidisciplinar da UNICAMP

E320

STRUCTURAL PROPERTIES OF PROTEIN CRYSTALS FROM XYLLELA FASTIDIOSA

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Different proteins are found in the human body, bacteria, plants and animals. The protein structure is indispensable for correctly determining the biological function of these macromolecules, which may lead to the development of new drugs, for example. Protein crystallization is a key process for the study of the protein structure and, consequently, its function. In this work we show the study of protein crystallization mechanisms by Atomic Force Microscopy (AFM). Crystallized proteins were prepared in tampon solution. A special experimental methodology was developed for imaging the crystals in the very viscous solution where they grow, in order to prevent a strong dampening of the signal. Several protein crystals were imaged, showing either the presence of small crystallites or wider and smoother surfaces, more characteristic of crystal growth. In particular, protein crystals of the phytopathologic bacterium *Xyllela Fastidiosa* (XF) were more thoroughly analyzed. This protein is involved in the stabilization of the cellular wall in stress episodes. We have observed nanowire structures superimposed on the typical crystalline surface. The nanowires were ~ 1,5nm in height. The hypothesis of lysosime contamination of the *Xyllela* samples was investigated, since lysosime was used to extract the XF protein of the bacterium and also shows the formation of similar structures. However, samples with no lysosime also presented the nanowires on the crystal surface, indicating the possibility of a different route in the crystallization dynamics of the XF protein.

Protein crystals - AFM - Xyllela fastidiosa