ANALYSIS OF THE MOLECULAR MACHINERY IMPLICATED IN MULTICELLULARITY IN *BACILLUS CEREUS*

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Abstract Topic: Environmental Microbiology/Microbial Ecology/Microbial Communities.

Background:

Bacillus cereus is a Gram-positive bacterium usually implicated in food poisoning outbreaks and human infections that sometimes result fatal. These events are closely related to the assembly of a biofilm that serves as a reservoir of cells, a nest for sporulation and protection from environmental stresses, host defenses or chemotherapy.

Objective:

To perform a comprehensive comparative study of biofilm and planktonic cells to: i) delineate the molecular machinery implicated in the different steps of the biofilm life cycle, and ii) define new genes dedicated to biofilm formation.

Methods:

Bacteria were grown under biofilm inducing conditions. Biofilm cells were separated from planktonic cells at different times and their whole mRNA was isolated, sequenced and analyzed.

Conclusions:

Our results reveal a high number of genes associated to biofilm, many of them with unknown function, but highly conserved in others bacterial species. Besides, we found global changes in cell wall synthesis, metabolism and interspecies interaction molecules. The interaction of *B. cereus* with other bacteria is conditioned by secondary metabolites, which are apparently overexpressed in biofilm. On the other hand, toxins are mainly expressed in planktonic cells, which are more oriented to interact with its hosts. These results reveal the defense and attacking positions of *B. cereus* in biofilm vs planktonic states.

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