Biofilms

In general, bacteria have two life forms during growth and proliferation. In one form, the bacteria exist as single, independent cells (planktonic) whereas in the other form, bacteria are organized into sessile aggregates. The latter form is commonly referred to as the biofilm growth phenotype.

The important hallmarks of chronic biofilm-based infections are extreme resistance to antibiotics and many other conventional antimicrobial agents, and an extreme capacity for evading the host defences.

Biocats constitute a protected mode of growth that allows survival in the hostile environment. The biofilm consists of microcolonies encapsulated by exopolysaccharide (EPS) produced by the bacteria or the host.

Biofilms and inflammation

Bacteria in biofilms are protected against the inflammatory host response. Detrimental they seem to generate an ongoing cellular response, often dominated by Polymorphonuclear leukocytes (PMNs).

Biofilms and treatment

Biofilm bacteria are generally more tolerant to antibiotic treatment than their planktonic bacteria counterpart. Antibiotic doses which kill suspended cells, for example, need to be increased as much as 1,000 x to kill biofilm cells in vitro. Biofilms evade antimicrobial challenges by multiple mechanisms.

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