Preventing Biofilm Formation by Enzyme Inhibitors

(No. T4-1893)

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Background and Unmet Need

Biofilm is a complex colony of bacteria, which are attached together by extracellular polymeric substance. This setting provides the bacteria protection against environmental factors, improves their surface attachment, and plays a major role in resistance to treatment. Therefore, biofilms are difficult to eradicate, much more than single bacterial colonies. Biofilms can form on a variety of surfaces, both living and non-living, and can therefore be found in industrial, hospital, and natural settings. One such example of biofilm formation is Cystic fibrosis patients, who often develop chronic life-threatening infections in their respiratory systems and treatment is made problematic due to said biofilms.

The research team of Dr. Kolodkin-Gal managed to disrupt the structure of biofilms and prevent their formation. This was performed by inhibiting enzymes that contribute to the properties of the extracellular matrix. When the extracellular matrix is compromised due to this treatment, the formation of the biofilm is disturbed, and it becomes more susceptible to treatment. This invention can therefore be a powerful tool to control, prevent, and destroy biofilms in a variety of settings.

The Solution

The present invention is based on inhibiting two enzymes that are involved in the structure of the bacteria colony, so that inhibiting them results in alterations of the extracellular matrix which comprises the biofilm. This treatment inhibited biofilm formation and increased its sensitivity to bactericides. Additional details with regard to this technology can be obtained based on a non-disclosure agreement (NDA).

Applications and Advantages

- Preventing biofilm formation
- Increasing sensitivity to anti-bacterial agents
- Wide range of applications â€“ can be used to prevent biofilm in multiple settings, from disease therapy via hospital equipment to contaminated water.
- Can be potentially combined with other drugs, such as antibiotics.

Patent Status

European Patent Office Published: Publication Number: 3773907