SYNTHETIC ANTIBACTERIAL CLAY COMPOSITIONS AND METHOD OF USING SAME

Background

The present invention relates to an antibacterial composition that is to be applied topically to an affected area. In particular, the present invention relates to synthetic antibacterial clay (ABC) compositions. Certain natural clays have been used in the Ivory Coast to treat Buruli ulcer, a flesh-eating disease caused by Mycobacterium ulcerans. Argicur and other clays have proved effective against this flesh-eating disease in Africa's Ivory Coast. Research was initiated into determining what makes one clay toxic to bacteria and another harmless.

The inventors identified a property which renders the natural antibacterial clays tested (i.e., the Argicur used in the Ivory Coast and Pyroclay) antibacterial. The inventors found that the presence of particular reducing agents (pyrite in these) is what renders these natural clays antibacterial. These reducing agents were found to be absent in clays found to not have bactericidal properties.

These compositions may have some advantages over simply using natural antibacterial clay in that they can be customized to elicit desired properties. In particular, the present invention relates to synthesized antibacterial compositions, containing a clay or clay mineral and a bactericidal effective amount of a reducing agent, to treat most, if not all, bacterial skin infections, including those caused by antibiotic resistant bacteria.

Abstract

The present invention is directed to synthetic bactericidal compositions having clay like properties and a method of using these compositions to topically treat bactenally-caused skin infections and skin diseases. The compositions within the scope of the invention compose a bactericidal effective amount of a reducing agent, such as pyrite, marcasite, pyrrhotite, FeS2, FeS, FeS04--or other reducing agents having like properties, and natural clay or clay mineral and/or synthetic clay or clay mineral, or other suitable matenals having clay-like properties. The synthetic bactericidal compositions are synthesized by adding the reducing agent to the clay or clay mineral. It is the presence of the reducing agent that renders them bactericidal. The clays serve as a vehicle within which the reducing agent is dispersed, as a diluent to the reducing agent, and also as an adsorbent and low permeability banner in use of the composition.

Opportunity

Antibiotic resistant bacteria strains are able to cause serious diseases and are becoming a major global public health problem. According to the Center for Disease Control and Prevention, each year in the United States, at least 2 million people become infected with bacteria that are resistant to antibiotics and at least 23,000 people die each year as a direct result of these infections. Many more people die from other conditions that were complicated by an antibiotic-resistant infection. It is imperative new discoveries consisting of antibacterial agents are made. The total economic cost of antibiotic resistance to the U.S. economy vary, but estimates have ranged as high as $20 billion in excess direct healthcare costs, with additional costs to society for lost productivity as high as $35 billion a year. Antibacterial clays are found to be effective in combating antibiotic-resistant bacteria. However, few FDA approved drugs are available. As a result of this increasing threat, the FDA is taking measures to expedite approvals. In accordance with the Generating Antibiotics Incentives Now (GAIN) Act, which was passed by Congress in 2012, the FDA is making the antibiotic development processes smoother.

Keywords

- Antibacterial Clays
- Pyrite Sensitive Pathogens
- Mycobacterium
- Antibiotic Resistant Bacteria

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This technology is protected under US patent application 13/515,309. The US Geological Survey is looking for a partner to further the commercialization of this technology through a license agreement. Interested parties should contact:

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