Adhesion Molecules (Carbohydrate Receptors) For Pathogenic Bacteria And Fungi

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Technology description

Summary

The ability of pathogenic organisms including bacteria and fungi to cause disease depends, at least initially, on the ability to bind to and enter target cells of the host. A wide variety of cellular molecules are involved in this interaction. The structure of the cell receptors involved in the initial binding of the bacteria or yeast can be very complex. Receptors involved in bacteria-animal cell interactions is the technology claimed in these inventions. Receptors identified in bacterial interactions are complex carbohydrate compounds whereas the receptor involved in the fungal interaction is a glycolipid. A variety of pathogenic bacteria are able to bind to the purified receptor including: Streptococcus pneumoniae , Staphylococcus aureus , Haemophilus influenzae and parainfluenzae , Klebsiella pneumoniae , Pseudomonas aeruginosa , cepacia , and maltophilia , some isolates of Escherichia coli , and Mycoplasma hominus and pneumoniae . Several species of fungi were shown to bind to a glycosphingolipid receptor including: Cryptococcus neoformans , Candida albicans , Histoplasma capsulatum , Sporotrichum schenckii , and Saccharomyces cerevisae . The technology claimed in these patents has potential diagnostic and therapeutic applications for both bacteria and fungi. Diagnostic kits are claimed allowing for the detection of certain microorganisms. These kits are comprised of either immobilized receptors on an insoluble substrate or a suspension of the purified compound. Binding of the bacteria is then detected by the use of either a labeled reagent specific for the suspected bacteria or by the presence of a perceptible agglutination reaction. Potential therapeutic applications relate to the administration of pharmaceutical compositions of the receptor to treat patients infected with the pathogen and as an immunization to prevent infection.

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