A NOVEL PROPHYLACTIC AND TREATMENT FOR PNEUMOCCAL INFECTION

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Technology description

Summary

The Blp Bacteriocins of Streptococcus Pneumoniae Mediate Intraspecies Competition Both in vitro and in vivo

Description

Addition of a seven-valent conjugate vaccine against pneumococcal bacteria to the standard infant vaccination schedule has dramatically reduced the incidence of invasive disease and bacterial colonization in nasopharynx. Because the vaccine contains only 7 of more than 90 serotypes of pneumococci, there are concerns that some of the remaining serotypes may fill the void left by those strains that the vaccine targets. Reports suggest that serotype replacement may be occurring at the levels of both nasopharyngeal colonization and disease. Reports show that the incidence of nonvaccine serotype 19A has significantly increased in postvaccine era and the strain has also been linked with an invasive pneumococcal disease in children less than 5 years old. Diseases caused by pneumococcal bacteria range from middle ear infections, otitis media, to pneumonia to meningitis. Researchers at University of Pennsylvania have studied bacteriocins, the small antimicrobial peptides that bacteria produce and use to compete with other strains of same species as well as with other species. Bacteria that produce bacteriocins have genetic machinery to protect themselves against their own bacteriocins.

Application area

Penn researchers have studied the blp bacteriocins and their regulatory machinery in relation to inter-strain competition and have shown that a cocktail of bacteriocins, using a wide range of pneumococcal bacteria, may be used for preventing and reducing nasopharyngeal colonization. Researchers propose that the blp bacteriocin cocktail can also be used to treat and prevent middle ear infections in children.

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