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Vaccines for pneumococci, Haemophilus and meningococci

RECOMBINANT VACCINE FOR PREVENTION OF STREPTOCOCCAL PNEUMONIAE INFECTION

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Objectives.

Streptococcus pneumonia (*S.pneumoniae*) is a leading cause of serious illness, including bacteremia, meningitis, and pneumonia among children and adults (Nuorti JP and Whitney CG. 2010). Vaccine prevention of *S.pneumoniae* infections is reccomended in many countries but all the commercial vaccines on the market (PPVor PCV) are targeted against capsular antigens of bacteria. In spite of theproved effectiveness of the known commercial vaccines, vaccination against the list of serotypes causes the appearance of the new clinically important strains with different capsular antigens ('Red Queen Dynamics' Jefferies E.M., et al. 2011). Present work suggests a new approach of making chimerical vaccine based on the conserved surface proteins.

Methods

The protein vaccine based on *in silico* designed molecule comprising the epitops of three S.pneumoniae surface proteins together with TLR5 targeting flagellin (FliC, PsaA, PspA, Sph)was produced from *E.coli* recombinant strain. After vaccination of Balb/c mice the level of the IgG was monitoredby ELISA. For the protection assay *S.pneumoniae* was introduced either intraperitoneum or intra nasally.

Results

Immunogenicity of vaccine preparation showed significant levels of antibodies against all thee *S.pneumoniae* antigens used. Vaccine was not toxic to mice and the antibody level did not decrease for at least 6 months which demonstrated good immune memory response. In the protection study vaccine provided protection against different *S.pneumoniae* strains indifferently to the serotype. The best level of protection was determined inthe intra nasal infection model.

Conclusion

A new recombinant vaccine against *S.pneumoniae* was developed. The perspectives of the clinical implication of this vaccine will be possible to evaluate after further studies.