

Research of a novel pneumococcal vaccine with innate immune activation

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Pneumonia is one of the major causes of death among the elderly, with pneumococcal pneumonia being particularly frequent. The pneumococcal vaccine is used to prevent this pneumonia, but improving its efficacy is an urgent issue. We have previously reported the induction of innate immune memory, which can act on pathogens different from the target of pneumococcal vaccine. By developing vaccine substrates co-expressing specific antigens and innate immune memory inducers, we can expect to develop vaccines that work against emerging infectious diseases other than the target infectious diseases. In this study, we analyzed the mechanism of the innate immune activation factors and investigated the optimization of their ability to induce innate immune memory. Furthermore, membrane vesicles expressing capsules of *Streptococcus pneumoniae* in probiotic *E. coli* were recovered and the membrane vesicle vaccine was evaluated in a mouse colonized by *Streptococcus pneumoniae* that we have already constructed.