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DESTUCTION OF THE TIGHT JUNCTION BY REGULATING STK EXPRESSION IN *STREPTOCOCCUS SUIS* SEROTYPE 2 IMPACTS BLOOD-BRAIN BARRIER PENETRATION

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Streptococcus suis **serotype 2 (SS2) is a worldwide causative agent of many forms of swine infection and is also recognized as a zoonotic agent causing human disease, including meningitis. An infection of SS2 could cause human meningitis, and more than 1500 human cases have been recorded worldwide. In particular, people with poor immunity are seriously threatened. By screening the TnYLB-1transposon mutant library of wild-type pathogenic strain ZY05719, a poor invasion and transcytosis serine/threonine protein kinase (*stk*) mutant was found. Therefore, we hypothesized that the stk gene is virulence factor related to crossing of the blood-brain barrier (BBB). *Stk* of SS2 is a single membrane-associated protein that is important for virulence. Adhesion and transcytosis of hBMEC by *Δstk* was poorer than ZY05719. *Δstk* and ZY05719 are equally capable of reorganizing the cytoskeleton of hBMEC and bEnd.3 which suggest that *stk* gene is not associated with paracellular route through the BBB. However, the level of claudin-5 in bEnd.3 cells decreased in *Δstk* treated group. BALB/c mice infected by ZY05719 can cause bacteremia and bacteria were detected in cerebro-spinal fluid (CSF), but *Δstk* was quickly cleared in the blood and there was no bacterium in CSF. In this study, we show that *Stk*-deficient SS2 decreased its ability to invade the brain endothelium which is not related to the alteration of the cytoskeleton organization in hBMEC. However, compared to wild-type strain, the ability of *Δstk* to destroy claudin-5 is weaker, by which we speculate that SS2 penetrated into BBB through a paracellular route.**

Biography

Xiaomeng Pei has received her Bachelor's degree in Veterinary Medicine from Nanjing Agricultural University. Presently she is pursuing PhD in Nanjing Agricultural University. Her research interest is focussed on the Pathogenesis of *Streptococcus Suis* and her current projects include Mechanism of Meningitis caused by *S. Suis* and Anti-Phagocytosis Mechanism of *S. Suis*. Based on the transposon mutant library, a number of invasions, transcytosis and phagocytosis related genes have been found which are significant for the further research. During her master's study and PhD period, she has got major awards.

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