

TITLE: ROLE OF CppA AND PepO IN BLOOD SURVIVAL AND TRANSFORMATION EFFICIENCY OF *Streptococcus Sanguinis*

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ABSTRACT:

Streptococcus sanguinis a commensal of oral cavity can turn opportunistic pathogen once its anatomical site is changed. It is known to be among the causing agents of infective endocarditis once it gets entry into blood stream. Survival of *Streptococcus sanguinis* in blood is necessary for it to reach heart and cause infective endocarditis. CppA is a putative C3 degrading proteinase found in the genome of *Streptococcus sanguinis*. The aim of this study was to investigate the role of CppA and PepO in blood survival and transformation efficiency of *S. sanguinis*. An isogenic *cppA* and *pepO* mutant were obtained in strain SK36 by double cross-over recombination with a null allele and compared to parent strain. Blood survival and transformation efficiency were compared between mutant (SKcppA and SKpepO) with parent strain (SK36) and the complemented mutant harboring an episomal copy of *cppA* and *pepO* (SKcppA+ and SkpepO+). Strains were incubated with 1ml blood (37°C; continuous agitation) and plated at different hours (0,1,2,4,24 and 42) of incubation to observe bacterial blood survival. Transformation efficiency was determined by incubating 1µg of plasmid (PDL 278) with strains (90min) with continuous agitation and then plated for colony count. Significant decreased survival was observed in blood for SKcppA compared to parent strain SK36 after 4, 24 and 42 hours while parent and complemented strains continued normally (Kruskal-Wallis, $p < 0.05$), While SKpepO showed significant decreased blood survival after 24 and 42 hours respectively (Kruskal-Wallis, $p < 0.05$). Transformation efficiency was enhanced approximately by 20% for SKcppA and 14% for SKpepO comparing to parent strain (SK36). Inactivation of *cppA* and *pepO* decreases blood survival and increases transformation efficiency in *S. sanguinis*.

KEYWORDS: *Streptococcus sanguinis*, blood survival, transformation.

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