Abstract

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This thesis deals with the characterization of three genes from *Streptococcus equi* encoding extracellular proteins, which specifically bind to proteins in serum and/or extracellular matrix of the host. This type of proteins are thought to be important for the adherence and/or the entrance of the bacteria to the site of multiplication. It is also presumed that some of the proteins also play a role in avoidance of the immune system of the host.

The first protein, called ZAG, binds α_2-macroglobulin, albumin, and immunoglobulin G through three separate domains of the protein. The second protein, called FNZ, displays one repetitive domain, which binds the N-terminal 29-kDa fragment of fibronectin (Fn), and a non-repetitive domain which also binds Fn, although not to the 29-kDa fragment. Proteins ZAG and FNZ also display C-terminal sequence motifs known to mediate anchoring of the protein to the bacterial cell wall. However, in strains of subsp. *equi* there is a deletion in the middle of the gene encoding FNZ resulting in a protein, which is secreted to the growth medium. Surprisingly this truncated, N-terminal half of FNZ also bound Fn, thus unveiling a third Fn-binding domain in FNZ. The third protein, called SFS, also binds Fn but lacks the cell wall anchoring motifs. However, whether SFS is normally attached to the cell surface or secreted is not known, since the *sfs* gene is not expressed during the conditions used for the *in vitro* cultivation. One motif, present in the Fn-binding domain of SFS, is also present in collagen. This sequence similarity is interesting, since recombinant SFS produced in *E. coli* inhibits the binding between Fn and collagen.

key words: Streptococcus equi, Streptococcus zooepidemicus, fibronectin-binding, IgG-binding, bacterial adhesion, FNZ, ZAG, SFS, shotgun phage display, PFGE.