Comparison of *Staphylococcus aureus* Strains Isolated from Bovine Mastitis

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Staphylococcus aureus is recognized worldwide as a pathogen causing many serious diseases in humans and animals and is the most common etiological agent of clinical and subclinical bovine mastitis.

The aim of the present study was to investigate properties of *S. aureus* strains isolated from milk of cows suffering from mastitis in Belgium, that may be associated with production of either clinical or subclinical mastitis: (i) expression of capsular antigens (CP5 or CP8) by specific ELISA; (ii) intracellular survival by invasion of MAC-T cells; and (iii) biofilm production by spectrophotometry analysis after growth in milk serum.

The results showed that (i) the proportion of strains expressing capsular antigen was higher ($p<0.0005$) in *cap8*- than in *cap5*-positive isolates; (ii) a correlation ($p<0.0005$) was observed between intracellular survival and both the capsular genotype and phenotype; and (iii) the biofilm production was associated ($p<0.05$) with the capsular phenotype but not genotype.
Therefore, isolates expressing the capsular antigen CP8 with low intracellular survival but high biofilm production are probably better adapted to an extracellular niche and could be specifically associated with production of clinical mastitis. Conversely, isolates that do not express any capsular antigen (CP5 or CP8) with high intracellular survival but weak biofilm formation are probably better adapted to an intracellular niche and could be specifically associated with production of subclinical mastitis.

In conclusion, capsular profile, biofilm production and intracellular survival analyses could be used as prognosis tests, to predict the persistence of the infection in the case of mastitis caused by *S. aureus*.