

**TITLE:** MOTILITY ON SEMISOLID AGAR OF *Staphylococcus pseudintermedius*, *Staphylococcus coagulans* AND *Staphylococcus schleiferi* ISOLATED FROM VETERINARY SOURCES AND DETECTION OF STAPHYLOCOCCAL MOTILITY-RELATED GENES OF *S. pseudintermedius*

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To many bacteria, motility is crucial for survival on different environments, as well as for pathogenesis. *Staphylococcus* is a genus that includes important pathogens which causes infectious diseases ranging from cutaneous abscess to invasive infections in human and other animals. These microorganisms have historically been described as non-motile. Over the years, a few forms of surface motility were described on strains of *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Staphylococcus xylosum*. In this study, we evaluated the presence of motility in *Staphylococcus pseudintermedius*, *Staphylococcus coagulans* and *Staphylococcus schleiferi* veterinary strains and investigated the presence of *agrA*, *agrBD*, *agrC*, *ctaA*, *dltA*, *nuc2*, *srtA* and *tagO*, which have been reported as staphylococcal surface motility-associated genes on *S. aureus*. For motility assays, the veterinary strains were selected, grown and spotted on tryptic soy broth (TSB) supplemented with 0.24% agar. As a negative control, we used MU50 *S. aureus*, an *agrA*-deficient isolate, which exhibited a non-motile phenotype. Polymerase chain reaction (PCR) was performed to investigate the presence of *agrA*, *agrBD*, *agrC*, *ctaA*, *dltA*, *nuc2*, *srtA* and *tagO* genes. Our results showed that all of *S. pseudintermedius*, *S. coagulans* and *S. schleiferi* isolates showed motility significantly different from the negative control, indicating the ability of these species to move across the surface of the agar. These colonies exhibited diameters varying from 10 to more than 40 millimeters in diameter, while *S. aureus* MU50 strain colonies varied from 5 to 9 millimeters. The motility presented was dependent on experimental changes assessed, suggesting that growth conditions affect the surface motility. PCR revealed the presence of *ctaA*, *dltA*, *nuc2*, *srtA* and *tagO* genes on all *S. pseudintermedius* strains. On the other hand, less than 41% of *S. pseudintermedius* isolates were positive for all *agr* genes, while 2 strains did not present any of the *agr* genes, indicating that the *agr* operon may not be essential for motility phenotype in *S. pseudintermedius*. Furthermore this suggests that the regulation of surface motility can occur through different mechanisms within the *Staphylococcus* genus. Motility phenotype was not previously described for these species, and future studies must unravel the mechanisms behind the motility of this bacterial genus and their role in pathogenesis.

**Keywords:** *S. pseudintermedius*, *S. coagulans*, *S. schleiferi*, motility.

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