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Ludmila Alekseeva, Lucie Rault, Sintia Almeida da Silva, Fabien Cousin, Patrick Legembre, Valérie Edmond, Vasco Azevedo, Anderson Miyoshi, Sergine Even, Frederic Taieb, et al.

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149 - *Staphylococcus aureus* alters cell cycle in human and bovine epithelial cells.

Alekseeva Ludmila¹, Rault Lucie^{2,3}, Almeida Sintia^{2,3,4}, Cousin Fabien J.^{2,3}, Legembre Patrick⁵, Edmond Valérie⁵, Azevedo Vasco⁴, Miyoshi Anderson⁴, Even Sergine^{2,3}, Taieb Frédéric⁶, Arlot-Bonnemains Yannick⁷, Le Loir Yves^{2,3}, Berkova Nadia^{2,3}.

1. Shemyakin and Ovchinnikov IBCH, RAS; Moscow, Russian Federation
2. INRA, UMR1253 STLO, F-35042 Rennes, France
3. Agrocampus Ouest, UMR1253, STLO, F-35042 Rennes, France,
4. ICB-UFMG, CEP 31.270-901. Belo Horizonte- MG, Brazil
5. IRSET, U1085, Université Rennes-1, 35043 Rennes, France
6. INRA, USC U1043 INSERM, Toulouse, F-31300, France
7. CNRS-UMR 6290, BIOSIT, Université Rennes-1, 35043 Rennes, France.
(Corresponding author: nadia.berkova@rennes.inra.fr)

Staphylococcus aureus can cause a wide range of infections in humans and warm-blooded animals. The epithelial surface is the principal site of staphylococcal infection. The goal of this work was to investigate the cytopathic effect of *S. aureus* and its ability to affect host cell cycle. Cultures of human cervix cancer HeLa and mammary gland bovine MAC-T epithelial cells were used to study *in vitro* the effects of *S. aureus* strains from human or ruminant origins. Using microscopic examination, we found that *S. aureus* induced an enlargement of the host cells and we observed that *S. aureus* slowed down cell proliferation. Similar effect was observed on both human and bovine cells using the human or the ruminant strains. Microscopic analysis of DAPI-stained cells revealed huge decrease of mitotic indexes in infected HeLa and Mac-T cells, synchronized by Double Thymidine Block. Flow cytometry analysis showed that *S. aureus* induces G2/M phase delay in synchronous HeLa cells. Western blot analysis revealed that the G2/M phase delay was associated with an accumulation of inactive phosphorylated cyclin-dependent kinase Cdk1/cdc2, a key inducer of mitosis entry, and dephosphorylation of core histone H3, an important component of the epigenetic landscape. Altogether, these results suggest that the delay in G2/M phase transition of the infected epithelial cells may be one of the mechanisms employed by *S. aureus* to survive and to propagate inside the host. Further investigations are ongoing to fully understand the mechanisms associated to this type of *S. aureus*-host cell interactions.