

MS13-04 | SURFACE LAYER PROTEINS OF LACTOBACILLI – DETERMINING THE CELL WALL

BINDING AND THEIR ANTIBACTERIAL EFFECT

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Surface layers (S-layers) are 2D crystalline lattices of proteins which cover the whole surface of many archaeal and bacterial cells. Since these proteins are in close contact with the environment, they fulfil many important tasks like bacterial adherence to other cells, protection against life-threatening conditions, maintenance of the cell shape and, auto- coaggregation. They play an important role in the stimulation of gut dendritic cells by interacting with specific receptors. Interaction with the cell wall occurs by binding to Lipoteichoic acids (LTA).

These proteins are not just important for our immune system. They are equally important for the role of lactobacilli in the microbiome of the gut. Lactobacillus S-Layers harbor outstanding therapeutic potential, especially for vaccines. Furthermore, it was reported that the cell wall binding domain of Lactobacilli surface layer proteins possess a murein hydrolase activity, which shows antibacterial activity against *Escherichia coli*.

Our goal is to characterize the surface layer proteins SlpA and SlpX of *L. acidophilus* and SlpA of *L. amylovorus*. Both species are of high biological and medical relevance because of their probiotic properties. We elucidated the 3D structures of the three cell wall binding domains by x-ray crystallography. Isothermal titration calorimetry experiments were performed to characterize the binding partner of these domains. Ongoing experiments focus on the co-crystallization with LTA fragments and the antibacterial effect of this domain.