

MS03-1-6 Interactions of probiotic bacteria with the human dendritic cell receptor DC-SIGN
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Abstract

Surface layers (S-layers) are protein coats displayed on the external surface of many bacterial and archaeal species. They provide a large surface area for interaction with host cells which implies tremendous implications for the immune response and human disease. It was shown that the extracted S-layer from *Lactobacillus acidophilus*, one of the major species found in human intestines, and its interaction with dermal dendritic cell receptors, especially DC-SIGN, can act as a potent inhibitor of viral and bacterial infections¹. However, it is not clear whether the non-glycosylated S-layer protein alone or together with lipoteichoic acids (LTA), an integral part of the bacterial cell wall that serves as an anchor for the S-layer, is responsible for the interaction. Characterization of the exact interaction partner(s), its binding mode and kinetics as well as comparison to known receptor-glycan binding regions from e.g. viral glycoproteins is essential for understanding the role of these interactions in triggering signalling pathways to achieve anti-viral or anti-bacterial effects. Since *L. acidophilus* and S-layer protein are both categorized as “generally recognized as safe” (GRAS), there is interest in characterizing this novel mechanism of inhibition in order to develop new therapeutics that would address infections of specific viruses or pathogenic bacteria.

References

1. Acosta, M. P., Ruzal, S. M. & Cordo, S. M. S-layer proteins from *Lactobacillus* sp . inhibit bacterial infection by blockage of DC-SIGN cell receptor. *International Journal of Biological Macromolecules* 92, 998–1005 (2016).