Pili as a mediator of intimate host-microbe interactions – comparisons among pathogens, commensals and probiotics

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Lactobacillus rhamnosus GG (LGG) is one of the most extensively studied probiotic strains, whose health-promoting effects have been demonstrated in a numerous clinical trials. The strong adherent property of LGG to human intestinal epithelium has been considered an important probiotic feature, but the underlying molecular mechanisms had not been revealed until recently. Our recent studies revealed on the cell surface of LGG proteinaceous polymeric structures know as pili, which were shown to be responsible for the adherence of LGG to the human intestinal mucus. The finding revealed a previously undescribed mechanism for the interaction of selected probiotic lactobacilli with the human host.

The paper will give overview on the LGG pilus structure, pilin subunits and function in mediating intimate host-microbe-interactions. Further, the similarities and differences between the LGG pilus structure and function and those of other commensals and pathogens will be discussed.