Inhibition of in vitro growth of mastitis pathogens by new Lactobacillus isolates of mammary gland in lactating dairy cows
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Background:
In dairy cow mastitis is a big problem. Protection of udder from pathogens is challenge for dairy industry. For mastitis prevention and treatment dairy farmers routinely use antibiotics, which is neither efficient nor safe1,2. Though there are too few alternatives for mastitis prevention and treatment, application of probiotics is the most promising alternative1,2. There is countless information on Lactobacilli in milk, but the information on the probiotics versus mastitis bacteria is rare.

Objectives:
1) To assess the antagonistic properties of Lactobacillus strains isolated from milk of healthy dairy cows against the most common mastitis bacteria; 2) to enhance udder's innate immunity in immunocompromised dairy cows.

Methods:
Milk samples of dairy cows were collected for cytobacteriological analyses. Bacterial colonies were identified; further analyses in anaerobic conditions were done using MRS media; to confirm the lactobacillus strains, api 50 CH test system were then performed on the colonies. The ability of the lactobacillus strains to inhibit the growth of pathogens was investigated. The lactobacilli were incubated after overnight growth, and co-cultured with pathogenic Staphylococcus aureus and Escherichia coli. After 48 h, bacterial counts of the pathogens and of the lactobacilli were performed.

Results:
The lactobacillus was identified as Lactobacillus fermentum; it strongly inhibited growth of both pathogenic E. coli and S. aureus. Moreover, the presence of the pathogens did not affect the growth of the L. fermentum.

Conclusion:
Depending on status of cows, the L. fermentum is found in the milk and cow’s environment. Huge decrease in pathogen growth in co-cultures of L. fermentum and S. aureus (as a super bug for contagious mastitis) and of L. fermentum and E. coli (as a super bug for environmental mastitis) strongly supports the idea of L. fermentum application as a good probiotic to prevent mastitis in immunocompromised dairy cows.

References:
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