

New natural antimicrobials

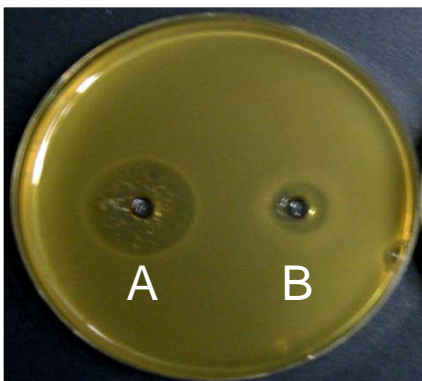
Technology description:

WHO/FAO define probiotics as live microorganisms which when administered in adequate amounts confer a health benefit on the host. We have recently isolate lactic acid bacteria (LAB) with potential antimicrobial applications.

Lactococcus lactis subsp. *lactis* MM19 (a nisin Z producer,) and *Pediococcus acidilactici* MM33 (a pediocin PA-1/AcH producer) were isolated from human feces and tested for antibacterial activity. *L. lactis* MM19 and *P. acidilactici* MM33 secreted bacteriocin-like substances (BLIS). The produced BLIS were assayed for their antibacterial activity and for pH, temperature and enzymes stability. The active compounds were heat-stable proteinaceous compounds, and biologically active from pH 2 to 10. BLIS from *L. lactis* MM19 has shown to possess a larger spectrum of antibacterial activity, inhibiting the growth of *Enterococcus faecium* and of various *Lactobacillus* and *Staphylococcus aureus* strains. Antibacterial activity of BLIS produced by *P. acidilactici* MM33 appeared to be restrained to *Enterococcus* sp., some *Lactobacilli* and several *Listeria monocytogenes* strains.

We have demonstrated the survival of *L. lactis* MM19 and *P. acidilactici* MM33 following a mouse *in vitro* model simulating the gastrointestinal transit and also show significant probiotic-associated alteration of some populations of the gastrointestinal microbiota. Moreover, the consumption of the probiotic was associated with a trend toward reduced intestinal colonization by vancomycin-resistant *Enterococcus*.

This invention has been developed by the team of Pr Monique Lacroix and by Dr. Mathieu Millette from the *Institut national de la recherche scientifique* and is protected by patent applications.



Antimicrobial activity of supernatant culture of *P. acidilactici* MM33 (A) and *L. lactis* MM19 (B) against vancomycin-resistant *Enterococcus*.

Percentages of CF-1 mice colonized with a detectable level of vancomycin-resistant *Enterococcus*.

Inoculum	postinfection day:					
	0	1	3	6	8	12
PBS	0	100	100	60	0	0
Bacitracin	0	100	0	100	100	100
<i>L. lactis</i> MM19	0	83	71	0	0	0
<i>P. acidilactici</i> MM33	0	100	100	0	0	0
<i>P. acidilactici</i> MM33A	0	100	100	50	0	0

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