Determination of the characteristics of *Lactobacillus spp* present in bovine artisanal cheeses

Luis Duran, Soraya Castillo, Francis Mendoza, Teresa Yepez, Pastor Machado

Decanato de agronomía, Universidad Centroccidental Lisandro Alvarado.
Departamento de Procesos Agroindustriales, Laboratorio de Bioingeniería. Apartado 3001.
Barquisimeto, Venezuela.
luisduran@ucla.edu.ve

Key words: Lactobacillus spp, artisan cheeses, probiotic, characterization

Introduction. Milk has amazing nutritional qualities, especially considering a food rich in protein and calcium easily absorbed. Milk and its derivatives represent more balanced and suitable food for maintaining bone mass and muscle man, currently representing the food group most consumed worldwide, however, is seen as a means susceptible to proliferation of microorganisms and enzyme activity generally produced by the action of *Lactobacillus spp,* which acidifies the medium acting on the lactose, making lactic acid, which promotes the coagulation of proteins. Lactobacilli are classified as probiotics, which refers to viable organisms as either monocultures or mixed cultures, which have beneficial effects on the host and to improve the properties of indigenous microflora in the gastrointestinal tract (Kailasapathy 1997; Salminen 1993; Suskovic 1997; Tournut 1994).
The objective of this work is to determine the characteristics of probiotic *Lactobacillus spp* present in cheeses made from bovine milk.

Methods. Acidifying activity was determined at 35 ° C/72 hours, measuring the growth of lactobacilli in salt at 2.5, 5 and 7.5%, acid tolerance was assessed by 9 mL of MRS broth adjusted to pH 4, 5 and 6.5 with 6N HCl and incubated at 37 ° C for 24 hours, the growth measured by optical density at 600 nm in a UV spectrophotometer (Avila et al, 2010). To determine growth at different temperatures were taken 9 mL of MRS broth at pH 6.5, incubated at 37 and 45 ° C for 24 hours.

Results. Biochemical tests made it possible to quantify and isolate colonies found in cheese samples analyzed allowing the characterization of these colonies and thus ideal strains selected for their ability probiotic. According to the results of the colony counts was between 2 * 101> 200 * 104, the characteristics of the isolated colonies regarding: speckled white to beige, single colonies presented gloss samples from Sanare, Yaracuy and Falcon.
In the table 3, are indicates the probiotic activity analyze samples. The probiotic activity of the samples Y3, Y4 and H was faster than that achieved the remaining after 48 and 72h, strains showing a high probiotic.

Table 1. Results of biochemical tests performed at strain of *Lactobacillus* isolated.

N°	Sample	pH 4.5	pH 6.5	37°C	45°C	NaCl 2.5%	NaCl 5%	NaCl 7.5%	Coagulation (h)	Cellular morphology
1	Y4	+	++	++	++	-	-	-	24	B*
2	HA	+	++	++	++	-	-	-	48	L*-B
3	F1	+	++	++	++	-	-	-	48	L*-B
4	C	+++	+++	++	+++	-	-	-	48	L*-B
5	S1	+++	+++	++	+++	-	-	-	72	L*-B
6	Y3	+++	+++	++	+++	-	-	-	24	B*
7	F2	+	++	++	+	-	-	-	72	L*
8	H	+	++	++	+	-	-	-	24	L*-B
9	A	+	++	++	++	-	-	-	48	B*

B * = Bacilli abundant, L * = Yeasts abundant, (+) = weak growth, (+ +) = moderate growth, (+ + +) = abundant growth, (-) = No Growth

Conclusions. The biochemical tests performed to the strains of Lactobacillus spp found, allowed showing that many of these attributes are presented with probiotic characteristics, one of these attributes was the ability to adapt to high temperatures and acidic pH, conditions that occur in the stomach every individual. Another important attribute exhibited by strains was acidifying capacity which ensures generate half unfavorable for the growth of pathogenic microorganisms in the gut of the consumer. However it is important to note that no strain was grown in salt making it difficult to adapt to bile salts from the digestive system.

Acknowledgements. We thank for support provided by FUNDACITE and also different UPS of states Lara, Yaracuy, Falcon.

References.

1. Alvarado *et al*, (2007) ***Isolation, characterization and identification of lactic acid bacteria of a smoky Venezuelan Andean craft cheese .used as starter culture.*** Unpublished research paper.

2. Gutierrez *et al* (2007***) Assessing the feasibility of a probiotic strain Lactobacillus casei native in cream cheese "Lasallian Research Journal.*** Unpublished Research Paper.

3. Mejias *et al*, (2007) ***Getting lactobacillus strains. Characterization in vitro as potential probiotic. [Online].*** Available http://www.scielo.org.ve/scielo.php?script=sci_arttext&pid=S0798-22592007000200012&lng=es&nrm=iso. [Accessed 2011, August 19].

4. Martinez *et al*, (2008) ***Molecular identification of probiotics isolated from foods and supplements: comparison with biochemical methods***. Unpublished research paper.