

TITLE: ISOLATION AND CHARACTERIZATION OF NEW LACTIC ACID BACTERIA FROM CHEESE WHEY FOR PRODUCTION OF FERMENTED MILK

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ABSTRACT:

Cheese whey is a by-product of dairy industries, which has a native and diversified microbiota, known as lactic acid bacteria (LAB). This bacterial group presents a high biotechnological potential due to its influence in organoleptic characteristics of fermented dairy foods and in human health. Thus, this work aimed to characterize the biotechnological potential of LAB isolated from cheese whey produced with bovine, buffalo and goat milk, for further production of fermented milk. For this purpose, samples of cheese whey were collected in a small agroindustry located on the Taquari Valley/Brazil, and LAB were isolated in agar de Man Rugosa and Sharp (MRS) at 35°C. Biotechnological characteristics of purified bacterial isolates evaluated were: acidification capacity, diacetyl production, gas production, proteolytic activity and antagonism effect against pathogenic bacteria. It was obtained 124 bacterial isolates from cheese whey, being 43 from bovine, 45 from buffalo, and 36 from goat. Most of the bacterial isolates (93%) were Gram positive, 100% were catalase negative, able to acidify the broth, and none was detected as gas producer. Approximately 40% presented strong diacetyl production and proteolytic activity, and 70% inhibit the growth of pathogenic bacteria (*Escherichia coli*, *Bacillus cereus*, *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Listeria monocytogenes*). Six LAB were selected and identified by 16S rRNA sequencing. Three different fermented milk were produced: (1) control with commercial isolates (*Streptococcus thermophilus*, *Lactococcus lactis subsp. lactis* and *Lactococcus lactis subsp. Cremoris*); (2 and 3) consortium with three *Enterococcus* spp. isolated in this work. Seventy-four volunteers tasted these fermented milks and the number 3 (produced with new *Enterococcus* spp.) presented the highest acceptability by consumers, with the highest aroma, appearance and flavor indexes. Therefore, this work showed the highest biotechnological potential of new *Enterococcus* spp. isolates for production of new fermented milk with distinguished aroma and flavors, which can has potential to act as a probiotic beverage.

Keywords: Biotechnological potential, lactic acid bacteria, cheese whey, fermented milk.

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