

Title: ANTIMICROBIAL SUSCEPTIBILITY PROFILE OF LACTIC ACID BACTERIA ISOLATED FROM MINAS ARTISANAL CHEESE PRODUCED IN ARAXÁ REGION – BRAZIL

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Abstract:

Minas artisanal is a traditional cheese made of raw milk with addition of endogenous starter cultures. Its ripening process is necessary to guarantee the development of flavor and improve food safety, being both effects associated to the metabolism of lactic acid bacteria (LAB). Some of those microorganisms may also have potential probiotic properties. One of those includes sensitivity to antimicrobials in order to avoid the spread of resistance to those drugs to the gastrointestinal microbiota of consumers. However, the information on that beneficial activity of LAB isolated from Minas artisanal is scarce. Thus, this research aimed to study the antimicrobial susceptibility profile of eight samples of LAB isolated from Minas artisanal cheese produced in Araxá region, Brazil. They were four samples of *Lactobacillus plantarum* (CQ₁T₀, DQ₁T₄, EQ₁T₅ and BQ₂₀T₆), two of *Lactobacillus rhamnosus* (AQ₁T₁, CQ₃T₅), one of *Lactobacillus casei* (BQ₄T₅) and one of *Lactobacillus brevis* (EQ₃T₅) which were identified by 16S rRNA sequencing. Antimicrobial susceptibility tests were carried out in triplicate with two repetitions using the agar diffusion disks including the following drugs: ceftazidime-CAZ (30µg), clindamycin-DA (2µg), ciprofloxacin-CIP (5µg), erythromycin-E (15µg), gentamicin-GN (10 µg), oxacilin-OX (1µg), penicilin-PEN (10UI), streptomycin-S (25µg), tetracilin-TE (30µg) and vancomycin-VA (30µg). According to the mean values of inhibition haloes (diameter in mm), only *Lactobacillus plantarum*-CQ₁T₀ was sensitive to all the antimicrobials tested. All the other LAB samples were resistant to at least one drug. *Lactobacillus plantarum*-EQ₁T₅ was resistant to six antimicrobials. TE and PEN were the antimicrobials to which the highest percent of sensitive LAB – 87.5% (7/8) was detected. On the other hand, 87.5% (7/8) of the LAB samples were not sensitive to OX, which may be associated to an intrinsic resistance. *Lactobacillus plantarum*-CQ₁T₀ was selected for further *in vitro* analyses in order to search for probiotic LAB from Minas artisanal cheeses. The selected sample may be used in probiotic *in vivo* tests and to produce safer cheeses preserving their tradition and flavor.

Keywords: Minas artisanal cheese, *Lactobacillus* spp., agar diffusion disk test, antimicrobial resistance, probiotic

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