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), tetraciclin-TE (30µg) and vancomycin-VA (30ug). 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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