Technological, phenotypic and genotypic characterization of lactobacilli from Graviera Kritis PDO Greek cheese, manufactured at two traditional dairies

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ABSTRACT

The phenotypic and genotypic variability of 54 lactobacilli isolated from mature Graviera Kritis cheese made at two dairies, was investigated. Classical biochemical tests, SDS-PAGE and 16S rRNA gene sequencing used for species assignment, showed that Lb. brevis and Lb. paracasei were the predominant species. RAPD-PCR and PFGE analysis of the 48 isolates of predominant species distinguished 21 genotype fingerprints, revealing a high genotypic heterogeneity. The examination of the technological properties of lactobacilli showed a significant (P<0.05) variation, in respect of their acidification and proteolytic activity. Genotypic clustering of lactobacilli and Principal Component Analysis (PCA) of their technological properties indicated that lactobacilli are associated with their particular production dairy ecosystem. Overall, polyphasic characterization of lactobacilli isolated from mature cheese, based on genotypic and phenotypic data, provides solid basis for understanding their distribution and their functional significance and may be used as a tool to select strains appropriate as adjuncts cultures.

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