

Automated ribotyping of lactobacilli associated with early childhood caries

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Abstract:

A series of 67 well-identified *Lactobacillus* spp. strains isolated from early childhood caries was characterised by automated ribotyping with *EcoRI* restriction enzyme using the RiboPrinter Microbial Characterization System (DuPont Qualicon, USA) in order to evaluate this technique for characterization and identification of lactobacilli associated with dental caries. Analysed group was identified using extensive biotyping and rep-PCR with the (GTG)₅ primer and consisted of *Lactobacillus fermentum* (20 strains), *Lactobacillus rhamnosus* (15 strains), *Lactobacillus casei/paracasei* (14 strains), *Lactobacillus gasseri* (7 strains), *Lactobacillus salivarius* (7 strains), and *Lactobacillus plantarum* (4 strains). Automated ribotyping revealed 55 riboprint patterns among the analysed group. The fingerprint profiles generated by individual species were distributed into one to four clusters. The automatic identification performed by the RiboPrinter system assigned only 18 strains to the species level, remaining strains were not identified because they did not reach the 85 % similarity threshold with reference riboprint patterns. Further clustering of obtained ribotype patterns into individual groups was performed by Bionumerics v 6.0 software (Applied-Maths, Belgium) and generally corresponded with the species assignment of analysed strains. In conclusion, automated ribotyping revealed low successfulness of identification, but further cluster analysis and visual examination of obtained riboprints improved applicability of this method for the species identification of lactobacilli associated with early childhood caries. The present study was supported by the Czech Science Foundation (project 310/09/0657) and the Ministry of Education, Youth and Sports of the Czech Republic (project 1M0528).

Key words: automated ribotyping, early childhood caries, identification, *Lactobacillus*, RiboPrinter