

# Amylolytic *Lactobacillus* Strains from Bulgarian Fermented Beverage Boza

Penka Petrova<sup>a,\*</sup>, Milena Emanuilova<sup>a</sup>, and Kaloyan Petrov<sup>b</sup>

<sup>a</sup> Institute of Microbiology, Bulgarian Academy of Sciences, 26, Acad. G. Bontchev Str., 1113 Sofia, Bulgaria. Fax: (+35 92) 8 70 01 09. E-mail: pepipetrova@yahoo.com

<sup>b</sup> Institute of Chemical Engineering, Bulgarian Academy of Sciences, 103, Acad. G. Bontchev Str., 1113 Sofia, Bulgaria

\* Author for correspondence and reprint requests

Z. Naturforsch. **65c**, 218–224 (2010); received December 12, 2009/January 7, 2010

The lactic acid fermentation is a worldwide method for cereal processing. Great diversity of fermented foods and drinks is produced with the participation of amylolytic lactic acid bacteria (ALAB). In the present study the ALAB content of the Bulgarian cereal beverage “boza” was investigated. Two strains, Bom 816 and N3, were found to possess significant amylolytic activity. The strains’ identification was based on genetic criteria, namely amplified ribosomal DNA restriction analysis (ARDRA) and sequencing of the 16S rDNA. The strain Bom 816 belongs to the species *Lactobacillus plantarum* and N3 to *Lactobacillus pentosus*, being the first amylolytic representative of this species.

Optimization of the media composition with starch as a sole carbon source was done. The starch hydrolysis was most efficient in medium containing 4 g/l yeast and 8 g/l meat extracts. Thus, *L. plantarum* Bom 816 consumed 14 g/l starch, while *L. pentosus* N3 consumed 17 g/l. The highest values of lactic acid reached were 9.5 g/l produced by Bom 816 and 5.5 g/l produced by N3. In the presence of yeast extract *L. pentosus* N3 formed 0.8–1 g/l succinic acid.

Both strains produced mainly cell-bound enzymes with amylase activity, at a pH optimum of 5.5, ranging from 3–4 to 21 U/ml for *L. pentosus* N3 and from 0.5 to 11.5 U/ml for *L. plantarum* Bom 816, in dependence of the assay conditions.

*Key words:* *Lactobacillus*, Boza, Amylase Activity