

Supplementary informations

Genomic and functional characterization of bacteriocinogenic lactic acid bacteria isolated from Boza, a traditional cereal-based beverage

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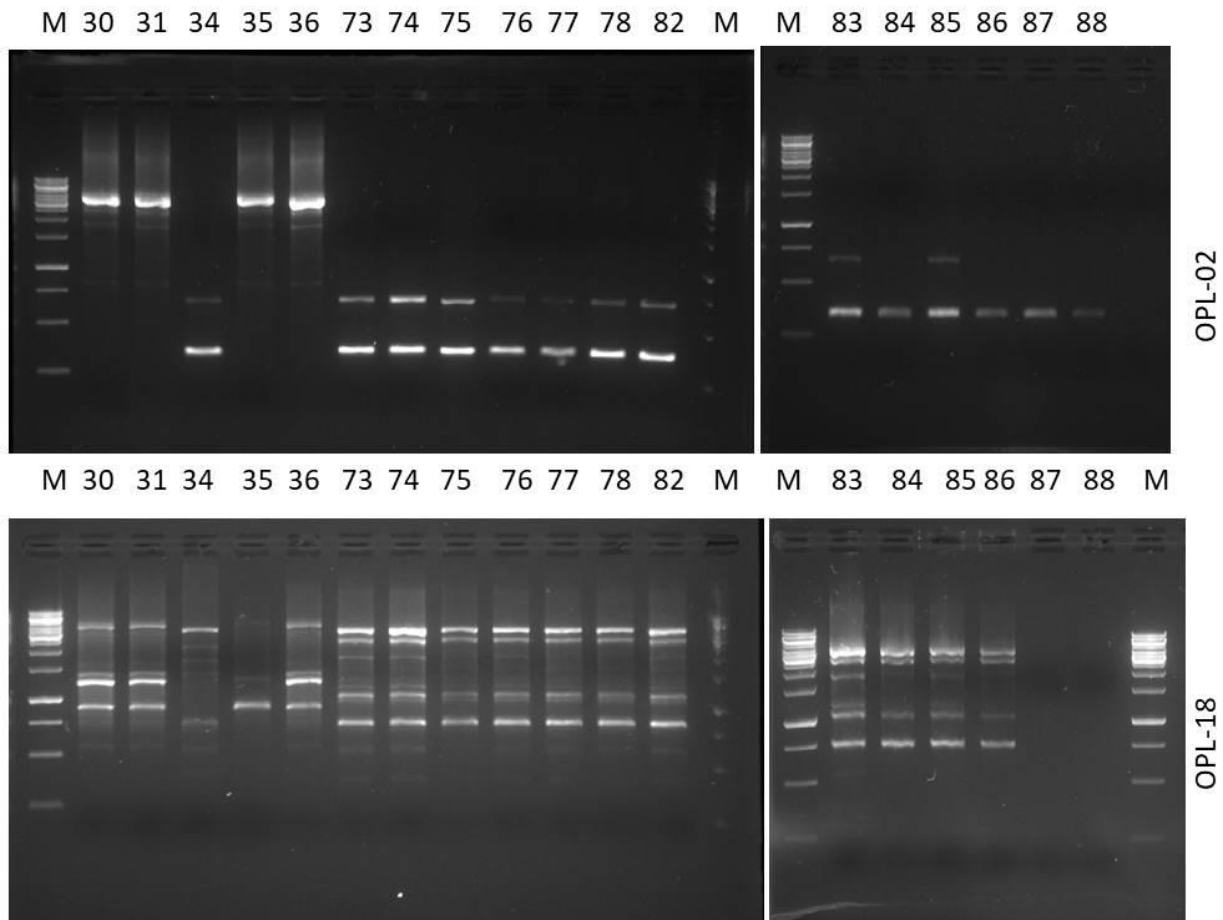
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Supplementary Methods

Antibiotic susceptibility

Selected antibiotics (Antibiotic discs, Oxoid Basingstoke, Hampshire, UK) for susceptibility test were used to assess interaction of the selected strains with commercial antimicrobials of different modes of action (listed in Supplementary Table 6). Studied strains was cultured in MRS broth at 37 °C for 24 h and MRS agar plates were inoculated with around 10^6 - 10^7 CFU/ml. The antibiotic discs were placed on the surface of a plate and subsequently incubated at 37 °C for 24 h. Inhibition zones around the discs were recorded (mm) and results used to determine the strain sensitivity¹. The test was performed in triplicate.

Supplementary Figures



Supplementary Figure 1. RAPD-PCR profile of the 18 bacterial isolates (numbers of the isolates are indicated on the figure) with antimicrobial activity, obtained in the screening process for new bacteriocinogenic strains isolated from boza with primer OPL-02 and OPL-18. M: 1 kb ladder

(Thermo Fisher Scientific). Isolates 31, 75 and 87 were selected for further studies based on the obtained profile and recorded bacteriocinogenic activity, and identified as *Pediococcus acidilactici* ST31BZ, *Pediococcus pentosaceus* ST75BZ and *Pediococcus pentosaceus* ST87BZ, respectively.

Supplementary Tables

Supplementary tables 1, 2, 3, and 4 are available in separate files.

Supplementary Table 5. Bacteriocin susceptibility assay results, including species name and number of strains tested.

Test organisms	growth media	Bacteriocin activity sensitive strains / total number tested strains		
		ST31BZ	ST75BZ	ST87BZ
<i>Enterococcus faecalis</i>	MRS	14 / 20	12 / 20	12 / 20
<i>Enterococcus faecium</i>	MRS	12 / 13	10 / 13	10 / 13
<i>Enterococcus hirae</i>	MRS	3 / 3	3 / 3	3 / 3
<i>Lactococcus lactis</i>	MRS	8 / 11	6 / 11	8 / 11
<i>Listeria innocua</i>	BHI	5 / 5	5 / 5	5 / 5
<i>Listeria monocytogenes</i>	BHI	36 / 38	37 / 38	37 / 38
<i>Streptococcus thermophilus</i>	MRS	6 / 11	4 / 11	4 / 11
<i>Latilactobacillus sakei</i>	MRS	4 / 7	4 / 7	4 / 7
<i>Lactiplantibacillus plantarum</i>	MRS	0 / 18	0 / 18	0 / 18
<i>Limosilactobacillus fermentum</i>	MRS	0 / 7	0 / 7	0 / 7
<i>Streptococcus infantarius</i> subsp. <i>infantarius</i>	MRS	0 / 2	0 / 2	0 / 2
<i>Limosilactobacillus mucosae</i>	MRS	0 / 2	0 / 2	0 / 2
<i>Salmonella</i> spp.	BHI	0 / 8	0 / 8	0 / 8
<i>Staphylococcus aureus</i>	BHI	0 / 14	0 / 14	0 / 14
<i>Staphylococcus epidermidis</i>	BHI	0 / 4	0 / 4	0 / 4
<i>Leuconostoc mesenteroides</i>	MRS	0 / 9	0 / 9	0 / 9
<i>Enterococcus mundtii</i>	MRS	0 / 1	0 / 1	0 / 1
<i>Latilactobacillus curvatus</i>	MRS	0 / 3	0 / 3	0 / 3
<i>Pediococcus</i> spp.	MRS	0 / 6	0 / 6	0 / 6
<i>Lactobacillus delbrueckii</i>	MRS	0 / 2	0 / 2	0 / 2

Supplementary Table 6. Antibiotic susceptibility of *Pediococcus acidilactici* ST31BZ, *Pediococcus pentosaceus* ST75BZ and *Pediococcus pentosaceus* ST87BZ.

Antibiotic	µg/disk	ST31BZ	ST78BZ	ST85BZ
		Diameter inhibition zone (mm)		
chloramphenicol	30	25	22	25
neomycin	10	18	16	16
ampicilin	10	0	0	0
tobramycin	10	0	0	0
kanamycin	30	0	0	0
gentamycin	10	0	0	0
amikacin	30	0	0	0
oxacillin	1	0	0	0
vancomycin	30	0	0	10
bacitracin	10	17	12	12
ciprofloxacin	5	0	0	0
ceforoxime	30	26	22	23
imipenem	10	28	28	29
clindamycin	2	25	24	24
erytromycin	15	23	22	23
cefepime	30	18	16	15
penicillin	10	27	22	22
tetracycline	30	0	0	0
metronidazole	50	0	0	0
nalidix acid	30	0	0	0

Supplementary References

1. Charteris, W. P., Kelly, P. M., Morelli, L. & Collins, J. K. Gradient Diffusion Antibiotic Susceptibility Testing of Potentially Probiotic Lactobacilli. *J. Food Prot.* **64**, 2007–2014 (2001).