

TITLE: ANTIMICROBIAL ACTIVITY OF ENTEROCINS AGAINST GRAM-POSITIVE

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ABSTRACT:

Enterococcus present species that produce antimicrobial peptides (enterocins) against several foodborne pathogens, as *Listeria* sp. Them, the aim of this study was characterize bacteriocin produced by strains of *Enterococcus* and the enterocin were examined against several bacteria. The 65 enterococci strains were streaked in plates containing BHI agar that were incubated at 37°C for 24h. The cells were died by chloroform vapor and soft BHI agar (0.8%) inoculated with *Listeria innocua* CLIP 12612 (10⁸ cells.ml⁻¹) was poured. The formation of halo was indicative of enterococci potentially producing enterocin (Ent+). The presence of 10 enterocin genes was evaluated by PCR method. Ent+ were growth in MRS medium at 37°C for 18h and cell-free supernatants (CFS) were obtained, neutralized with 1M NaOH and treated with catalase. The antimicrobial activity of CFS was done by diffusion in agar in plate with indicator bacteria. The CFS were evaluated for their activity after proteolytic enzymes (protease, trypsin and α -chymiotrypsin) and heat treatment after 80°C and 100°C. The quantification of the CFS activity, expressed as arbitrary units (AU) per mililiter, were defined as highest dilution of CFS which showed growth inhibition. Of the 65 enterococci, 11 (5 from food, 3 water and 3 clinical) were considered Ent+, with the prevalence for genes *entA*, *entB*, *entP* and *entX*. Bacteriocins produced by enterococci strains were present in 7/11 CFS obtained from isolates Ent+. The CFS were inactivated after treatment with proteolytic enzymes and thermostable, characteristics of enterocin. The highest level of activity was performed by 4/7 CFS (6400 AU.mL⁻¹). Regarding the spectrum of action of the CFS, eliminated 12/43 indicator bacteria, as *Listeria monocytogenes*, *Listeria ivanovii*, well as other species of *L. innocua* and some clinical enterococci. All enterococci were immune to their own CFS. The antimicrobial activity of the enterocins evaluated, mainly against *Listeria*, bacterium that can cause serious infections in humans through contaminated food, show the enterococci here as the candidates in the use of food bioconservatives.

Keywords: antibacterial peptide, arbitrary unit, bioconservatives

Development Agency: Fundação Araucária/CNPq-CAPES/UTFPR