

عنوان مقاله:

Enhancing Hydrogen Peroxide Formation by Lactobacillus Delbrueckii Str Resistant Mutants in The Cold Condition

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خلاصه مقاله:

The strains of *Lactobacillus delbrueckii* subsp. *lactis* widely used in food preservation due to ability produce high amount of hydrogen peroxide at refrigerator temperatures to inhibit food-borne pathogens and psychrophilic spoilage microorganisms. In order to improve of bio-preservation efficacy of *L. delbrueckii* MDC 9617 mutations causing resistance to streptomycin (str) were used. Among UV-mutagenized population of *L. delbrueckii* three str mutants producing high amounts of H₂O₂ were selected. Str mutants produced significant amounts of hydrogen peroxide 50-60 µg/ml in sodium phosphate buffer (0.2 M, pH 6.5) and in beef broth (BB) at 5 °C for 5 days submerged cultivation without of growth. Evaluation mutants antibacterial activity at refrigeration temperatures against food-borne pathogen *Escherichia coli* O157: H7 revealed elimination of pathogen total number up to practically undetectable amount for 3 days. In case of solid-state cultivation on agar-based medium, disks soaked by mutant cells suspensions formed larger inhibitory zones on *E. coli* O157: H7 lawn for one-day cold exposition. The size of inhibition zone depends on concentration of LAB cells. Str mutants *L. delbrueckii* reduced initial amount 2×10⁵ of *E. coli* O157: H7 in ground beef up to 3 log for 3 days of solid-state cocultivation when the wild strain reduced only 2 log. The application of *L. delbrueckii* mutants did not cause any changes in sensory characteristics of ground beef, moreover promotes expanding of shelf-life due to inhibition of psychrophilic spoilage microorganisms.

کلمات کلیدی:

Biopreservation, *Lactobacillus delbrueckii*, Str mutations, refrigerated temperatures, hydrogen peroxide, *E. coli* O157: H7

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