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The impact of the cell-free solution of lactic acid bacteria on cadaverine production by Listeria monocytogenes and Staphylococcus aureus in lysine-decarboxylase broth

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Abstract : The influences of cell-free solutions (CFSs) of lactic acid bacteria (LAB) on cadaverine and other biogenic amine production by Listeria monocytogenes and Staphylococcus aureus were investigated in lysine decarboxylase broth (LDB) using HPLC. Cell free solutions were prepared from Lactococcus lactis subsp. lactis, Leuconostoc mesenteroides subsp. cremoris, Pediococcus acidophilus and Streptococcus thermophiles. Two different concentrations that were 50% and 25% CFS and the control without CFSs were prepared. Significant variations on biogenic amine production were observed in the presence of L. monocytogenes and S. aureus ($P < 0.05$). The role of CFS on biogenic amine production by foodborne pathogens varied depending on strains and specific amine. Cadaverine formation in control by L. monocytogenes and S. aureus were 500.9 and 948.1 mg/L, respectively while the CFSs of LAB induced 4-fold lower cadaverine production by L. monocytogenes and 7-fold lower cadaverine production by S. aureus. CFSs resulted in strong decreases in cadaverine and putrescine production by L. monocytogenes and S. aureus, although remarkable increases were observed for histamine, spermidine, spermine, serotonin, dopamine, tyramine and agmatine, in the presence of LAB in lysine decarboxylase broth.

Keywords : Cell-free solution, lactic acid bacteria, cadaverine, food borne-pathogen

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