

Production of Biogenic Amines and Fermentation Metabolites by *Lactobacillus plantarum* Isolated from Naturally Fermented Pickles

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Aim of the study: Biogenic amines can be produced in fermented foods due to metabolic activities of microorganisms. Naturally occurring microbiota is an important factor that may affect the amount of biogenic amines formation during fermentation. The purpose of this study was to determine the production of biogenic amines and fermentation metabolites by *Lactobacillus plantarum* isolates from naturally fermented pickles randomly collected from different regions of Turkey.

Material and Methods: Isolates previously identified as *L. plantarum* were inoculated in deMan, Rogosa and Sharpe (MRS) broth supplemented with 0.2% L-histidine monohydrochloride, L-lysine monohydrochloride, and L-ornithine monohydrochloride for biogenic amine production. Isolates were measured after incubation for the production of three biogenic amines including cadaverine, putrescine and histamine with HPLC analysis. For fermentation metabolites, the same isolates incubated in MRS broth were treated for HPLC analysis of formate, pyruvate, lactate, ethanol, and 2,3-butanediol.

Results: The amount of produced biogenic amines by tested *L. plantarum* strains ranged as: cadaverine: 23-298 mg/L, putrescine: 0-994 mg/L, Histamine: 0-668 mg/L. Total biogenic amine production for each isolate was between 115-1332 mg/L. Production of fermentation metabolites for measured isolates varied as follows: formate: 2.996-64.902 mM, Pyruvate: 0.100-0.980 mM, lactate: 7.113-47.878 mM, ethanol 6.048-20.353 mM, and 2,3-butanediol: 0.111-13.148 mM. Naturally fermented pickles tested in here had *L. plantarum* strains with different biogenic amines and fermentation metabolites production capacity. Strain variability in naturally fermented pickles may cause public health risks of biogenic amines.

Keywords: Biogenic amines, *Lactobacillus plantarum*, Fermentation, Metabolit.