Session II Lecture 1

Diversity of NARO-Lactic Acid Bacteria Collection

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Summary

NARO-Lactic Acid Bacteria (LAB) Collection comprises over 6,000 isolates collected since 1995 in several institutes that were latterly integrated into the current organization. To utilize this valuable bioresource as a tool for facilitating agricultural and food research, we started the project for establishing the integrated bacterial collection of NARO. The LAB isolates were characterized in various respects including taxonomic, physiological, fermentation, and functional properties. The data were integrated into a database together with basic information about the isolates such as source (food or non-food, and the type of food product), year and place, culturing condition, and genome information (ongoing). About 3,000 isolates out of the collection are food origin (e.g., fresh vegetable and crop, fermented pickle, sake lee, and soybean paste) and the others are from non-food samples (e.g., silage, feed, and the samples from livestock animals). The isolates belong to all six families of Lactobacillales and the collection is taxonomically diverse as shown in the table. We tested the food-origin isolates for their fermentation ability of skim milk and soymilk (coagulation and final pH). These strains are also characterized by metabolite formation and consumption in soymilk fermentation by using the technique of NMR-based metabolomics. These data might enable us the rapid screening of desirable LAB strains.

Table. Taxonomy of the isolates in NARO-LAB Collection

Order	3	Lactobacillales, Bifidobacteriales, Bacillales
Family	9	Lactobacillaceae, Leuconostocaceae, Enterococcaceae, Streptococcaceae, Carnobacteriaceae, Bifidobacteriaceae, Bacillaceae etc.
Genus	>30	*Latilactobacillus*, *Lactiplantibacillus*, *Leuconostoc*, *Lentilactobacillus*, *Enterococcus*, *Limosilactobacillus*, *Lacticaseibacillus*, *Lactococcus*, *Pediococcus*, *Levilactobacillus*, *Lactobacillus*, *Weissella*, *Streptococcus* etc.
Species	>180	