Lactobacillus yamanashiensis subsp. yamanashiensis and Lactobacillus yamanashiensis subsp. mali sp. and subsp. nov., nom. rev.

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The name Lactobacillus yamanashiensis (Nonomura et al.) was not included on the Approved Lists of Bacterial Names and currently has no standing in bacterial nomenclature. This name is here revived for the same organism with which it was originally associated. The type strain is 239 (= ATCC 27304).

The name Lactobacillus yamanashiensis is not on the Approved Lists of Bacterial Names (6). However, the organism with which this name was originally associated has been isolated from wine musts (4) and fermenting ciders (1), and the name was validly published according to the International Code of Nomenclature of Bacteria (2-4). This species can be clearly differentiated from all other named species of Lactobacillus by the very low guanine-plus-cytosine content of its deoxyribonucleic acid (the lowest in the genus) and the presence of diaminopimelic acid in its cell walls, as well as by other taxonomic characteristics. Consequently, the name Lactobacillus yamanashiensis is revived here for the same organism to which it originally referred, in accordance with Rule 24a (2).

L. yamanashiensis was first proposed and described by Nonomura et al. (4) in 1965 and was redescribed in detail by Nonomura and Ohara (3) in 1967. Later, Carr et al. (1) compared the same strain with their strains of Lactobacillus mali and proposed the name L. yamanashiensis subsp. mali for their strains.

A description of L. yamanashiensis nom. rev., based on the type strain, is given below.

Description of Lactobacillus yamanashiensis sp. nov., nom. rev. Cells of L. yamanashiensis (ya.ma.na.shi.en's sis. N.L. adj. yamanashiensis belonging to Yamanashi Prefecture, Japan, the source of the wine must from which the organism was isolated) are gram positive, catalase negative, facultatively anaerobic rods 0.5 to 0.8 by 1.2 to 2.3 μm and occur singly, in pairs, and in short chains. Nonmotile, or weakly motile with a few peritrichous flagella.

Colonies are white, smooth, and glistening after a few days. Liquid cultures are turbid after a few days, with subsequent clearing and sediment.

Homofermentative, producing L(+)- and DL-lactic acids. Acid is produced from glucose, fructose, mannose, sucrose, and salicin. No acid is produced from ribose, arabinose, xylose, maltose, melibiose, lactose, raffinose or rhamnose. Little or no acid is produced from galactose, melezitose, mannitol, or sorbitol.

No growth in 4% taurocholate or 5% NaCl. No change in litmus milk. Dextran is produced from sucrose. Mannitol is not produced from fructose. Ammonia is not produced from arginine. Nitrite is not produced from nitrate. Esculin is hydrolyzed. Acetoin is produced. Malic acid is decomposed to lactic acid and CO₂. Pseudocatalase negative.

Optimal temperature for growth is 25 to 30°C. Growth occurs at 15°C but not at 45°C. Optimal pH for growth is 5 to 7.

Very good growth occurs in medium containing peptone, tryptose, yeast extract, liver extract, Tween 80, MnCl₂, glucose, and fructose.

Cell wall peptidoglycan contains meso-diaminopimelic acid, glutamate, and glycine.

Guanine-plus-cytosine content of deoxyribonucleic acid is 32.9 mol%, as determined by the thermal denaturation method (1).

Source: wine must.

Type strain: 239 (= ATCC 27340).

This species is differentiated from all other species in the genus Lactobacillus most decisively by its low guanine-plus-cytosine content, in addition to the presence of diaminopimelic acid in its cell wall peptidoglycan (1, 5). It is distinguished also by the following key characteristics: homofermentation, growth at 15°C, inability to ferment ribose, and production of L(+)- and DL-lactic acids.

Carr et al. (1) have proposed the subspecies L. yamanashiensis subsp. mali for 15 isolates from apple juice and cider. The guanine-plus-cytosine contents of the deoxyribonucleic acids of 11 of these strains are 33.2 ± 0.7 mol%. The following
three strains of this subspecies have been deposited in American Type Culture Collection: ATCC 27053, ATCC 27054, and ATCC 27055.

LITERATURE CITED