



Draft Genome Sequences of 24 *Lactococcus lactis* Strains

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ABSTRACT The lactic acid bacterium *Lactococcus lactis* is widely used for the production of fermented dairy products. Here, we present the draft genome sequences of 24 *L. lactis* strains isolated from different environments and geographic locations.

Lactococcus lactis is a Gram-positive bacterium that is predominantly found on plant material and in the dairy environment (1, 2). It is extensively used in dairy fermentations (3), which is mainly due to its role in the development of texture and flavor through, e.g., proteolysis and the production of volatile flavor compounds (4). It also contributes to food preservation through the production of organic acids and bacteriocins such as nisin (5). Four *L. lactis* subspecies have been defined (6): subsp. *lactis* (7), subsp. *cremoris* (8), subsp. *hordniae* (9), and subsp. *tractae* (10). In this study we report the draft genome sequences of 24 *L. lactis* strains, of which 23 belong to subspecies *lactis* and one (LMG8520) is the type strain for the subspecies *hordniae* (Table 1) (11). However, we found in a detailed phylogenetic and comparative genome analysis that strain LMG8520 has a *L. lactis* subsp. *lactis* genotype.

The strains were grown overnight in 5 mL LM17 broth at 30°C. After propagation in fresh medium, cells were harvested during midexponential growth and total DNA was isolated as previously described (11) with the following modifications. Cell pellets were resuspended in a buffer [6.7% sucrose, 1 mM EDTA, 50 mM TrisHCl (pH 8.0)] and incubated with RNase (0.5 mg/mL) and lysozyme (2 mg/mL) at 37°C for 1 h. Subsequently, cells were lysed by treating the samples with SDS (1% wt/vol final concentration) at 37°C for 10 min. The total DNA was extracted with phenol-chloroform, precipitated with isopropanol and sodium acetate (12), and dissolved in sterile water.

Whole-genome sequencing was performed at GATC Biotech (Konstanz, Germany) with 50 bp paired-end libraries on an Illumina HiSeq 2000. Raw sequence reads of each of the genomes were assembled *de novo* using IDBA (13) with default parameters at a target coverage of 50×. This resulted in draft genomic sequences for 24 *L. lactis* strains (Table 1). Annotation of the contig sequences was performed by the RAST server (14).

Accession number(s). The genome sequences of the 24 *L. lactis* strains have been deposited as whole-genome shotgun projects at DDBJ/EMBL/GenBank under the accession numbers listed in Table 1.

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TABLE 1 Overview of the 24 *L. lactis* strains in NCBI BioProject PRJNA294255

Strain	Original strain name or culture collection no.	Subspecies	Accession no.	Source of isolation	Country of isolation
ATCC 19435 ^a	OJ	<i>lactis</i>	LKLC00000000	Milk (dairy starter) (11)	Denmark
DRA4		<i>lactis</i> biovar <i>diacetylactis</i>	LIWD00000000	Dairy starter (11)	the Netherlands
E34		<i>lactis</i>	LKLD00000000	Silage (11)	the Netherlands
K231		<i>lactis</i>	LKLE00000000	White kimchi (11)	Japan
K337		<i>lactis</i>	LKLF00000000	White kimchi (11)	Japan
KF134		<i>lactis</i>	LKLJ00000000	Alfalfa and radish (15)	New Zealand
KF146		<i>lactis</i>	LKLL00000000	Alfalfa and radish (15)	New Zealand
KF196		<i>lactis</i>	LKLL00000000	Japanese kaiware shoots (15)	New Zealand
KF201		<i>lactis</i>	LKLM00000000	Sliced mixed vegetables (15)	New Zealand
KF24		<i>lactis</i>	LKLH00000000	Alfalfa sprouts (15)	New Zealand
KF282		<i>lactis</i>	LKLN00000000	Mustard and cress (15)	New Zealand
KF67		<i>lactis</i>	LKLI00000000	Grapefruit juice (15)	New Zealand
KF7		<i>lactis</i>	LKLG00000000	Alfalfa sprouts (15)	New Zealand
Li-1		<i>lactis</i>	LKLO00000000	Grass (11)	Belgium
LMG14418	TM 147	<i>lactis</i>	LKLT00000000	Bovine milk (11)	Belgium
LMG8520 ^a	HC-1-1	<i>hordniae</i>	LKLP00000000	Leaf hopper (11)	United States
LMG8526	B 6113	<i>lactis</i>	LKLQ00000000	Chinese radish (11)	United Kingdom
LMG9446	21L	<i>lactis</i>	LKLR00000000	Frozen peas (11)	United Kingdom
LMG9447 ^b	31L	<i>lactis</i>	LKLS00000000	Frozen peas (11)	United Kingdom
M20		<i>lactis</i> biovar <i>diacetylactis</i>	LKLU00000000	Soil (11)	the Netherlands
ML8	NCDO1994	<i>lactis</i>	LKLV00000000	Dairy starter (11)	United Kingdom
N42		<i>lactis</i>	LKLW00000000	Soil and grass (11)	the Netherlands
NCDO895	X62	<i>lactis</i>	LKLX00000000	Dairy starter (11)	United Kingdom
UC317		<i>lactis</i>	LKLY00000000	Dairy starter (11)	Ireland

^aType strain.^bThis strain was incorrectly labeled as LMG9449 in references 11 and 16.

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