

Table S1: LAB isolated strains. The first three best results of V1-V3 sequence BLAST analysis are reported. Natural whey starter from cow (NWSc); natural whey starter from buffalo (NWSb); aerobiosis (AE); anaerobiosis (AN); Operational Taxonomic Unit (OTU); not applicable (na).

ISOLATES	SOURCE/ MEDIUM- Growth conditions	V1-V3 SEQUENCE BLAST ANALYSIS	SPECIE/SUBSPECIE SPECIFIC PCR ANALYSIS	RAPD-PCR CLUSTERING
I1	NWSc/MRS 30°C-AE	Lactococcus lactis subsp. cremoris (98%) Lactococcus lactis subsp. hordniae (98%) Lactococcus lactis strain NBRC (98%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 1
I2		Lactococcus lactis subsp. hordniae (98%) Lactococcus lactis strain NBRC (98%) Lactococcus lactis subsp. tructae (98%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 2
I3		Lactococcus lactis subsp. cremoris (98%) Lactococcus lactis subsp. hordniae (98%) Lactococcus lactis strain NBRC (97%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 1
I4		Lactococcus lactis subsp. cremoris (97%) Lactococcus lactis subsp. hordniae (97%) Lactococcus lactis strain NBRC (97%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 3
I5		Lactococcus lactis subsp cremoris (98%) Lactococcus lactis subsp hordniae (98% ) Lactococcus taiwanensis (98%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 4
I6		Lactococcus lactis strain NBRC (99%) Lactococcus lactis strain NCD0 (99%) Lactococcus lactis subsp hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 5



I7		Lactococcus lactis strain NBRC (92%) Lactococcus lactis strain NCDO (92%) Lactococcus taiwanensis (96%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 6
I8		Enterococcus faecium NBRC100485 (98%) Enterococcus faecium NBRC 100486 (98%) Enterococcus thailandicus (98%)	<i>Enterococcus faecium</i>	na
I9		Lactococcus lactis subsp cremoris (99%) Lactococcus lactis subsp hordniae (99%) Lactococcus lactis strain NBRC (99%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 1
I10		Enterococcus faecium NBRC 100485 (96%) Enterococcus faecium NBRC 100486 (96%) Enterococcus thailandicus (96%)	<i>Enterococcus faecium</i>	na
L1	NWSc/MRS 30°C-AN	Lactococcus lactis strain NBRC (99%) Lactococcus lactis strain NCDO (99%) Lactococcus lactis subsp. hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
L6		Lactococcus taiwanensis (99%) Lactococcus lactis subsp. cremoris (99%) Lactococcus lactis subsp. hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
L7		Lactococcus taiwanensis (99%) Lactococcus lactis subsp. cremoris (99%) Lactococcus lactis subsp. hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
L8		Lactococcus taiwanensis (99%) Lactococcus lactis subsp. cremoris (99%) Lactococcus lactis subsp. hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
L9		Lactococcus taiwanensis (99%) Lactococcus lactis subsp. cremoris (99%) Lactococcus lactis subsp. hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	na



L10		Lactococcus taiwanensis (99%) Lactococcus lactis subsp. cremoris (99%) Lactococcus lactis subsp. hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
M1	NWSc/ESTY 30°C-AE	Enterococcus faecium NBRC100486 (97%) Enterococcus faecium NBRC100485 (97%) Enterococcus durans (97%)	<i>Enterococcus faecium</i>	na
M3		Enterococcus faecium NBRC100486 (97%) Enterococcus faecium NBRC100485 (97%) Enterococcus thailandicus (97%)	<i>Enterococcus faecium</i>	na
M5		Enterococcus faecium NBRC100486 (97%) Enterococcus faecium NBRC100485 (97%) Enterococcus thailandicus (97%)	<i>Enterococcus faecium</i>	na
M7		Lactococcus lactis cremoris (98%) Lactococcus lactis hordniae (98%) Lactococcus lactis strain NBRC (98%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 1
M8		Lactococcus lactis subsp. cremoris (98%) Lactococcus lactis subsp. hordniae (98%) Lactococcus lactis subsp. NBRC (98%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 1
M9		Lactococcus lactis subsp. cremoris (99%) Lactococcus lactis subsp. hordniae (99%) Lactococcus lactis strain NBRC (99%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 1
M10		Lactococcus lactis subsp. cremoris (98%) Lactococcus lactis subsp. hordniae (98%) Lactococcus lactis strain NBRC (98%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 1
N1	NWSc/ESTY 30°C-AN	Enterococcus faecium NBRC100486 (97%) Enterococcus faecium NBRC100485 (97%) Enterococcus thailandicus (97%)	<i>Enterococcus faecium</i>	na



N2		Enterococcus faecium NBRC100486 (96%) Enterococcus faecium NBRC100485 (96%) Enterococcus thailandicus (96%)	<i>Enterococcus faecium</i>	na
N3		Streptococcus thermophilus ATCC (97%) Streptococcus thermophilus DSH (96%) Streptococcus vestibularis (96%)	<i>Streptococcus thermophilus</i>	na
N5		Enterococcus hirae (99%) Enterococcus faecium (99%) Enterococcus hirae (99%)	<i>Enterococcus faecium</i>	na
Q1	NWSc/ESTY 44°C-AE	Streptococcus thermophilus (99%) Streptococcus salivarius (99%) Streptococcus thermophilus (98%)	<i>Streptococcus thermophilus</i>	na
Q2		Streptococcus thermophilus (99%) Streptococcus salivarius (99%) Streptococcus thermophilus (98%)	<i>Streptococcus thermophilus</i>	na
Q3		Streptococcus thermophilus (99%) Streptococcus salivarius (99%) Streptococcus thermophilus (98%)	<i>Streptococcus thermophilus</i>	na
Q4		Streptococcus thermophilus (99%) Streptococcus vestibularis (94%) Streptococcus salivarius (94%)	<i>Streptococcus thermophilus</i>	na
Q5		Streptococcus thermophilus (99%) Streptococcus salivarius (99%) Streptococcus vestibularis (99%)	<i>Streptococcus thermophilus</i>	na
Q6		Streptococcus thermophilus (99%) Streptococcus salivarius (99%) Streptococcus vestibularis (99%)	<i>Streptococcus thermophilus</i>	na



Q7		Streptococcus thermophilus (99%) Streptococcus salivarius (99%) Streptococcus vestibularis (99%)	<i>Streptococcus thermophilus</i>	na
Q10		Streptococcus thermophilus (99%) Streptococcus salivarius (99%) Streptococcus vestibularis (99%)	<i>Streptococcus thermophilus</i>	na
O3	NWSc/BHI 37°C-AE	Enterococcus faecium (98%) Enterococcus hirae (98%) Enterococcus faecium (97%)	<i>Enterococcus faecium</i>	na
O4		Enterococcus faecium (98%) Enterococcus hirae (98%) Enterococcus faecium (97%)	<i>Enterococcus faecium</i>	na
O5		Enterococcus faecium (98%) Enterococcus hirae (98%) Enterococcus faecium (97%)	<i>Enterococcus faecium</i>	na
O6		Enterococcus faecium (97%) Enterococcus hirae (97%) Enterococcus faecium (97%)	<i>Enterococcus faecium</i>	na
O7		Enterococcus faecium (98%) Enterococcus faecium (98%) Enterococcus hirae (97%)	<i>Enterococcus faecium</i>	na
O8		Enterococcus faecium (97%) Enterococcus faecium (97%) Enterococcus hirae (97%)	<i>Enterococcus faecium</i>	na
A2	NWSb/MRS 30°C-AE	Lactococcus lactis subsp. cremoris (93%) Lactococcus lactis subsp. hordniae (93%) Lactococcus lactis subsp. tructae (93%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 8



A3	Lactococcus lactis (98%) Lactococcus lactis (98%) Lactococcus lactis subsp. hordniae (97%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 9
A4	Lactococcus lactis subsp. cremoris 93% Lactococcus lactis subsp. hordniae 93% Lactococcus lactis strain NBRC 93%	<i>Lactococcus lactis subsp.lactis</i>	na
A5	Lactococcus lactis subsp. Hordniae (98%) Lactococcus lactis subsp. hordniae (98%) Lactococcus lactis subsp. tructe (98%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 10
A8	Lactococcus lactis strain NBRC (96%) Lactococcus lactis strain NCDO 96% Lactococcus lactis subsp. hordniae 96%	<i>Lactococcus lactis subsp.lactis</i>	na
A17	Lactococcus lactis (100%) Lactococcus lactis (100%) Lactococcus lactis subsp. hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
A25	Lactococcus lactis (100%) Lactococcus lactis (100%) Lactococcus lactis subsp. hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
A30	Lactococcus lactis strain NBRC (99%) Lactococcus lactis strain NCDO (99%) Lactococcus lactis subsp. hordniae (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
A40	Lactococcus lactis subsp. cremoris (99%) Lactococcus lactis subsp. hordniae (99%) Lactococcus lactis (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
A45	Lactococcus lactis subsp. hordniae (100%) Lactococcus lactis (100%) Lactococcus lactis subsp. tructae (100%)	<i>Lactococcus lactis subsp.lactis</i>	na



A48		Lactococcus lactis subsp. cremoris (99%) Lactococcus lactis subsp. hordniae (99%) Lactococcus lactis strain NBRC (99%)	<i>Lactococcus lactis subsp.lactis</i>	na
A50		Lactococcus lactis subsp. cremoris (100%) Lactococcus lactis subsp. hordniae (100%) Lactococcus lactis (100%)	<i>Lactococcus lactis subsp.lactis</i>	na
B1	NWSb/MRS 30°C-AN	Lactococcus lactis subsp. lactis (99%) Lactococcus lactis subsp. lactis (98%) Lactococcus lactis subsp. hordniae (97%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 11
D1	NWSb/ESTY 30°C-AN	Lactococcus lactis subsp. lactis (99%) Lactobacillus delbrueckii subsp. lactis (99%) Lactococcus lactis subsp. cremoris (99%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 12
D2		Lactococcus lactis subsp. Lactis (98%) Lysinibacillus fusiformis (95%) Lysinibacillus fusiformis (95%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 10
D3		Lactococcus lactis subsp. Lactis (99%) Lactobacillus delbrueckii subsp. lactis (99%) Streptococcus sp. (92%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 14
D4		Streptococcus thermophilus (99%) Streptococcus sp. (97%) Streptococcus salivarius (84%)	<i>Streptococcus thermophilus</i>	na
D5		Lactococcus lactis subsp. Lactis (93%) Lactobacillus delbrueckii subsp. lactis (93%) Streptococcus sp. (93%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 15
MS2		Lactococcus lactis strain NBRC (99%) Lactococcus lactis supsp. lactis (98%) Lactococcus lactis subsp. hordniae (98%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 16



MS9		Lactococcus lactis subsp. lactis (98%) Lactococcus lactis subsp. hordniae (98%) Lactococcus lactis strain NBRC (98%)	<i>Lactococcus lactis subsp.lactis</i>	OTU 17
E3	NWSb/MRS 44°C-AN	Streptococcus thermophilus (98%) Streptococcus salivarius (97%) Streptococcus thermophilus (97%)	<i>Streptococcus thermophilus</i>	na
E5		Streptococcus thermophilus (99%) Streptococcus salivarius (98%) Streptococcus thermophilus (98%)	<i>Streptococcus thermophilus</i>	na
E8		Streptococcus thermophilus (98%) Streptococcus thermophilus (96%) Streptococcus salivarius (92%)	<i>Streptococcus thermophilus</i>	na
E10		Lactobacillus fermentum (92%) Lactobacillus fermentum (90%) Lactobacillus sp. (90%)	<i>Lactobacillus fermentum</i>	na
F3	NWSb/ESTY 44°C-AE	Lactobacillus delbrueckii subsp.delbrueckii (98%) Lactobacillus delbrueckii subsp.lactis (97%) Lactobacillus delbrueckii subsp.bulgaricus (97%)	<i>Lactobacillus delbrueckii</i>	na
G1	NWSb/ESTY 44°C-AN	Lactobacillus delbrueckii subsp.bulgaricus (98%) Lactobacillus delbrueckii subsp. indicus (98%) Lactobacillus delbrueckii subsp.delbrueckii (97%)	<i>Lactobacillus delbrueckii</i>	na
G3		Lactobacillus delbrueckii subsp. bulgaricus (98%) Lactobacillus delbrueckii subsp. delbrueckii (97%) Lactobacillus leichmannii (94%)	<i>Lactobacillus delbrueckii</i>	na
G5		Lactobacillus delbrueckii subsp. bulgaricus (98%) Lactobacillus delbrueckii subsp. indicus (98%) Lactobacillus delbrueckii subsp. delbrueckii (97%)	<i>Lactobacillus delbrueckii</i>	na