

Supplementary Materials:

Probiotic properties of lactic acid bacteria isolated from traditionally fermented Xinjiang cheese

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Table S1 Physiological and biochemical characteristics of six strains

Strains	H4	K4-8	K4-9	R4	R5	S4
Cell morphology	Coccus	Coccus	Coccus	Rod	Coccus	Rod
Surface appearance	Off-white, smooth moist	Off-white, smooth moist	Off-white, smooth moist	Milky white, smooth moist	Off-white, smooth moist	Milky white, smooth moist
Gram staining	+	+	+	+	+	+
Gas from glucose	+	+	-	+	-	-
Catalase test	-	-	-	-	-	-
Milk curd test	+	-	-	+	+	+
Growth at:						
45 °C	w	-	w	+	-	+
60 °C	w	-	-	w	w	-
pH 3.0	+	+	+	+	+	+
pH 9.0	-	-	-	+	-	+
Hydrolysis of:						
Arginine	+	+	-	-	+	-
Aesculin	+	+	-	+	+	-
Carbohydrate fermentation						
Glucose	+	+	+	+	+	+
Sucrose	-	+	+	+	-	+
Fructose	+	+	+	+	+	-
Galactose	+	+	+	+	+	-
Sodium gluconate	-	-	-	-	-	-
Lactose	-	+	+	-	+	-
Mannitol	+	-	-	-	+	-
Preliminary results	<i>Enterococcus</i>	<i>Enterococcus</i>	<i>Enterococcus</i>	<i>Lactobacillus</i>	<i>Enterococcus</i>	<i>Lactobacillus</i>

+ = positive; - = negative; w = weak

Table S2 Acidifying activity of six strains of lactic acid bacteria isolated from Xinjiang cheese

Strains	Titratable acidity (g/100 ml) ^g		
	Incubation time 6 h	Incubation time 12 h	Incubation time 24 h
<i>L. rhamnosus</i> R4	0.40 ^{cd}	0.69 ^b	0.86 ^a
<i>L. helveticus</i> S4	0.41 ^{bc}	0.72 ^a	0.78 ^c
<i>E. hirae</i> H4	0.44 ^a	0.68 ^b	0.83 ^b
<i>E. hirae</i> R5	0.44 ^a	0.60 ^{cd}	0.74 ^{de}
<i>E. hirae</i> K4-8	0.37 ^{de}	0.58 ^{de}	0.82 ^b
<i>E. hirae</i> K4-9	0.22 ^f	0.59 ^{ef}	0.73 ^{ef}

Presented values are means of duplicate determinations; Mean values within the same column followed by different superscript letters differ significantly ($P<0.05$); ^g Titratable acidity expressed as g/100 ml lactic acid

Table S3 Diacetyl-producing abilities of six strains of lactic acid bacteria isolated from Xinjiang cheese

Strains	Fermentation temperature (°C)	Cold storage time (h)	Diacetyl production (µg/ml)
<i>L. rhamnosus</i> R4	37	48	1.76 ^a
<i>L. helveticus</i> S4	37	36	1.61 ^b
<i>E. hirae</i> H4	37	36	1.39 ^c
<i>E. hirae</i> R5	37	24	1.20 ^d
<i>E. hirae</i> K4-8	37	24	0.72 ^e
<i>E. hirae</i> K4-9	37	12	0.68 ^e

Presented values are means of duplicate determinations; Mean values within the same column followed by different superscript letters differ significantly ($P<0.05$)

Table S4 Autolysis activities of six strains of lactic acid bacteria isolated from Xinjiang cheese

Strains	Autolysis (%)		
	Incubation time 8 h	Incubation time 24 h	Incubation time 48 h
<i>L. rhamnosus</i> R4	12.70±0.50 ^a	22.30±1.20 ^a	56.05±0.80 ^a
<i>L. helveticus</i> S4	11.80±0.41 ^b	20.5±0.60 ^b	45.42±1.21 ^a
<i>E. hirae</i> H4	10.90±0.60 ^{cd}	15.30±0.80 ^c	29.38±0.02 ^b
<i>E. hirae</i> R5	10.0±0.50 ^{cd}	14.81±1.30 ^c	25.08±0.97 ^c
<i>E. hirae</i> K4-8	3.51±0.40 ^e	8.72±0.50 ^d	13.56±0.05 ^d
<i>E. hirae</i> K4-9	3.32±0.37 ^f	5.03±0.60 ^e	9.65±0.81 ^e

^{a-f} Presented values are means of duplicate determinations; ± indicates standard deviation from the mean. Mean values (± standard deviation) within the same column followed by different superscript letters differ significantly ($P < 0.05$)