

Figure S1. Strain identification by species-specific multiplex PCR. a) *Lc. varacasei* (253 bp) and *Lc. rhamnosus* (801 bp) identification by *mutL* primers, b) *Lp. plantarum* identification (318 bp) by *recA* primers, and c) *Lactococcus lactis* subsp. *lactis* identification by *LcLspp-F* primers (387 bp).

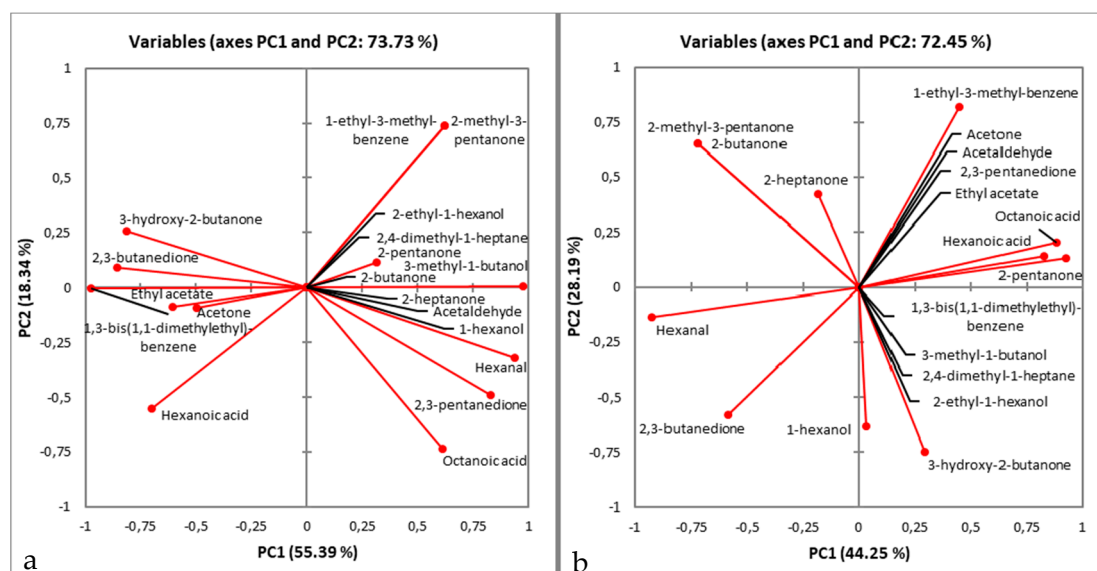


Figure S2. Minor volatile compounds determined by HS-SPME GC/MS analysis in functional yoghurt (a) and ayran (b) products.

Table S1. Sensory evaluation of the functional yoghurt products compared to a similar type commercial product.

Yoghurt products						
Sensory characteristic	Description	YC	YC_O	Y_FDF	Y_FDIO	Commercial
Appearance	Smoothness	4.2 ± 0.7	4.0 ± 1.0	3.9 ± 1.0	4.0 ± 1.1	2.8 ± 1.2
	Bubbles	1.2 ± 0.4	1.3 ± 0.6	1.2 ± 0.4	1.3 ± 0.6	1.3 ± 0.5
	Syneresis	3.3 ± 1.2	2.3 ± 1.0	2.5 ± 1.2	2.9 ± 1.2	1.2 ± 0.3
Aroma	Milk-like	1.9 ± 1.1	1.5 ± 0.7	1.2 ± 0.9	2.0 ± 0.9	-
	Neutral	-	-	-	-	1.6 ± 0.8
Texture (in the spoon)	Cohesion	2.7 ± 0.9	3.4 ± 0.9	3.0 ± 0.9	2.9 ± 0.8	4.4 ± 0.7
	Syneresis	3.0 ± 1.4	2.2 ± 0.	2.2 ± 0.8	3.1 ± 1.0	2.2 ± 1.7
	Stickiness	2.0 ± 1.0	3.2 ± 1.1	2.5 ± 1.1	2.1 ± 0.6	4.6 ± 0.7
	Residues	1.9 ± 1.2	2.9 ± 1.1	2.0 ± 1.2	2.6 ± 1.0	2.8 ± 1.6
Texture (when tasted)	Cohesion	3.0 ± 1.5	3.0 ± 0.9	3.2 ± 1.1	2.85 ± 1.41	4.38 ± 0.65
	Syneresis	2.1 ± 1.0	2.5 ± 1.2	2.1 ± 0.9	2.31 ± 1.11	3.23 ± 1.24
	Stickiness	1.8 ± 0.9	2.5 ± 1.0	1.6 ± 0.8	1.54 ± 0.66	3.15 ± 1.41
	Existence of solid parts	1.0 ± 0.0	3.3 ± 1.0	1.2 ± 0.6	2.69 ± 1.03	1.00 ± 0.00
	Grains	1.0 ± 0.0	2.5 ± 1.2	1.0 ± 0.0	2.08 ± 1.19	1.00 ± 0.00
Flavour	Sour	2.1 ± 1.2	2.2 ± 0.9	2.5 ± 0.8	-	2.2 ± 1.1
	Sweet	-	-	-	1.2 ± 0.8	-
Overall evaluation		3.5 ± 1.3	3.3 ± 1.5	3.0 ± 1.0	2.9 ± 1.3	4.2 ± 1.0

The values are expressed as means ± standard deviation. YC: control yoghurt, YC_O: control yoghurt + oat flakes, Y_FDF: yoghurt with freeze-dried free *Lc. paracasei* FBM_1327 cells, Y_FDIO: yoghurt with freeze-dried immobilized *Lc. paracasei* FBM_1327 cells on oat flakes cells. Scale (1-5): 1: least, 5: very much. Overall evaluation (0-5): 0: Not acceptable, 5: Very good.

Table S2. Sensory evaluation of the functional ayran products compared to a similar type commercial product.

Sensory characteristic	Description	Ayran products				Commercial
		AC	AC_O	A_FDF	A_FDIO	
Appearance	Watery	3.5 ± 1.1	-	1.8 ± 0.8	-	2.4 ± 0.8
	Creamy	-	1.5 ± 0.8	2.0 ± 1.5	1.9 ± 1.0	1.4 ± 0.9
	Existence of solid parts	-	3.5 ± 1.1	-	3.7 ± 1.3	-
Colour	White	3.7 ± 1.03	3.6 ± 0.8	3.2 ± 0.9	-	3.4 ± 1.19
	Off-white	-	2.3 ± 1.1	-	3.5 ± 0.6	-
	Light yellow	1.1 ± 0.5	3.2 ± 0.7	2.5 ± 0.6	1.7 ± 1.1	1.2 ± 0.52
Aroma	Creamy	2.3 ± 0.9	1.5 ± 0.9	2.2 ± 0.8	1.5 ± 0.8	3.5 ± 0.9
	Cereal-like	-	2.9 ± 0.9	-	3.4 ± 0.9	-
Texture	Watery	3.9 ± 0.8	2.8 ± 1.1	1.4 ± 0.8	-	2.3 ± 0.4
	Creamy	-	-	2.7 ± 0.7	3.7 ± 0.8	3.0 ± 0.8
	Existence of solid parts	-	3.1 ± 0.7	-	3.6 ± 0.7	-
Flavour	Sour	2.5 ± 0.9	2.4 ± 0.8	2.1 ± 0.7	2.6 ± 0.5	2.7 ± 0.7
	Sweet-and-sour	1.0 ± 0.2	2.5 ± 0.8	2.8 ± 0.7	3.7 ± 0.8	-
	Salty	1.2 ± 0.8	-	1.3 ± 0.9	2.0 ± 0.3	1.3 ± 0.8
Overall evaluation		2.7 ± 0.9	3.1 ± 0.9	3.4 ± 0.7	3.8 ± 1.0	3.8 ± 0.9

The values are expressed as means ± standard deviation. AC: control ayran, AC_O: control ayran + oat flakes, A_FDF: ayran with freeze-dried free *Lc paracasei* FBM_1327 cells, A_FDIO: ayran with freeze-dried immobilized *Lc. paracasei* FBM_1327 cells on oat flakes. Scale (1-5): 1: least, 5: very much. Overall evaluation (0-5): 0: Not acceptable, 5: Very good.