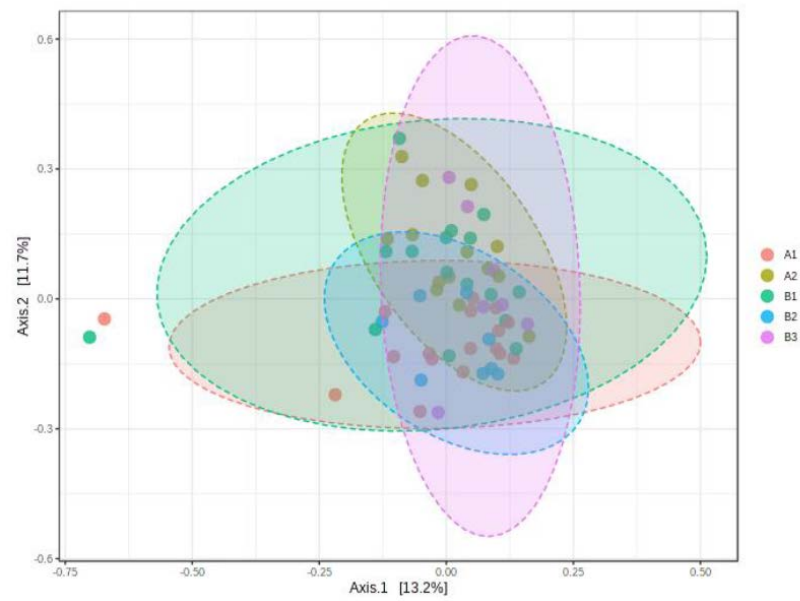


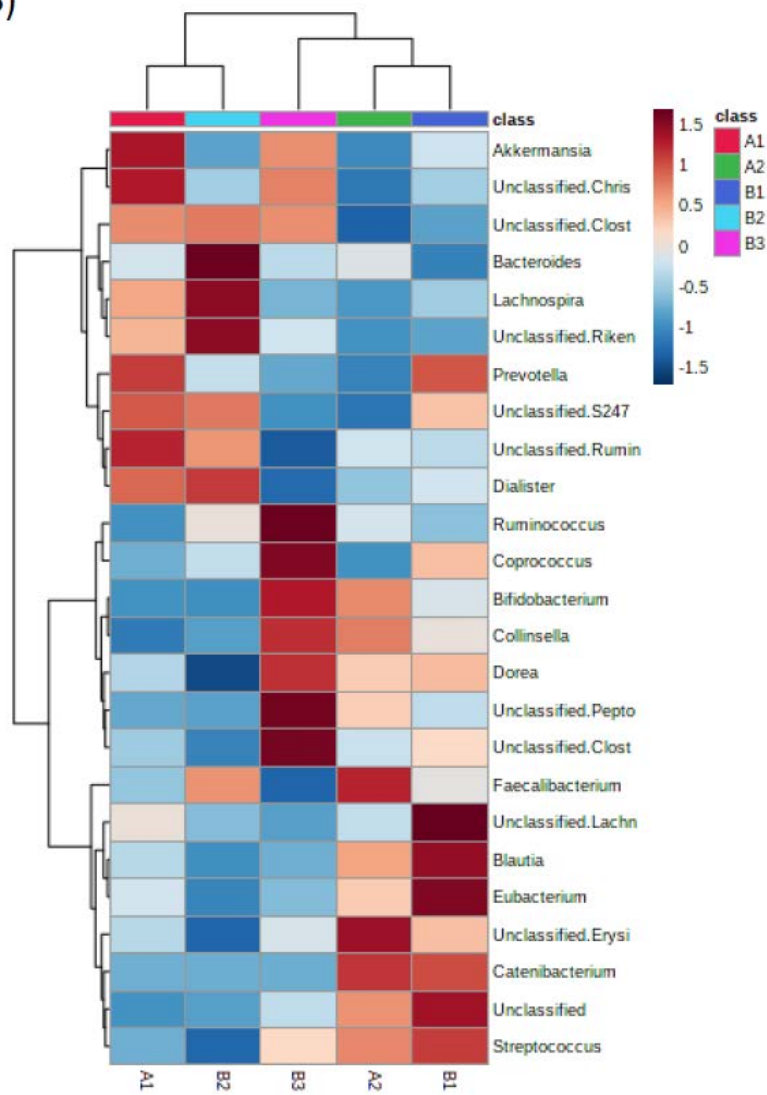
## Supplementary Materials

**Figure S1.** Global microbiota distribution in samples and overrepresented genera among the five clusters identified in the text and in Figure 1. **(A)** Beta diversity Principal coordinates analysis (PCoA) derived from Bray Curtis distances among samples ( $p = 0.003$  by PERMANOVA). **(B)** Microbial clusters and representative microbial taxa at genus level according to migration groups between baseline clusters and after the intervention. **(C)** LEfSe analysis indicates differentially abundant genus in each cluster.

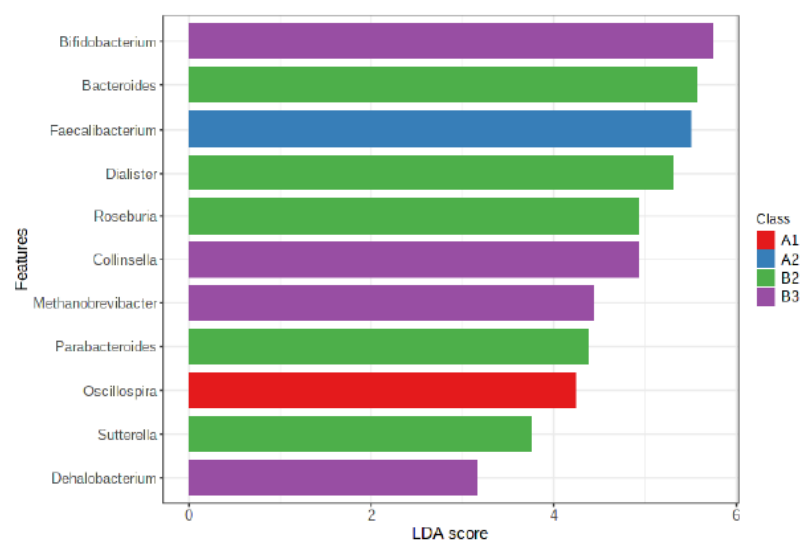
A)



B)



C)



**Table S1.** Validation of a FFQ by use of a 3-day recall.

	FFQ <sup>1</sup>	3 day-records <sup>2</sup>	R	p-value
Total protein	102.7±13.4	104.6±21.6	0.332	0.268
Animal protein	65.6±13.9	67.6±28.6	0.373	0.209
Plant protein	37.1±7.4	37.1±9.7	0.505	0.078
Lipids	111.3±13.4	114.9±15.5	0.710	0.007
Carbohydrates	262.7±35.7	261.2±49.7	0.668	0.013
Total dietary fiber	29.6±7.9	30.3±9.2	0.760	0.003

<sup>1</sup>Data presented as the mean ± standard deviation. Comparison of the nutrient intake using a 3-day diet records and the food frequency questionnaire.

<sup>2</sup> Association between nutrient intakes estimated by a food frequency questionnaire (FFQ) and 3-day diet records by use of Pearson correlation coefficient (R) test. P<0.05 was statistically significant.

**Table S2.** Nutrient composition and calories of freshly prepared natural horchata without added sugars supplied in this assay. The composition of standard natural horchata with added sugars is described, as well as that of different brands of bottled pasteurized commercial horchata where starch has been hydrolysed.

	Natural Horchata without added sugar*	Standard Nat- ural Horchata	Bottled pasteur- ized Brand H†	Bottled pasteur- ized Brand P†	Bottled pasteur- ized Brand CU†	Bottled pasteur- ized Brand CM†
	g/100 ml	g/100 ml	g/100 ml	g/100 ml	g/100 ml	g/100 ml
Lipids	4.1	4.1	3.6	3.6	2,8	3,8
Total Carbohydrates	6.8	13.8	12	12	11	13
from which						
Starch/ Fi- bre	5.5	5.5	1‡	1‡	1‡	1‡
Simple sugars	1.3	6.1	11	11	10	12
Protein	1.2	1.2	1	1	0,6	0,9
kcal/100 ml	68.9	165.9	96.4	96.4	79.6	89.8

\* supplied in this study.

† nutrients composition as described in the label of different commercial products.

‡ the estimated content of residual carbohydrate polymers of 1%, which is possibly due to the reported use of stabilizers described in the ingredients list.

**Table S3.** Proportions of predominant genera in the different Microbiota profiles before and after the intervention.

		Cluster A1		Cluster A2	
		Before Intervention	After Intervention	Before Intervention	After Intervention
Cluster B1	<i>Akkermansia</i>	1.61 (3.86)	1.365 (7.19)	0.085 (0.44)	0.02 (0.18)
	<i>Bacteroides</i>	1.5 (1.27)	1.875 (1.49)	2.05 (1.57)	2.985 (3.86)
	<i>Bifidobacterium</i>	1.635 (2.69)	1.395 (1.99)	7.195 (5.09)	4.425 (7.23)
	<i>Blautia</i>	8.5 (11.24)	7.655 (3.57)	14.49 (4.50)	12.65 (9.30)
	<i>Collinsella</i>	1.24 (1.04)	0.735 (0.67)	1.36 (1.07)	2.11 (2.15)
	<i>Coprococcus</i>	5.27 (1.15)	3.28 (1.68)	6.515 (1.60)	4.525 (0.62)
	<i>Dialister</i>	0.01 (2.62)	0 (5.35)	0 (0.44)	0.015 (0.23)
	<i>Dorea</i>	2.12 (1.51)	1.725 (0.70)	1.97 (1.04)	2.255 (0.89)
	<i>Eubacterium</i>	2.775 (1.69)	2.335 (1.30)	0.045 (0.22)	0.06 (0.21)
	<i>Faecalibacterium</i>	3.23 (1.17)	4.61 (4.61)	6.65 (3.45)	6.87 (5.46)
	<i>Lachnospira</i>	0.145 (0.32)	0.075 (0.63)	0.33 (0.20)	0.14 (0.4)
	<i>Oscillospira</i>	0.77 (0.25)	0.9 (0.2)	0.545 (0.36)	0.73 (0.29)
	<i>Prevotella</i>	0.435 (1.19)	0.745 (1.71)	0 (0.04)	0.03 (0.10)
	<i>Roseburia</i>	0.295 (0.61)	0.315 (0.66)	0.705 (0.42)	0.255 (0.67)
	<i>Ruminococcus</i>	4.77 (2.64)	4.04 (1.59)	5.505 (0.74)	4.745 (1.90)

	<i>Streptococcus</i>	1.84 (3.55)	0.425 (0.76)	1.115 (0.68)	1.385 (2.52)
	<i>Unclassified</i>	1.375 (1.07)	1.085 (1.43)	3.48 (4.16)	2.865 (2.85)
	<i>Un_Christensenellaceae</i>	0.25 (0.8)	0.905 (1.47)	0.02 (0.08)	0.025 (0.03)
	<i>Un.Clostridiaceae</i>	0.375 (1.05)	0.73 (0.81)	1.15 (0.89)	0.435 (0.52)
	<i>Un.Clostridiales</i>	9.185 (7.61)	9.2 (5.39)	3.08 (1.53)	2.52 (3.39)
	<i>Un.Coriobacteriaceae</i>	0.565 (0.23)	0.395 (0.41)	0.58 (0.64)	0.575 (0.32)
	<i>Un.Enterobacteriaceae</i>	0.015 (0.12)	0.29 (1.11)	0.01 (0.01)	0.665 (1.40)
	<i>Un.Erysipelotrichaceae</i>	0.74 (0.73)	0.535 (0.59)	1.62 (1.93)	1.57 (2.76)
	<i>Un.Lachnospiraceae</i>	8.355 (4.39)	7.49 (3.78)	8.775 (7.56)	5.325 (6.6)
	<i>Un.Peptostreptococcaceae</i>	0.25 (0.22)	0.435 (0.26)	0.94 (1.08)	0.625 (1.01)
	<i>Un.Ruminococcaceae</i>	23.7 (13.21)	25.98 (7.58)	20.055 (8.96)	23.37 (11.78)
Cluster B2	<i>Akkermansia</i>	1.47 (3.44)	1.245 (4.16)	0.055 (0.05)	0.35 (0.35)
	<i>Bacteroides</i>	5.405 (5.9)	4.71 (1.48)	18.925 (5.81)	8.455 (5.04)
	<i>Bifidobacterium</i>	0.915 (1.66)	0.605 (1.17)	1.645 (1.39)	3.805 (2.80)
	<i>Blautia</i>	6.725 (4.8)	8.42 (3.13)	10.465 (4.00)	10.93 (1.9)
	<i>Collinsella</i>	0.695 (0.71)	0.725 (0.34)	1.12 (0.45)	1.23 (0.24)
	<i>Coprococcus</i>	5.335 (1.71)	6.65 (3.16)	3.345 (0.58)	5.16 (1.4)
	<i>Dialister</i>	3.07 (2.87)	3.4 (3.14)	4.405 (1.63)	5.085 (0.98)
	<i>Dorea</i>	1.415 (0.68)	1.515 (0.50)	2.025 (0.15)	1.33 (0.01)
	<i>Eubacterium</i>	0 (0)	0 (0)	2.13 (1.12)	4.085 (2.94)
	<i>Faecalibacterium</i>	6.74 (2.66)	4.515 (1.81)	9.11 (5.78)	13.27 (9.26)
	<i>Lachnospira</i>	0.66 (1.46)	0.69 (0.24)	0.52 (0.52)	0.04 (0.04)
	<i>Oscillospira</i>	0.77 (0.39)	0.93 (0.57)	0.68 (0.21)	0.425 (0.14)
	<i>Prevotella</i>	0.11 (1.46)	0.145 (0.58)	0.005 (0.01)	0.005 (0.01)
	<i>Roseburia</i>	1.265 (0.88)	0.66 (0.40)	3.01 (1.82)	1.755 (1.03)
	<i>Ruminococcus</i>	6.07 (1.19)	5.23 (1.91)	4.49 (0.46)	4.605 (1.83)
	<i>Streptococcus</i>	0.195 (0.38)	0.43 (0.79)	0.665 (0.65)	0.16 (0.11)
	<i>Unclassified</i>	1.3 (0.17)	1.295 (0.70)	2.285 (0.87)	2.365 (1.43)
	<i>Un.Christensenellaceae</i>	0.245 (0.31)	0.255 (0.67)	0.045 (0.02)	0.04 (0.03)
	<i>Un.Clostridiaceae</i>	0.51 (0.56)	0.36 (0.52)	0.72 (0.52)	0.4 (0.36)
	<i>Un.Clostridiales</i>	14.835 (4.52)	14.095 (4.76)	4.005 (2.58)	3.835 (2.74)
	<i>Un.Coriobacteriaceae</i>	0.27 (0.23)	0.265 (0.08)	0.22 (0.21)	0.275 (0.27)
	<i>Un.Enterobacteriaceae</i>	0.015 (0.17)	0.165 (1.08)	0.255 (0.26)	1.025 (0.61)
	<i>Un.Erysipelotrichaceae</i>	0.78 (0.51)	0.945 (0.79)	0.815 (0.04)	1.35 (0.89)
	<i>Un.Lachnospiraceae</i>	5.43 (1.89)	6.795 (3.5)	3.915 (0.30)	6.16 (3.95)
	<i>Un.Peptostreptococcaceae</i>	0.265 (0.22)	0.45 (0.21)	0.895 (0.48)	0.855 (0.78)
	<i>Un.Ruminococcaceae</i>	26.295 (3.21)	26.38 (3.63)	17.035 (5.85)	20.88 (6.3)
Cluster B3	<i>Akkermansia</i>	1.75 (3.89)	8.68 (5.78)	0.325 (3.84)	0.38 (2.99)
	<i>Bacteroides</i>	6.07 (4.61)	5.6 (4.80)	1.3 (2.70)	1.895 (2.50)
	<i>Bifidobacterium</i>	3.46 (1.60)	0.83 (0.52)	17.555 (16.25)	9.62 (9.94)
	<i>Blautia</i>	6.66 (5.84)	3.27 (2.34)	8.43 (4.72)	5.755 (1.38)
	<i>Collinsella</i>	1.42 (1.48)	0.32 (0.71)	2.19 (2.51)	1.595 (1.45)
	<i>Coprococcus</i>	5.8 (1.29)	3.74 (1.94)	5.845 (2.11)	4.12 (2.19)
	<i>Dialister</i>	0 (0)	0 (0)	0.01 (0.21)	0.02 (0.83)
	<i>Dorea</i>	2.44 (0.36)	1.8 (0.13)	2.28 (0.63)	1.84 (0.63)
	<i>Eubacterium</i>	0.03 (0.06)	0.04 (0.02)	0.08 (1.8)	0.065 (1.57)
	<i>Faecalibacterium</i>	1.86 (1.02)	4.52 (1.82)	2.18 (2.75)	9.12 (4.99)
	<i>Lachnospira</i>	0.46 (0.13)	0.99 (0.45)	0.235 (0.15)	0.155 (0.22)
	<i>Oscillospira</i>	1.32 (0.40)	0.94 (0.2)	0.75 (0.59)	0.515 (0.17)
	<i>Prevotella</i>	0.49 (0.08)	0.32 (0.73)	0.015 (0.29)	0.035 (0.66)
	<i>Roseburia</i>	0.12 (0.07)	0.23 (0.09)	0.34 (0.33)	0.85 (0.65)
	<i>Ruminococcus</i>	9.09 (1.47)	6.96 (2.60)	6.605 (2.38)	7.695 (4.24)
	<i>Streptococcus</i>	0.35 (1.16)	0.63 (0.6)	1.5 (1.26)	0.82 (1.30)
	<i>Unclassified</i>	1.97 (0.61)	1.31 (0.19)	2.05 (0.87)	2.21 (1.22)
	<i>Un.Christensenellaceae</i>	2.77 (1.58)	2.35 (1.74)	0.14 (0.22)	0.175 (0.05)
	<i>Un.Clostridiaceae</i>	1.49 (0.44)	0.95 (0.42)	1.39 (1.09)	1.265 (0.45)

<i>Un.Clostridiales</i>	9.3 (2.25)	9.45 (0.92)	12.075 (6.32)	8.175 (7.5)
<i>Un.Coriobacteriaceae</i>	1.25 (0.34)	0.85 (0.99)	0.935 (1.16)	0.465 (0.42)
<i>Un.Enterobacteriaceae</i>	0.07 (0.02)	0.19 (0.24)	0.03 (0.07)	0.375 (0.86)
<i>Un.Erysipelotrichaceae</i>	1.16 (0.63)	2.69 (0.92)	1.415 (0.87)	1.305 (0.20)
<i>Un.Lachnospiraceae</i>	5.75 (3.54)	4.43 (1.22)	4.47 (2.45)	4.47 (2.14)
<i>Un.Peptostreptococcaceae</i>	0.68 (0.47)	0.46 (0.51)	1.425 (0.92)	0.555 (0.76)
<i>Un.Ruminococcaceae</i>	26.06 (2.05)	28.09 (1.02)	11.295 (6.18)	18.195 (7.00)

Data is expressed as median (interquartile range). Only those genera that had an averaged relative abundance higher than 0.5% were included in the table.