

Lean and obese microbiota: differences in *in vitro* fermentation of food-by-products

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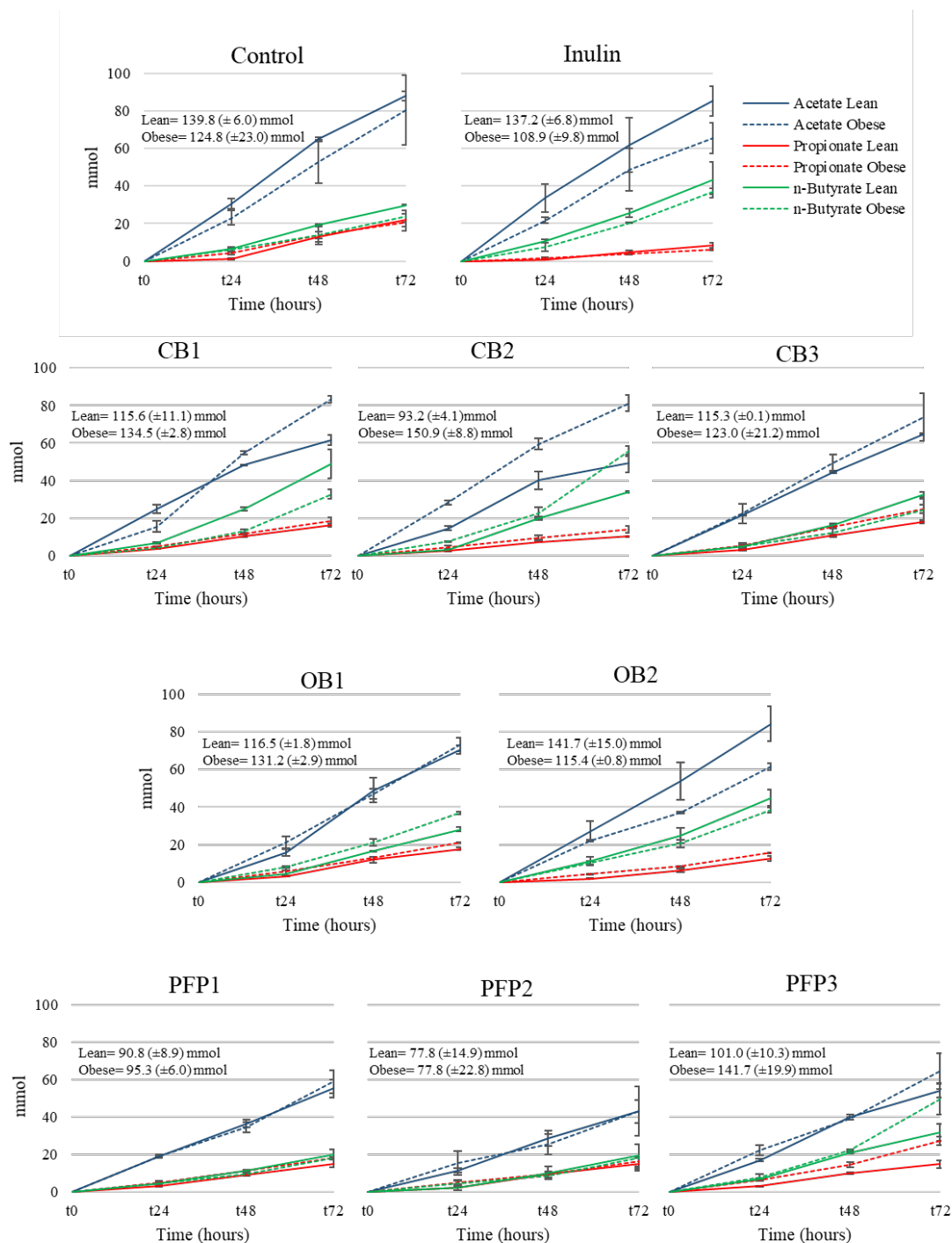


Figure S1. Kinetics and total cumulative production of short chain fatty acids by the lean and obese microbiota during 72 hours fermentation in TIM-2 with different test compounds. CB = cassava bagasse; OB = orange bagasse; PFP = passion fruit peel.

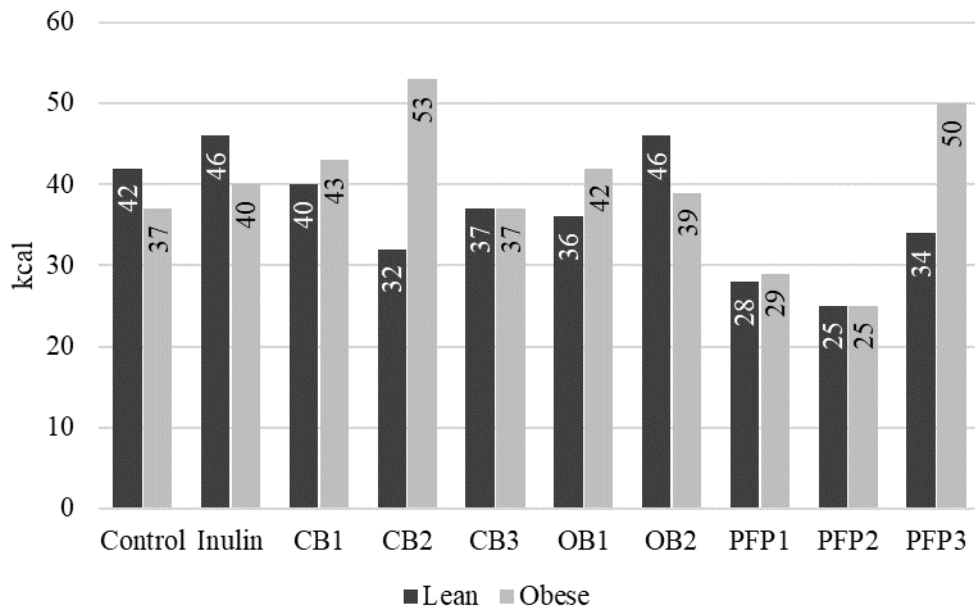


Figure S2. Total energy (kcal) production by the lean and obese microbiota after fermentation with the different test compounds. Difference in energy production between lean and obese microbiota was not significant ($P>0.05$). CB = cassava bagasse; OB = orange bagasse; PFP = passion fruit peel.

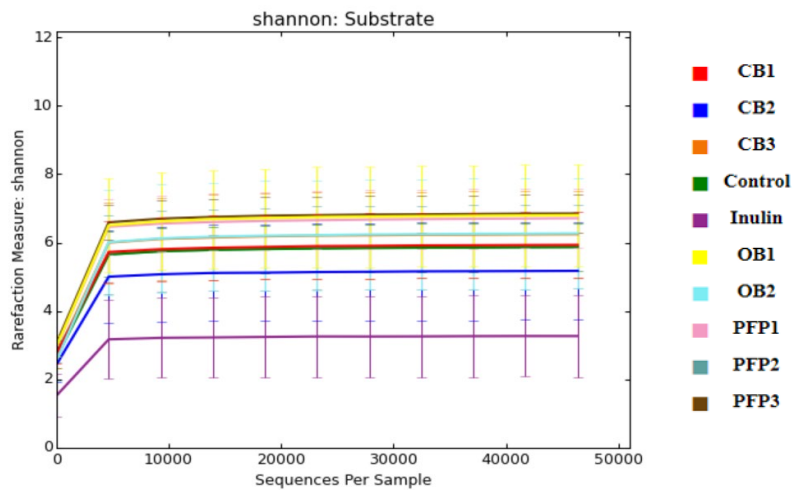


Figure S3. Shannon index at t72 h (lean and obese combined) with test compounds. PFP3 had the highest diversity in bacterial population, whereas inulin showed the least diverse composition. CB = cassava bagasse; OB = orange bagasse; PFP = passion fruit peel.

Table S1. Chemical composition of cassava bagasses, orange bagasses and passion fruit peels (Bussolo de Souza *et al.*, 2018).^{1,3}

By-product	% (w/w)									Total starch (%)	Pectin (%)	NSP glucose (%)	Small sugars ² (%)	Protein (%)	DM (%)	DA (%)
	Rha	Fuc	Ara	Xyl	Man	Gal	Glc	UA	Total							
<i>Cassava bagasse</i>																
CB1	0.3±0.0	0.0±0.0	0.4±0.0	0.3±0.0	0.4±0.1	0.8±0.0	77.7±3.7	2.0±0.1	81.9±3.7	77.4±2.3	3.5	0.3	1.4±0.3	0.6±0.0	0±0.6	13±0.8
CB2	0.3±0.0	0.0±0.0	0.4±0.1	0.4±0.1	0.6±0.0	0.8±0.2	79.3±2.7	2.4±0.1	84.2±3.1	70.5±2.1	3.9	8.8	1.2±0.0	0.8±0.1	14±2.1	8±0.7
CB3	0.5±0.0	0.2±0.0	1.9±0.1	2.4±0.1	1.2±0.0	4.7±0.2	60.9±2.7	9.6±0.1	81.4±3.1	45±0.6	16.7	15.9	0.07±0.1	1.1±0.0	24±2.7	34±1.1
<i>Orange bagasse</i>																
OB1	1.5±0.0	0.1±0.0	5.0±0.1	1.5±0.0	3.6±0.1	4.3±0.1	21.9±0.2	15.4±0.2	51.8±0.1	0.7±0.0	26.2	NE	22.8±0.4	4.7±0.1	68±1.4	7±0.7
OB2	0.9±0.0	0.1±0.0	3.2±0.0	1.1±0.0	4.5±0.1	3.0±0.0	23.8±0.0	14.0±0.1	50.6±0.3	0.8±0.0	21.1	NE	33.4±0.3	6.4±0.0	58±2.2	7±0.7
<i>Passion fruit peel</i>																
PPF1	0.4±0.0	0.3±0.0	1.5±0.0	7.6±0.6	4.0±0.1	1.9±0.0	18.1±0.8	15.7±0.3	49.5±1.2	2.3±0.0	19.5	15.8	0.57±0.0	8.5±0.1	38±2.6	21±0.6
PPF2	0.3±0.0	0.3±0.0	1.5±0.0	7.0±0.2	4.9±0.3	2.0±0.3	16.6±1.1	16.1±0.5	48.7±0.1	0.4±0.1	19.9	16.2	1.2±0.0	8.4±0.2	51±1.0	31±2.8
PPF3	0.3±0.0	0.1±0.0	1.1±0.0	3.5±0.1	2.0±0.0	1.0±0.0	46.2±2.3	8.6±0.1	62.8±2.1	38.9±1.1	11.0	7.3	0.63±0.0	7.2±0.1	15±1.2	20±1.9

¹ Rha: rhamnose, Fuc: fucose, Ara: arabinose, Xyl: xylose, Man: mannose, Gal: galactose, Glc: glucose, UA: uronic acids; NE: not estimated; Pectin: sum of UA, Rha, Ara and Gal; DM: degree of methylation (moles of methanol per 100 moles of galacturonic acid residues); DA: degree of acetylation (moles of acetic acid per 100 moles of galacturonic acid residues). CB = cassava bagasse; OB = orange bagasse; PFP = passion fruit peel.

² Small sugars: glucose (as free monomers), fructose and sucrose.

³ Bussolo de Souza, C., Jonathan, M., Isay Saad, S.M., Schols, H.A. and Venema, K., 2018. Characterization and in vitro digestibility of by-products from Brazilian food industry: Cassava bagasse, orange bagasse and passion fruit peel. *Bioactive Carbohydrates and Dietary Fibre* 16: 90-99.

Table S2. Cumulative production of organic acids (succinate, lactate, formate and caproate) by the lean and obese microbiota after 72 h fermentation with the different substrates.¹

	Succinate		Lactate		Formate		Caproate		TOTAL	
	Lean	Obese	Lean	Obese	Lean	Obese	Lean	Obese	Lean	Obese
Control	2.1±0.5	7.1±6.6	0.6±0.0	1.1±0.7	4.5±0.7	3.6±1.2	0.0±0.0	0.0±0.0	7.2±1.1	11.8±6.0
Inulin	7.2±4.4	0.2±0.0	7.6±2.0	14.4±14.0	5.1±1.1	3.1±0.8	0.0±0.0	0.0±0.0	19.9±5.5	17.7±14.8
CB1	0.8±0.2	2.1±0.1	0.2±0.0	4.1±2.3	3.9±0.4	5.7±0.1	0.2±0.1	0.0±0.0	5.2±0.8	11.9±2.3
CB2	2.9±0.7	0.2±0.0	0.4±0.4	5.7±0.2	6.2±0.0	4.0±1.1	0.2±0.1	0.0±0.0	9.8±1.2	9.9±1.2
CB3	0.9±0.5	0.2±0.0	0.2±0.1	0.2±0.2	2.9±0.4	1.8±0.5	0.3±0.2	0.0±0.0	4.3±1.4	2.2±0.7
OB1	0.6±0.1	1.3±0.7	0.0±0.0	0.1±0.7	0.2±0.0	2.3±0.5	1.2±0.8	0.1±0.1	2.0±0.9	3.9±0.5
OB2	3.1±0.7	-0.1±0.1	1.0±0.5	0.0±0.1	2.2±0.1	1.0±0.1	0.3±0.3	0.2±0.2	6.7±1.0	1.1±0.3
PFP1	0.7±0.0	0.1±0.3	-0.2±0.2	0.1±0.2	0.8±0.6	1.1±0.9	1.4±0.6	0.0±0.1	2.7±0.1	1.2±1.3
PFP2	0.3±0.1	-0.2±0.0	0.0±0.0	-0.6±0.4	1.6±0.8	1.2±1.3	0.4±0.1	0.0±0.0	2.3±0.9	0.5±1.6
PFP3	0.4±0.2	0.2±0.1	-0.1±0.1	0.9±0.3	1.4±1.0	4.1±0.3	0.6±0.2	0.0±0.0	2.3±1.5	5.2±0.6

¹ CB = cassava bagasse; OB = orange bagasse; PFP = passion fruit peel.