

Supplementary Information

Ten-dimensional hyphenation including simulated static gastrointestinal digestion on the adsorbent surface, planar assays, and bioactivity evaluation for meal replacement products

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Table S1. Studied meal replacement products with flavour, expiration date, ingredients, and sample weights (*W*), extracted with 5 mL *n*-butanol and filtered through a 0.45 µm cellulose acetate filter

Flavor	Best before	Ingredients	W [g]
Vanilla	03/19/2022	milk protein, vegetable oils (sunflower, rapeseed), chicory root fibre, coconut milk, gluten-free oat fibre, vitamins (A, C, D, E, K, B1, B3, B5, B6, folic acid, biotin), minerals (potassium, magnesium, iron, zinc, copper, manganese, selenium, chromium, molybdenum, chloride, iodine), modified starch, maltodextrin, sweetener sucralose; natural flavourings.	5.00
Choco	03/19/2022	milk protein, vegetable oils (sunflower, rapeseed), fat-reduced cocoa 7.3%, chicory root fibre, coconut milk, gluten-free oat fibre, vitamins (A, C, D, E, K, B1, B3, B5, B6, folic acid, biotin), minerals (potassium, magnesium, iron, zinc, copper, manganese, selenium, chromium, molybdenum, chloride, iodine), modified starch, maltodextrin, sweetener sucralose; natural flavourings.	5.00
Berry	03/19/2022	milk protein, vegetable oils (sunflower, rapeseed), chicory root fibre, coconut milk, gluten-free oat fibre, raspberry puree 0.2%, dried strawberries 0.2%, vitamins (A, C, D, E, K, B1, B3, B5, B6, folic acid, biotin), minerals (potassium, magnesium, iron, zinc, copper, manganese, selenium, chromium, molybdenum, chloride, iodine), modified starch, maltodextrin, sweetener sucralose; colouring beetroot concentrate; acidity regulator citric acid; natural flavourings.	5.09
Coffee	03/11/2022	milk protein, vegetable oils (sunflower, rapeseed), chicory root fibre, coffee extract 3.2%, coconut milk, gluten-free oat fibre, vitamins (A, C, D, E, K, B1, B3, B5, B6, folic acid, biotin), minerals (potassium, magnesium, iron, zinc, copper, manganese, selenium, chromium, molybdenum, chloride, iodine), modified starch, maltodextrin, sweetener sucralose; natural flavourings.	5.02
Banana	03/11/2022	milk protein, vegetable oils (sunflower, rapeseed), chicory root fibre, coconut milk, gluten-free oat fibre, banana powder 0.2%, vitamins (A, C, D, E, K, B1, B3, B5, B6, folic acid, biotin), minerals (potassium, magnesium, iron, zinc, copper, manganese, selenium, chromium, molybdenum, chloride, iodine), modified starch, maltodextrin, sweetener sucralose; natural flavourings.	5.04
Coconut	03/19/2022	milk protein, vegetable oils (sunflower, rapeseed), chicory root fibre, gluten-free oat fibre, coconut milk 0.4%, vitamins (A, C, D, E, K, B1, B3, B5, B6, folic acid, biotin), minerals (potassium, magnesium, iron, zinc, copper, manganese, selenium, chromium, molybdenum, chloride, iodine), modified starch, maltodextrin, sweetener sucralose; natural flavourings.	5.10

Table S2. Ingredients and nutritional values of the six investigated MRPs

Nutrients	Nutritional values*
Calories [kcal]	400.00 ± 0
Carbohydrates [g]	30.33 ± 0.47
of which sugars [g]	15.17 ± 0.69
Protein [g]	25.00 ± 0
Fat [g]	18.17 ± 0.37
of which saturated fats [g]	2.42 ± 0.09
Fiber [g]	6.62 ± 0.47
Salt [g]	0.53 ± 0
Vitamins	
Vitamin A [µg]	241.00 ± 0
Vitamin D [µg]	1.50 ± 0
Vitamin E [mg]	3.60 ± 0
Vitamin K [µg]	23.00 ± 0
Vitamin C [mg]	24.00 ± 0
Thiamin [mg]	0.33 ± 0
Riboflavin [mg]	0.70 ± 0
Niacin [mg]	4.80 ± 0
Vitamin B6 [mg]	0.42 ± 0
Folic acid [µg]	60.40 ± 0
Vitamin B12 [µg]	1.20 ± 0
Biotin [µg]	20.00 ± 0
Pantothenic acid [mg]	1.80 ± 0
Minerals	
Potassium [mg]	633.33 ± 74.54
Chloride [mg]	240.00 ± 0
Calcium [mg]	722.67 ± 2.98
Phosphorus [mg]	498.83 ± 13.04
Magnesium [mg]	119.17 ± 13.79
Iron [mg]	4.55 ± 0.78
Zinc [mg]	3.00 ± 0
Copper [mg]	0.34 ± 0.09
Manganese [mg]	0.60 ± 0
Selenium [µg]	17.00 ± 0
Chromium [µg]	12.00 ± 0
Molybdenum [µg]	15.00 ± 0
Iodine [µg]	45.22 ± 0.04

*Values were calculated as mean ± standard deviation per portion (300 mL).

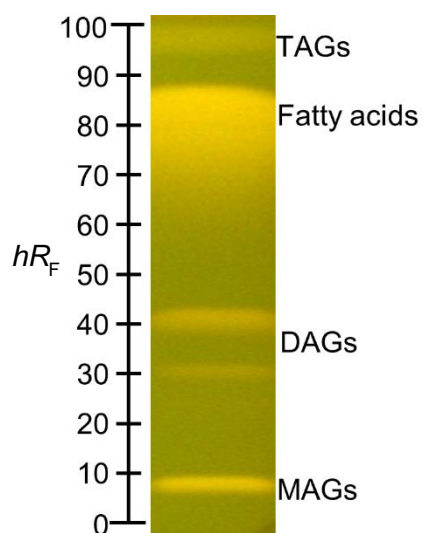


Fig. S1. NP-HPTLC–FLD of eight fatty acids (C10:0–C18:3), monoacylglycerols (MAGs), diacylglycerols (DAGs), and triacylglycerols (TAGs) applied (10 μg /band each) on HPTLC plate silica gel 60 F₂₅₄ MS-grade, developed with *n*-hexane – diethyl ether – formic acid (70:30:2, V/V/V) up to 60 mm and detected after chemical derivatisation with rhodamine 6G (0.1% in ethanol).