

Supplementary Materials

**Comparison of carrier gases for the separation and quantification of mineral oil hydrocarbon (MOH) fractions using online LC-GC-FID**

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7 Pages

2 Tables

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Table S1 contains the comparison of resolutions  $R_s$  and peak width  $w_{0.5}$  for the critical pairs (1-MN & 2-MN; Cicy & C13) in the internal quantification standard using different nitrogen carrier gas flows and oven ramps, with absolute injected masses of 100 ng (1-MN and 2-MN, Cicy) and 50 ng (C13).

The highlighted option using a flow of 4 mL/min and a ramp of 15 K/min was selected as the best compromise of resolution and peak width (see Table 1 of the main text).

Table S1: Optimisation of nitrogen carrier gas flow and oven ramp

N <sub>2</sub> flow	$R_s$ [1MN]	$w_{0.5}$ [1MN]	$R_s$ [C13]	$w_{0.5}$ [C13]	Ramp
5 mL/min	1.69	0.067	2.29	0.071	10 K/min
4 mL/min	1.85	0.061	2.26	0.064	10 K/min
3 mL/min	2.09	0.054	2.20	0.054	10 K/min
5 mL/min	1.65	0.050	1.88	0.052	15 K/min
4 mL/min	1.85	0.044	1.80	0.047	15 K/min
3 mL/min	2.03	0.039	1.60	0.040	15 K/min
5 mL/min	1.63	0.040	1.60	0.042	20 K/min
4 mL/min	1.77	0.036	1.47	0.037	20 K/min
3 mL/min	2.03	0.031	1.20	0.032	20 K/min

Table S2: All gas flows applied to optimised chromatographic conditions (see Table 1 of the main text). In all cases the same total gas flow arrived at the flame ionisation detector.

Carrier gas flow (mL/min)		FID gas flows (mL/min)		
		H <sub>2</sub> (fuel)	N <sub>2</sub> (makeup)	air
N <sub>2</sub>	4	30	26	300
He	5	30	25	300
H <sub>2</sub>	5	25	30	300

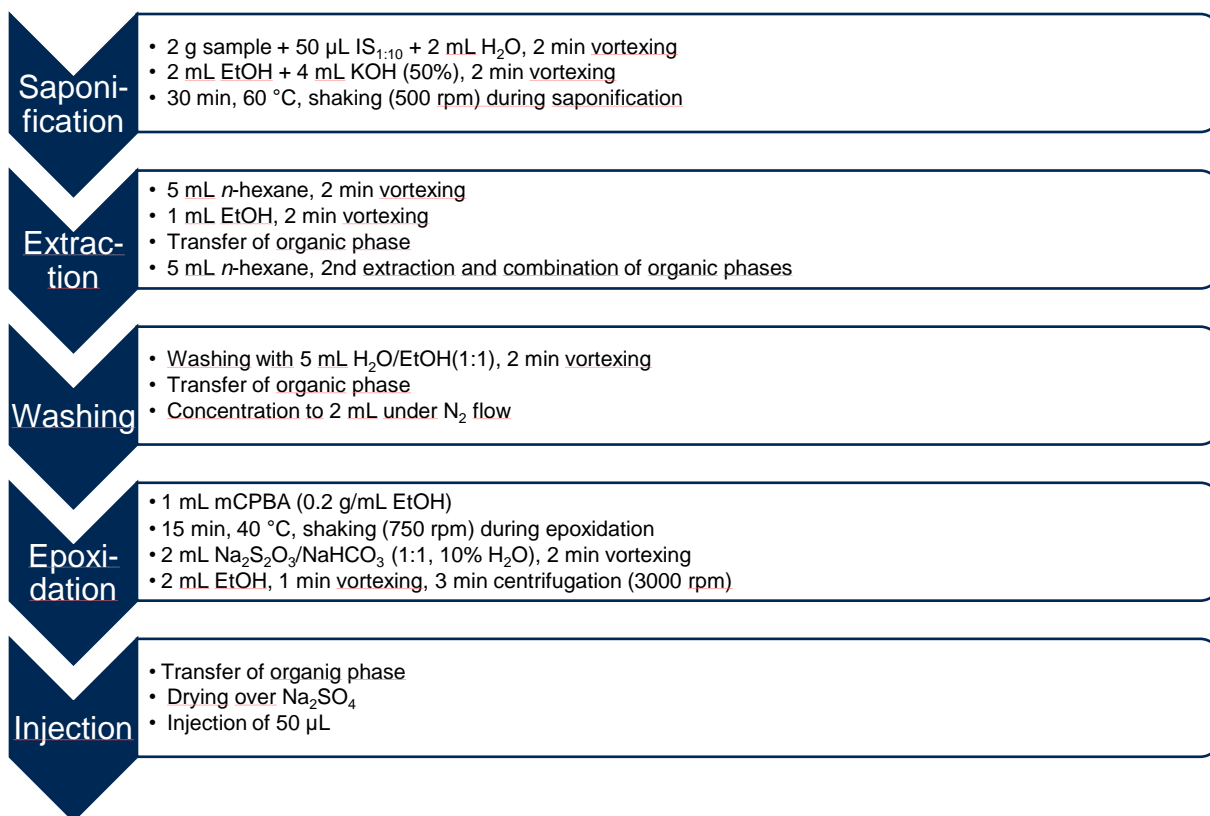


Fig. S1: Sample preparation of infant formula samples

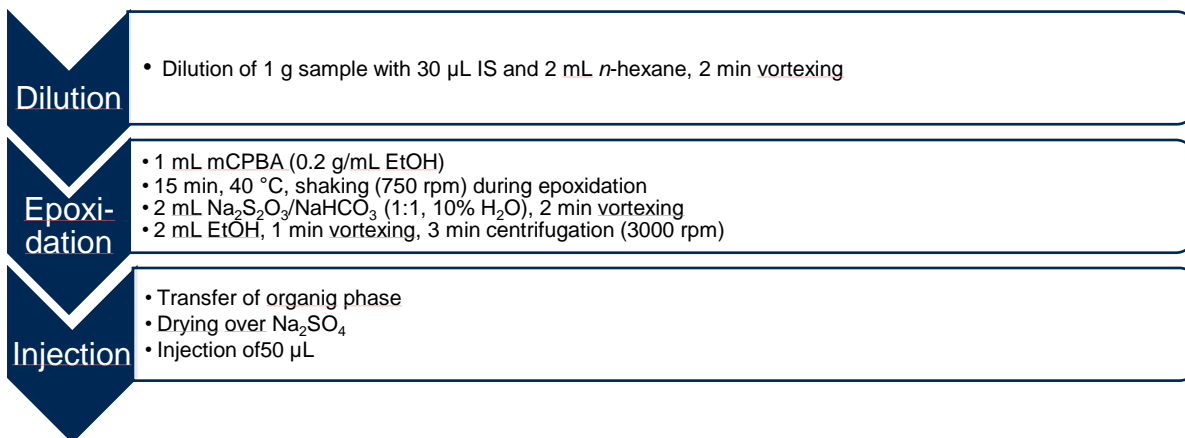


Fig. S2: Sample preparation of coconut oil samples

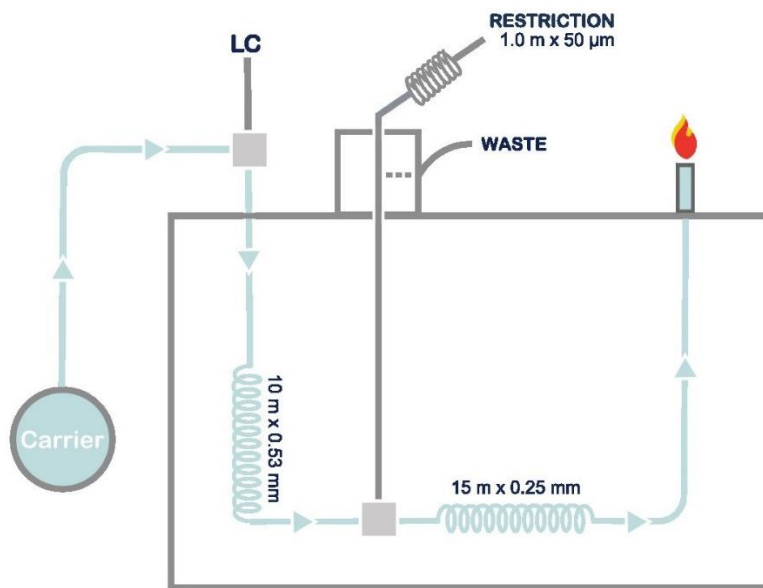
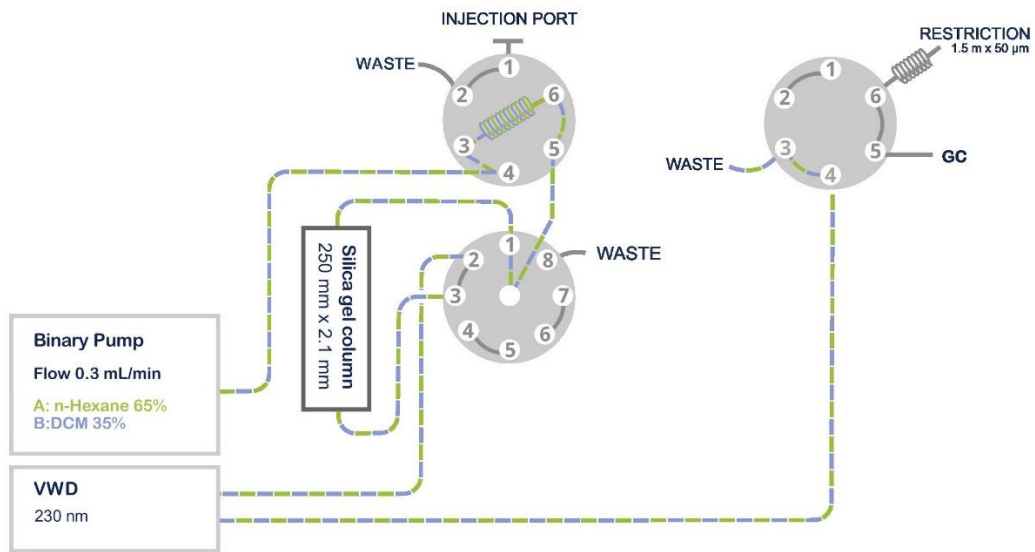


Fig. S3: LC-GC-FID configuration. Above: LC. Below : GC-FID

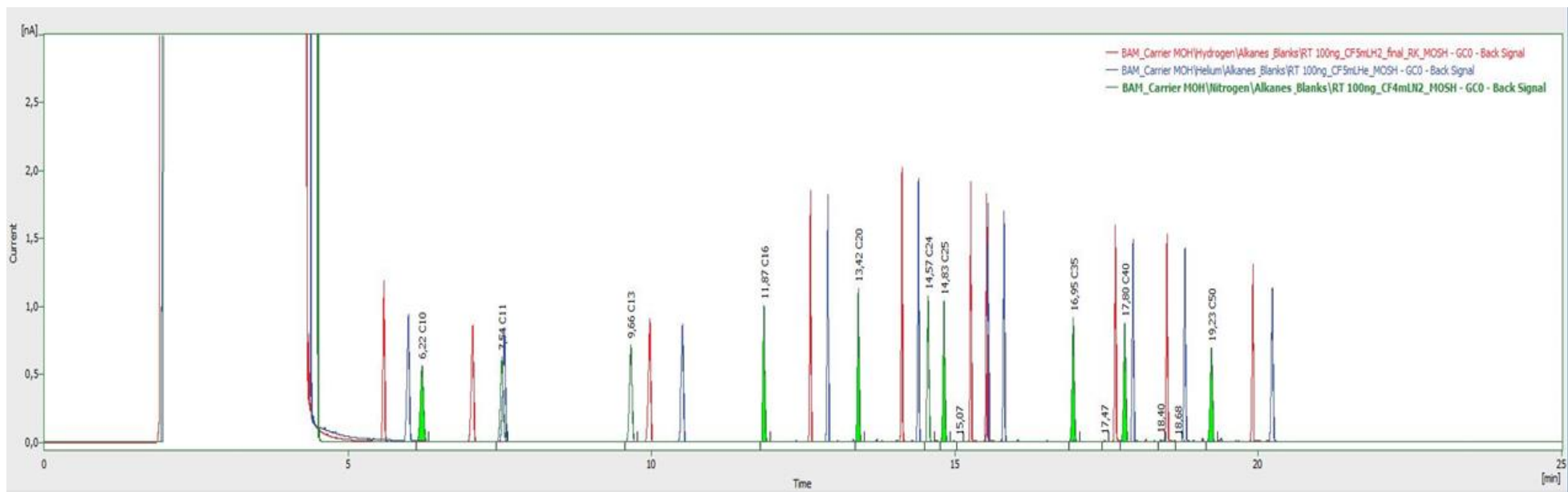


Fig. S4: Alkanes (retention time standard, each compound 100 ng absolute). Overlay of chromatograms obtained with the different carrier gases: H<sub>2</sub> – red; He – blue; N<sub>2</sub> – green

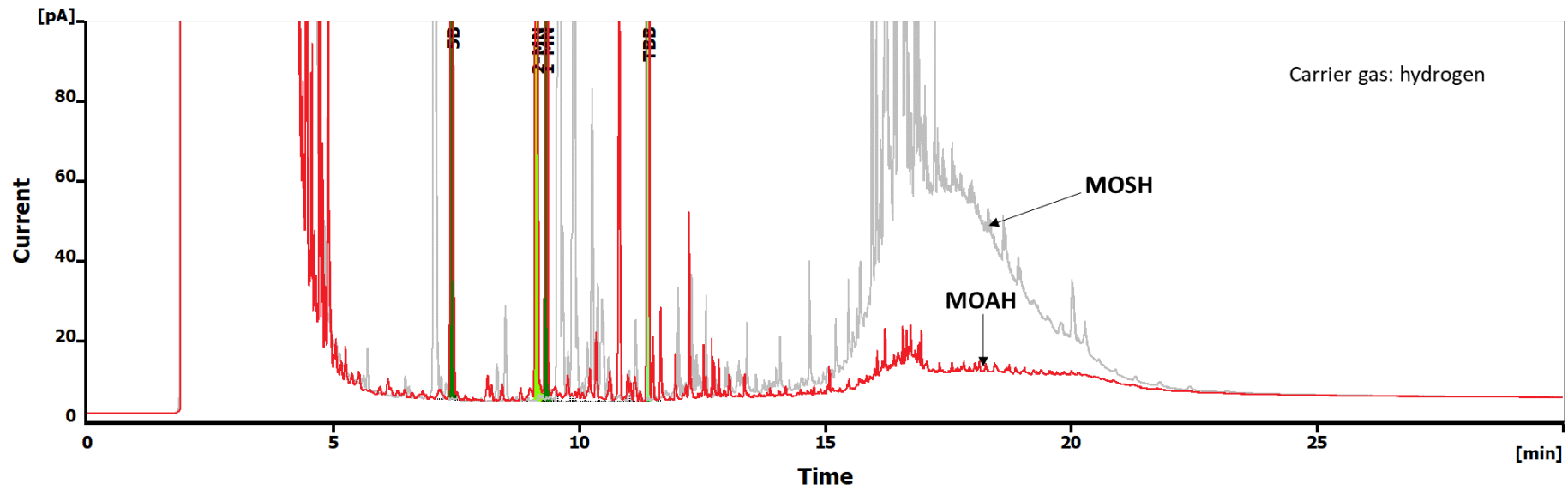
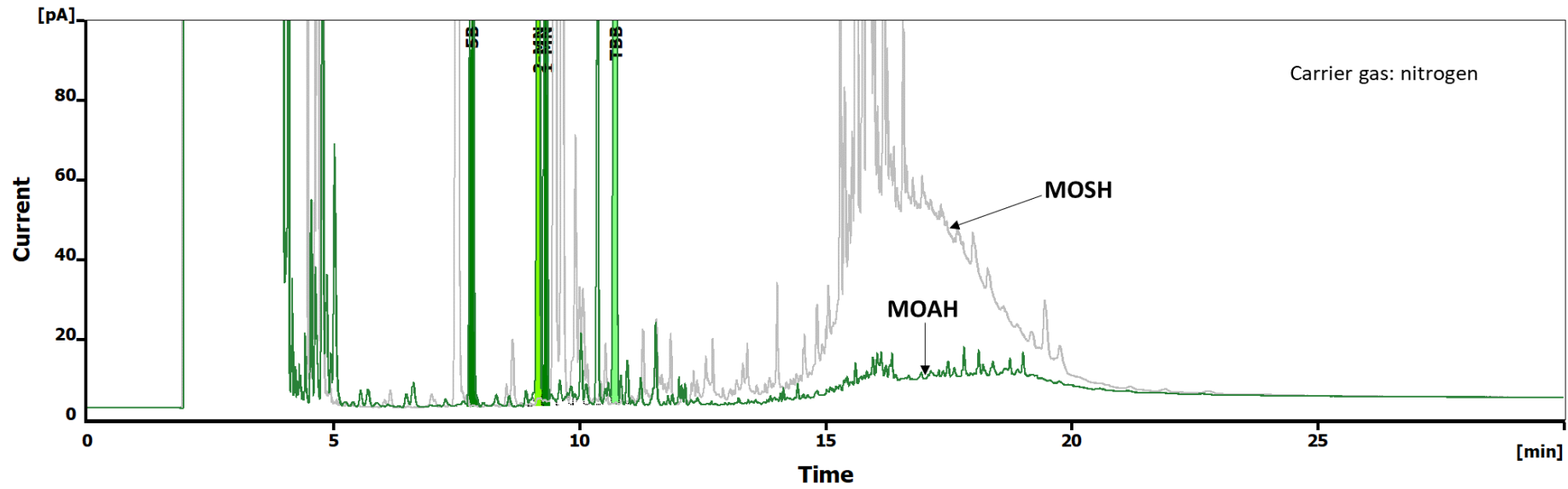


Fig. S5: Comparison of chromatograms (coconut oil 2) obtained with the three carrier gases. Overlay MOSH and MOAH fractions

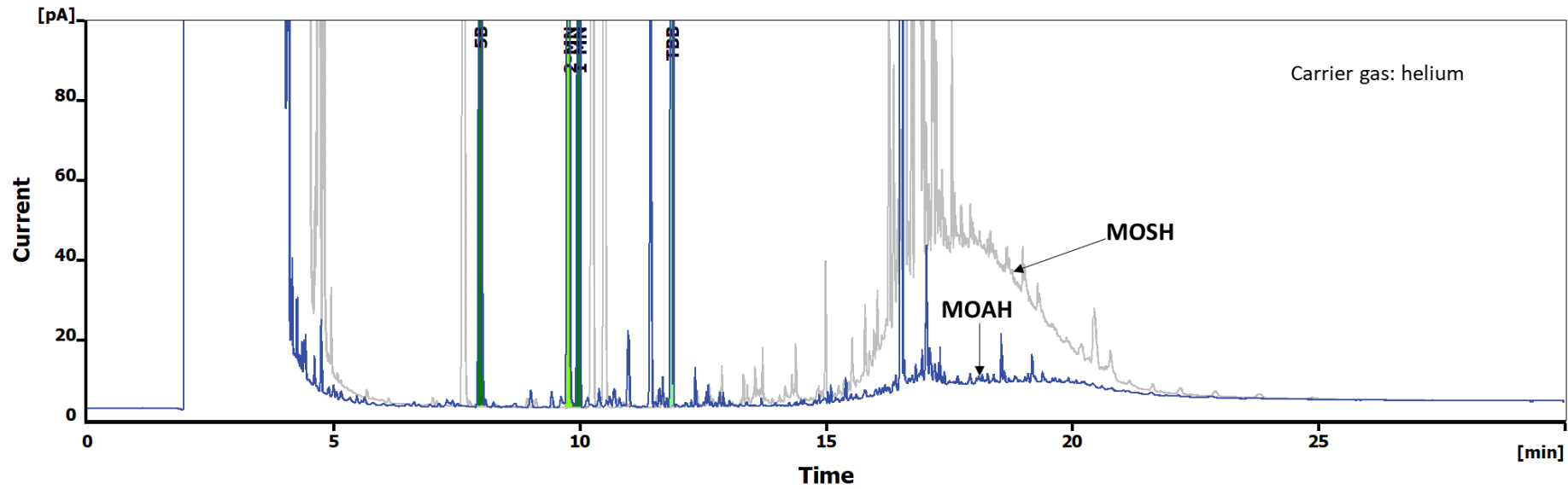


Fig. S5, continued: Comparison of chromatograms (coconut oil 2) obtained with the three carrier gases. Overlay MOSH and MOAH fractions