

Supporting Information for: Occurrence of Genotoxic Furan-2(5H)-one in Heated Milk and Pancakes: Key Role of Lactose and Free Radicals during Cooking

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Supporting Information 1: Details on SAFE-GC-MS/SIM acquisition method

Table S1 Selected ion monitoring (SIM) acquisition windows, mass spectral data, and retention index of monitored volatiles

Observation Window	Compound	CAS n°	t _r (min)	Ion 1	Ion 2	Ion 3	Molecular ion	RI	RI literature (standard nonpolar)
				(Relative Intensity %)					
Window 1 (t ₀ =7min)	Furfural (FAL)	98-01-1	8.9	96	95 (94)	67 (6)	98	813	804
	Furfuryl alcohol (FOL)	98-00-0	9.3	98	81 (45)	69 (27)	100	836	830
Window 2 (t ₀ =9,8 min)	Furan-2(5 <i>H</i>)-one (F2(5 <i>H</i>)one)	497-23-4	10.1	55	84 (64)	54 (20)	86	875	867
	Furan-2(3 <i>H</i>)-one	20825-71-2	11.0	55	84 (52)	53 (44)	86	-	914
Window 3 (t ₀ =12 min)	EST (<i>n</i> -decane)	124-18-5	13.3	57	71 (47)	85 (36)	143	999	1015
Window 4 (t ₀ =14,2 min)	IST (2-acethylthiophene)	88-15-3	16.3	111	126 (69)	95 (80)	129	1075	1057

Supporting Information 2: SAFE-GC-MS/SIM method performance

Linearity was assessed at between 1-210 mg·kg⁻¹ for furfuryl alcohol, 0.1-22 mg·kg⁻¹ for furfural, and 1-15 mg·kg⁻¹ for furan-2(5H)-one, while maintaining 2-acethylthiophene (internal standard) constant at 5 mg·kg⁻¹ (**Figure S1**). Linearity was confirmed using Mandel's fitting test for all compounds within the concentration range. Limits of detection (LOD) and quantification (LOQ) of the method were estimated using a signal-to-noise (S/N) approach, in

food samples with low amount of the analytes to account for matrix effects and extraction losses (**Table S2**). Recoveries were assessed using the standard addition procedure using an internal standard. Matrix effects were inherently taken into consideration by standard addition. Repeatability (CV_r) and within-lab reproducibility (CV_{RW}) were assessed by performing triplicate on three different days.

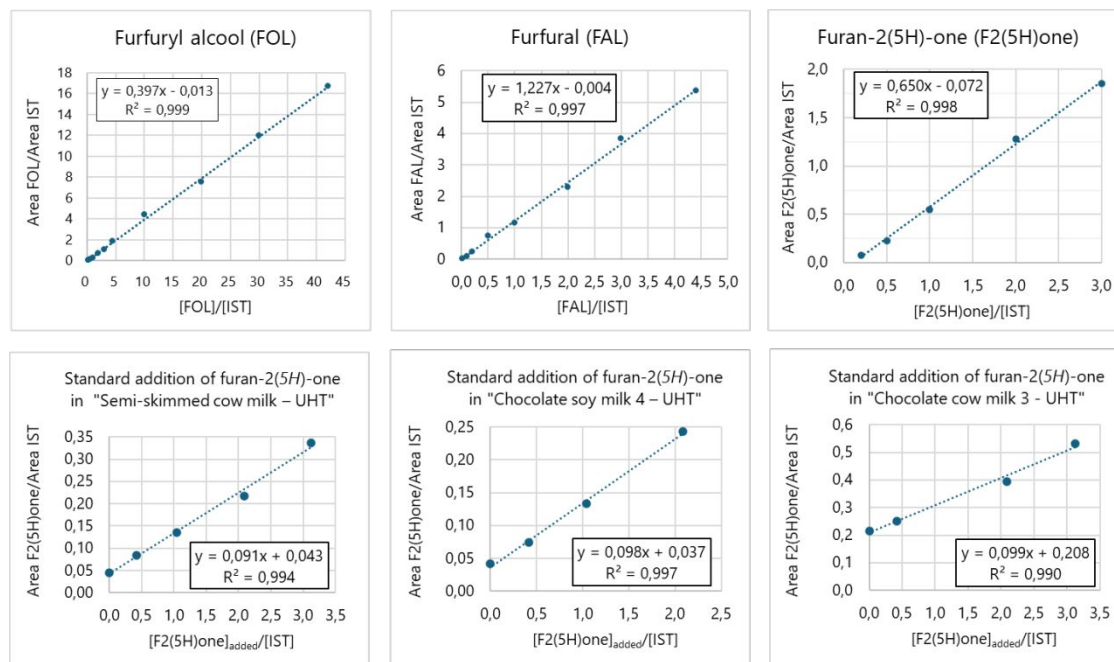


Figure S1 Calibration and standard addition curves for furfuryl alcohol (FOL), furfural (FAL), and furan-2(5H)-one (F2(5H)one).

Table S2 Validation parameter results

Matrix	Parameter	Furan-2(5H)-one
Dairies	LOD ($\mu\text{g}\cdot\text{kg}^{-1}$)	0.2
	LOQ ($\mu\text{g}\cdot\text{kg}^{-1}$)	0.6
	Recovery (%)	29
	CV_r (%)	4.5
	CV_{RW} (%)	18.9
Pancakes	LOD ($\mu\text{g}\cdot\text{kg}^{-1}$)	0.1
	LOQ ($\mu\text{g}\cdot\text{kg}^{-1}$)	0.4
	Recovery (%)	50
	CV_r (%)	8.5
Model systems	CV_{RW} (%)	10.7
	LOD ($\mu\text{g}\cdot\text{kg}^{-1}$)	0.1
	LOQ ($\mu\text{g}\cdot\text{kg}^{-1}$)	0.4
	Recovery (%)	62
	CV_r (%)	10.0
	CV_{RW} (%)	10.8

Supporting Information 3: SIM chromatograms of volatile extracts from pancakes prepared with lactose-containing milk (a) or lactose-free milk (b).

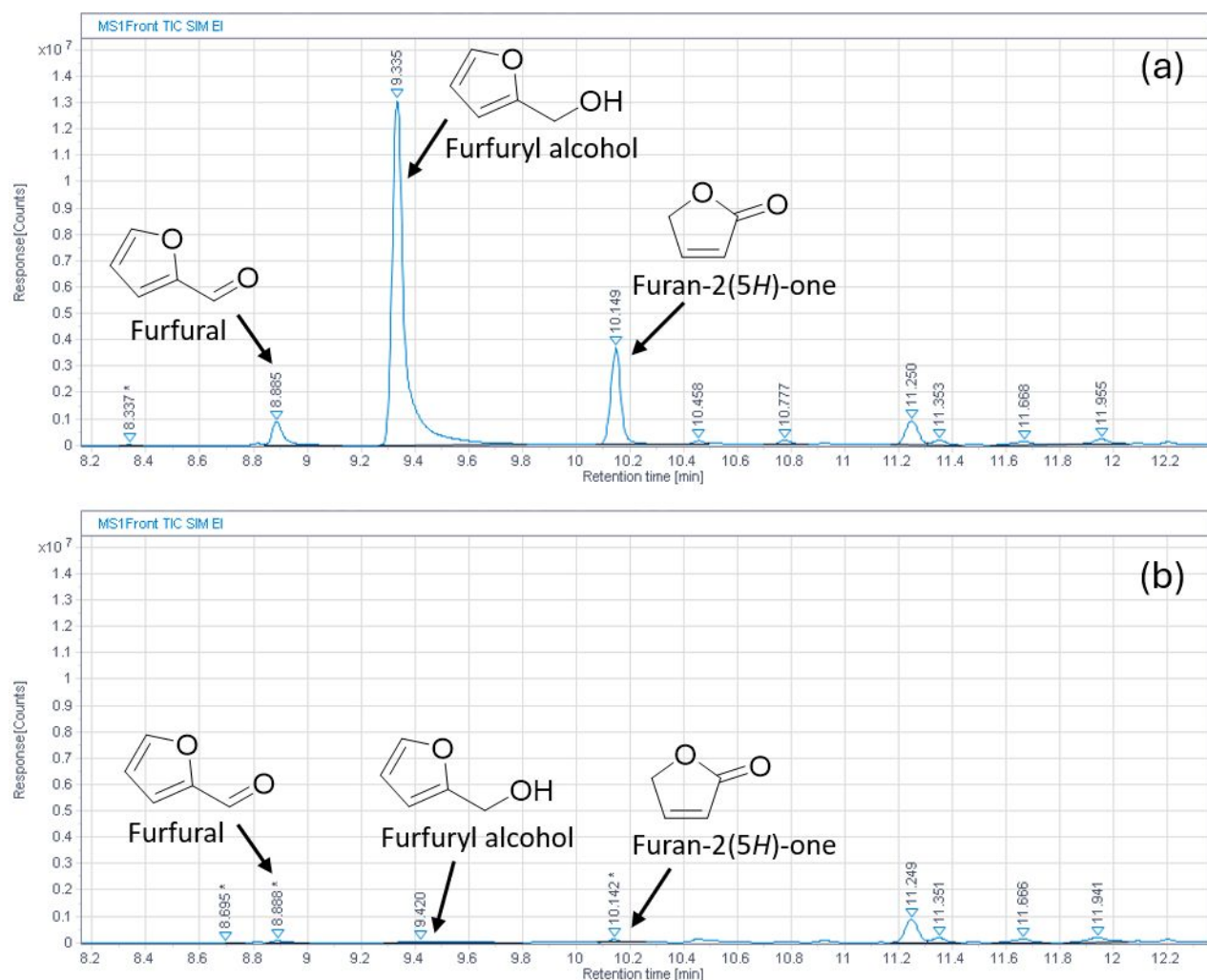


Figure S2 SIM chromatograms of volatile extracts from pancakes prepared with lactose-containing milk (a) or lactose-free milk (b). The y-axis scale is identical in both chromatograms to facilitate comparison.