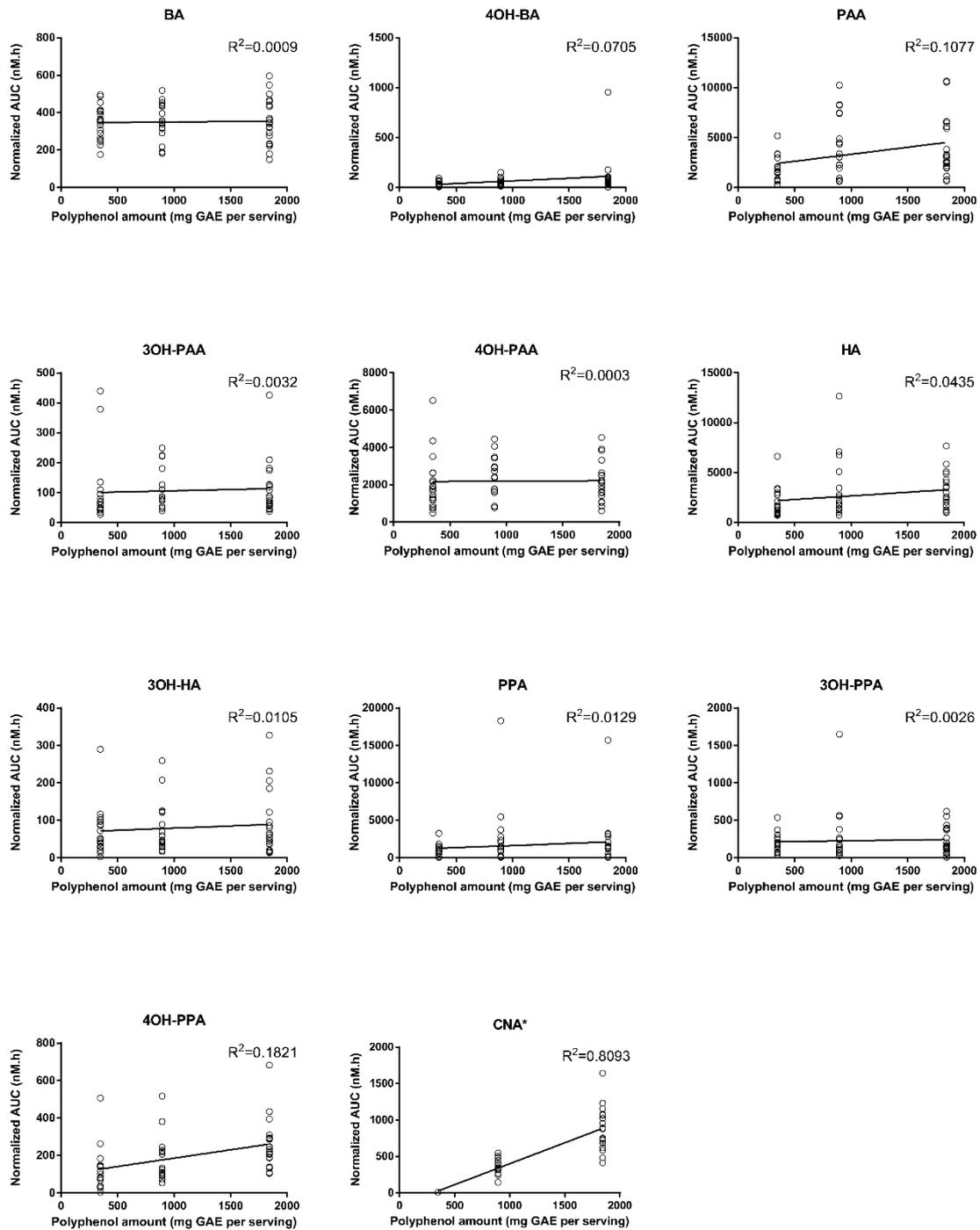
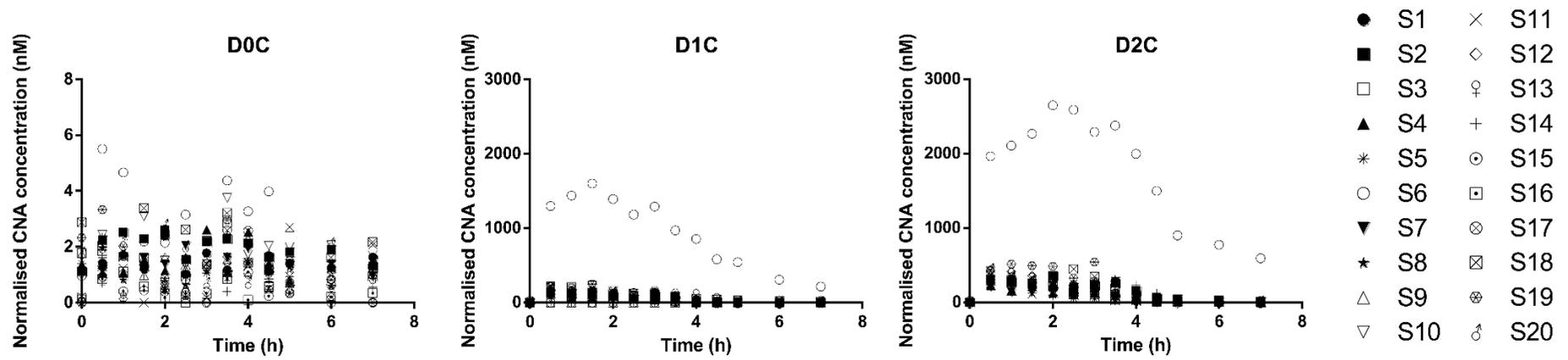


**Figure S1** Proposed polyphenol metabolism pathways. Red fonts reflect the parent polyphenols of mixed spices used in this study, while the red rectangle shows the phenolic acids quantified in this study.



**Figure S2.** Scatter plot and linear regression of phenolic acid metabolites normalized area under the curve (AUC) (nM.h) against total polyphenol content of D0C, D1C and D2C meals (mg of gallic acid equivalent (GAE) per serving) as used in the mixed spices intervention study. Benzoic acid (BA); 4-hydroxybenzoic acid (4OH-BA); phenylacetic acid (PAA); 3-hydroxyphenylacetic acid (3OH-PAA); 4-hydroxyphenylacetic acid (4OH-PAA); phenylpropanoic acid (PPA); 3-hydroxyphenylpropanoic acid (3OH-PPA); 4-hydroxyphenylpropanoic acid (4OH-PPA), hippuric acid (HA); 3-hydroxyhippuric acid (3OH-HA); and cinnamic acid (CNA). \*One outlier was omitted from the regression.



**Figure S3.** Normalized linear plasma concentration against time plots of cinnamic acid (CNA) across all three doses. One participant was identified as a biological outlier, displaying strong dose-exposure relationship within himself, but higher exposure relative to other participants in the study.

**Table S1.** Mass spectrometry compound-dependent parameters and method validation parameters, linearity ( $R^2$ ), accuracy (percentage deviation from spiked), and precision (relative SD). Entrance potential was set at 10 V for all analytes. CE, collision energy; CXP, collision exit potential; DP, declustering potential; Q1, Parent mass/charge; Q3, product mass/charge; RT, retention time.

Polyphenols	Q1	Q3	RT (min)	Dwell (msec)	DP	CE	CXP	Dynamic range (nM)	Linearity $R^2$	Spiked amount (nM)	Accuracy (%)	Precision (%)
<b>Benzoic acid derivatives</b>												
Benzoic acid (BA)	121	77	2.52	50	-10	-14	-5	5 – 1000	0.988	50.00	109.79	39.08
										400.00	99.08	8.53
										800.00	93.91	10.20
3-Hydroxybenzoic acid (3OH-BA)	136.7	93	1.8	50	-55	-16	-5	5 – 1000	0.996	50.00	88.42	9.22
										400.00	97.53	4.65
										800.00	98.33	5.34
4-Hydroxybenzoic acid (4OH-BA)	136.7	93.1	1.47	50	-55	-20	-9	5 – 1000	0.995	50.00	87.85	4.90
										400.00	95.99	2.13
										800.00	109.98	7.28
<b>Phenylacetic acid derivatives</b>												
Phenylacetic acid (PAA)	134.8	91.1	2.58	50	-45	-10	-13	25 – 5000	0.998	250.00	101.89	12.93
										2000.00	99.27	2.89
										4000.00	93.18	7.00
3-Hydroxyphenylacetic acid (3OH-PAA)	150.8	107	1.88	50	-45	-12	-5	25 – 5000	0.998	250.00	101.45	5.38
										2000.00	99.07	1.20
										4000.00	93.75	6.02
4-Hydroxyphenylacetic acid (4OH-PAA)	150.8	107	1.66	50	-45	-10	-9	25 – 5000	0.995	250.00	106.01	11.41
										2000.00	96.82	5.96
										4000.00	95.18	7.79
<b>Phenylpropanoate derivatives</b>												
Phenylpropanoate acid (PPA)	148.8	105	2.98	50	-55	-14	-9	25 – 5000	0.997	250.00	99.43	6.39
										2000.00	97.27	2.84
										4000.00	94.02	8.29
3-Hydroxyphenylpropanoic acid (3OH-PPA)	164.7	106	2.27	50	-65	-30	-15	5 – 1000	0.995	50.00	98.40	17.09
										400.00	98.66	2.23
										800.00	97.95	8.59
4-Hydroxyphenylpropanoic acid (4OH-PPA)	164.7	59	2.1	50	-60	-16	-7	5 – 1000	0.996	50.00	107.23	16.38
										400.00	99.99	5.16
										800.00	95.36	7.61
<b>Hippuric acid derivatives</b>												
Hippuric acid (HA)	177.7	134	1.56	50	-50	-16	-11	25 – 5000	0.993	250.00	95.69	18.54
										2000.00	100.92	3.31
										4000.00	96.68	11.88
3-Hydroxyhippuric acid (3OH-HA)	193.7	149.9	0.97	50	-70	-18	-11	5 – 1000	0.996	50.00	95.07	7.54
										400.00	94.43	5.59
										800.00	92.93	9.88
4-Hydroxyhippuric acid (4OH-HA)	193.8	99.9	0.85	50	-50	-14	-9	5 – 1000	0.995	50.00	77.08	12.81
										400.00	91.89	3.94
										800.00	97.45	7.78
<b>Cinnamic acid derivatives</b>												
Cinnamic acid (CNA)	146.7	103	2.99	50	-40	-14	-9	5 – 1000	0.998	50.00	100.33	7.10
										400.00	98.08	6.55
										800.00	94.42	5.91

**Table S2.** Comparison of various nutrkinetic models with the Akaike information criterion. Akaike information criterion is a measure of relative quality of statistical models between a set of model parameters, with low value denoting better model fit within each weighting (1/Y, 1/Y<sup>2</sup>, no weighting). K<sub>a</sub>, 1<sup>st</sup> order absorption rate constant; K<sub>e</sub>, 1<sup>st</sup> order elimination rate constant; N.A., not applicable.

Weighting	Compartment	Rate constant	Lag time	Elimination rate	AIC value		
					Dose 0	Dose 1	Dose 2
1/Y <sup>2</sup>	1	-	No	1 <sup>st</sup> order	29.58	51.88	10.50
1/Y <sup>2</sup>	1	-	Yes	1 <sup>st</sup> order	31.54	53.82	12.48
1/Y <sup>2</sup>	1	K <sub>e</sub> =K <sub>a</sub>	No	1 <sup>st</sup> order	32.85	50.23	8.51
1/Y <sup>2</sup>	1	K <sub>e</sub> =K <sub>a</sub>	Yes	1 <sup>st</sup> order	N.A.	52.23	10.51
1/Y <sup>2</sup>	2	Micro	No	1 <sup>st</sup> order	N.A.	55.12	14.50
1/Y <sup>2</sup>	2	Micro	Yes	1 <sup>st</sup> order	N.A.	57.07	16.47
1/Y	1	-	No	1 <sup>st</sup> order	26.66	77.05	76.55
1/Y	1	-	Yes	1 <sup>st</sup> order	28.58	75.98	77.66
1/Y	1	K <sub>e</sub> =K <sub>a</sub>	No	1 <sup>st</sup> order	31.30	75.24	74.55
1/Y	1	K <sub>e</sub> =K <sub>a</sub>	Yes	1 <sup>st</sup> order	33.30	77.24	76.55
1/Y	2	Micro	No	1 <sup>st</sup> order	N.A.	N.A.	80.55
1/Y	2	Micro	Yes	1 <sup>st</sup> order	N.A.	80.02	81.66
No weighting	1	-	No	1 <sup>st</sup> order	23.66	100.83	127.14
No weighting	1	-	Yes	1 <sup>st</sup> order	25.54	97.82	124.51
No weighting	1	K <sub>e</sub> =K <sub>a</sub>	No	1 <sup>st</sup> order	29.89	106.52	127.45
No weighting	1	K <sub>e</sub> =K <sub>a</sub>	Yes	1 <sup>st</sup> order	N.A.	N.A.	N.A.
No weighting	2	Micro	No	1 <sup>st</sup> order	N.A.	104.83	131.13
No weighting	2	Micro	Yes	1 <sup>st</sup> order	N.A.	101.87	128.50