

Table S1 Gas chromatography program conditions.

Time (min)	Drift gas (mL/min)	Carrier gas (mL/min)	Recording
0	150	2	rec
2	150	2	-
10	150	10	-
20	150	100	-
40	150	100	stop

Table S2 GC-IMS analysis conditions.

GC-IMS	
Analysis time	40 min
chromatographic column	MXT-WAX (30 m × 0.53 mm × 1 μm)
Column temperature	60°C
Carrier gas/Drift gas	N ₂
IMS temperature	45°C
Automated headspace sampler	
Injection volume	500 μL
Incubation time	20 min
Incubation temperature	60°C
Injection needle temperature	85°C
Incubation speed	500 rpm

Table S3 Total peak intensity of volatile compounds

Compound	HAD	HPD	HFD	UFD
Ester	57749.18±1645.53 ^a	58616.34±1823.31 ^a	37526.87±1142.76 ^c	42821.6±487.72 ^b
Aldehyde	43672.23±1224.98 ^b	45967.2±562.19 ^a	42330.17±255.35 ^b	34232.11±266.53 ^c
Alcohol	69547.58±1584.08 ^a	59759.48±398.29 ^d	64949.65±688.18 ^c	67253.74±339.13 ^b
Ketone	31337.91±1695.68 ^a	20903.29±81.83 ^b	21141.37±683.66 ^b	19118.7±406.56 ^b
Heterocyclic compound	8454.45±313.69 ^a	5443.76±82.71 ^b	5697.97±228.32 ^b	3987.23±37.23 ^c
Carboxylic acid	169684.85±3386.03 ^a	112958.72±5135.23 ^b	107790.6±3056.05 ^b	108074.25±964.34 ^b
Terpene	4852.6±122.64 ^a	4249.2±65.77 ^b	3362.57±70.83 ^d	3680.95±89.49 ^c
Sulfur-containing compound	1326.96±88.41 ^d	1845.21±15.2 ^c	3026.78±64.68 ^a	2100.46±19.72 ^b
Nitrogen-containing compound	16689.58±1745.14 ^c	22996.53±371.18 ^b	27988.61±2256.53 ^a	30365±1623.45 ^a
Aromatic hydrocarbon	760.66±23.35 ^b	719.13±15.16 ^b	850.45±52.77 ^a	419.44±14.21 ^c
Total	404076±1537.27 ^a	333458.86±3149.11 ^b	314665.04±5207.8 ^c	312053.48±366.87 ^c

The different letters within the same row indicate significant differences ($p < 0.05$).

Table S4 Percentage of volatile compounds

Compound	HAD (%)	HPD (%)	HFD (%)	UFD (%)
Ester	14.29±0.36	17.58±0.7	11.93±0.42	13.72±0.14
Aldehyde	10.81±0.26	13.78±0.05	13.46±0.17	10.97±0.1
Alcohol	17.21±0.33	17.92±0.29	20.64±0.23	21.55±0.09
Ketone	7.75±0.39	6.27±0.08	6.72±0.29	6.13±0.13
Heterocyclic compound	2.09±0.07	1.63±0.01	1.81±0.04	1.28±0.01
Carboxylic acid	42.00±0.98	33.86±1.22	34.25±0.47	34.63±0.27
Terpene	1.20±0.03	1.27±0.03	1.07±0.02	1.18±0.03
Sulfur-containing compound	0.33±0.02	0.55±0.01	0.96±0.03	0.67±0.01
Nitrogen-containing compound	4.13±0.45	6.9±0.17	8.89±0.61	9.73±0.53
Aromatic hydrocarbon	0.19±0.01	0.22±0.01	0.27±0.02	0.13±0.01
Total	100.00	100.00	100.00	100.00