GC Technical Note
GT010
GL Sciences Inc.

Easy Enrichment of Curry Powder Fragrance with MonoTrap and GC/O

Qualitative analysis of odor components contained in commercial curry flour was performed using MonoTrap, headspace gas was extracted with solvents after collection, and odor components were sensory judged by qualitative analysis and GC/O (odor-sniffing GC). The odor-sniffing GC/O used in this study was sensory tested by two people who had two OP275 channels remodeled to smell at the same time. Sotron is the key material in the odor components of curry flour, and to efficiently collect sotron in the headspace, we used five sheets of MonoTrap DCC18 (with activated carbon) and sampled them at 60 °C for 24h. Sampling is also very easy to perform by placing the sample and MonoTrap in vial bins in a homeothermic tank, as shown in the bottom panel.

Protocol

MT Extract Cup with Vial
(Start UP-Kit)

Sample

← Curry Powder 60 g

H S Sampling

← MonoTrap； DCC18 5 pcs at 60 °C, 24 hours

Solvent Extraction

← Diethyl ether 1000 µL, Ultrasonication 5 mins
← Enrich by N_2 gas to 100 µL

Measure

GC/O

GC/MS

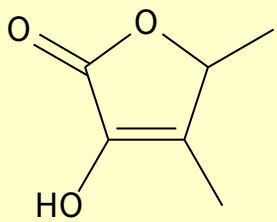
Sniffing Port OP275 and OPV277 (GC/O) Operatable by 2 Persons

A unique combination of the OP275 and OPV277 system (GC/O system) offers an objective judgment of smell by having 2 persons simultaneously smell the fragrance in order to have more accuracy and sensitivity.

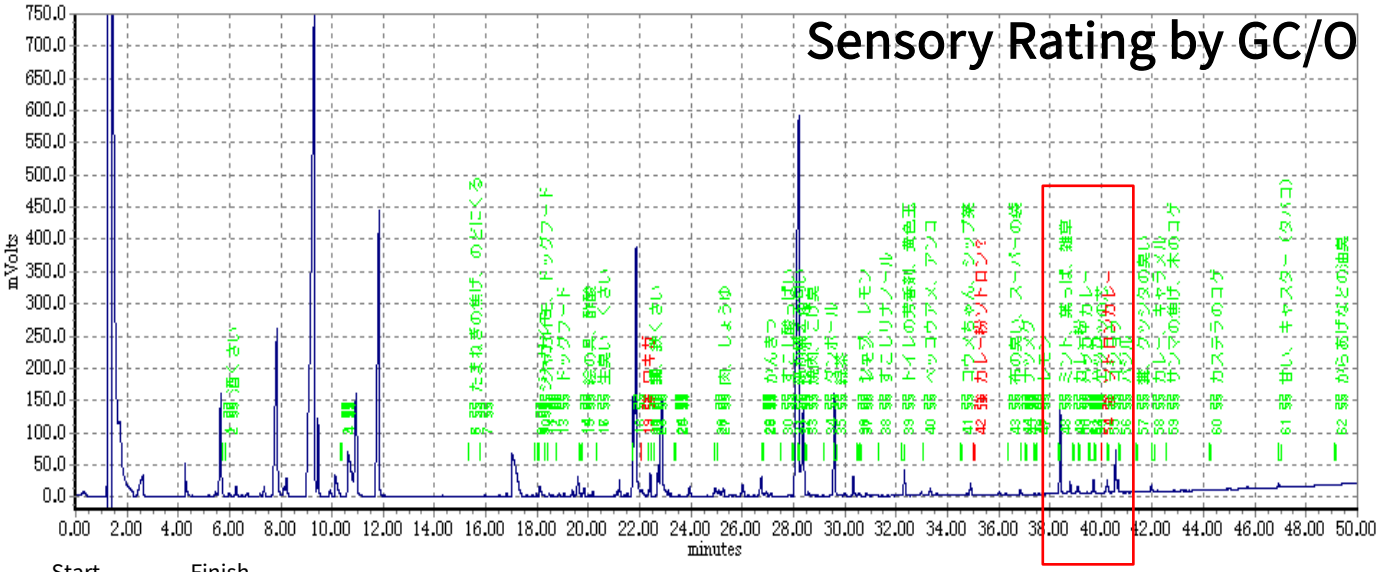
GC/O system OPV277set and OP275 is a sniffing Port with software for the simultaneous operation by 2 persons.

Please contact us for OP275 and OPV277.

Sotolone



Fragment Ion; 83,55,128

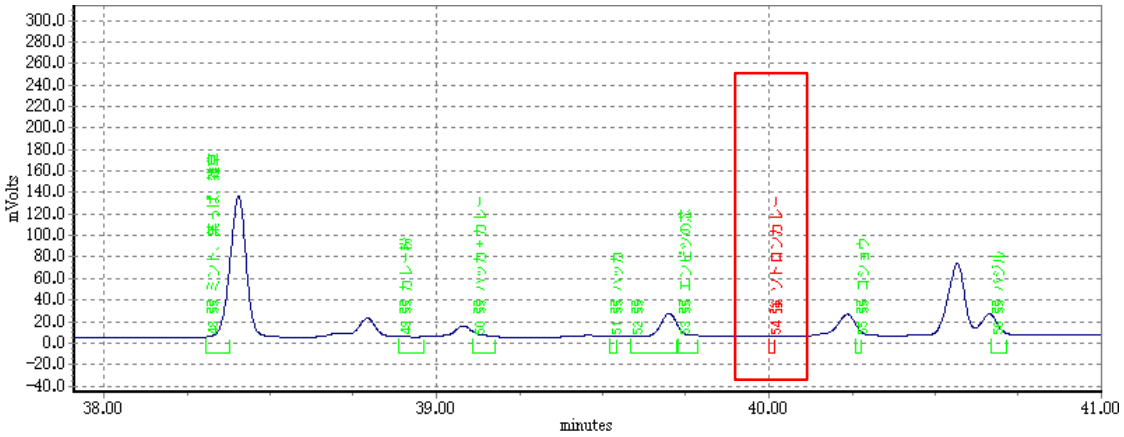


No.	Start [min]	Finish [min]	Level	Operator #1	Operator #2
1	5.837	5.839	Weak	Alcohol	Alcohol
2	15.293	15.296	Weak	Overcooked onion	A smell that hurts throat
3	18.014	18.017	Weak	Potato	Potato
4	18.074	18.077	Weak	Potato	Dog food
5	18.73	18.733	Weak	Dog food	Dog food
6	19.745	19.748	Weak	Paint	Acetic Acid
7	20.326	20.329	Weak	Fishy	Odor
8	22.04	22.043	Strong	Odor	Odor
9	22.324	22.327	Weak	Fecal	
10	22.357	22.359	Weak	Iron	Iron
11	25.009	25.013	Weak	Meat	Soy Source
12	26.82	26.82	Weak	Citrus	
13	27.471	27.488	Weak	Vinegar	
14	27.962	27.977	Weak	Burning Paper	Burning Paper
15	28.165	28.199	Weak	Carton Box	Carton Box
16	28.453	28.529	Weak	BBQ	Overcooking
17	29.18	29.19	Weak	Carton Box	Carton Box
18	29.557	29.701	Weak	Green Tea	Green Tea
19	30.477	30.521	Weak	Wet compress	Lemon
20	30.572	30.656	Weak	Lemon	Lemon
21	31.317	31.333	Weak	Linalool	
22	32.21	32.315	Weak	Bathroom Fragrance	Bathroom Fragrance
23	33.041	33.07	Weak	Candy	Bean Jam
24	34.5	34.562	Weak	Plum	Wet compress
25	35.003	35.045	Strong	Curry powder	
26	36.3539	36.382	Weak	Cloth	Plastic bag
27	36.865	36.895	Weak	Nutmeg	
28	37.479	37.49	Weak		Lemon
29	38.304	38.376	Weak	Mints	Leaves
30	38.885	38.962	Weak	Curry powder	Curry powder
31	39.107	39.174	Weak	Corn mint + curry	
32	39.52	39.542	Weak	Corn mint	
33	39.726	39.784	Weak	Pencil	
34	40.001	40.015	Strong	Sotolon/Curry	Sotolon /Curry
35	40.26	40.279	Weak	Black pepper	Black pepper
36	40.67	40.716	Weak	Basil	Herb
37	41.363	41.387	Weak	Fecal	Sox
38	42.002	42.067	Weak	Curry	Caramel
39	42.538	42.564	Weak	Burned fish	Burned wood
40	44.228	44.302	Weak	Overcooked Pancake	
41	46.908	47.038	Weak	sweet	Cigarette
42	49.121	49.161	weak	Oil	Oil

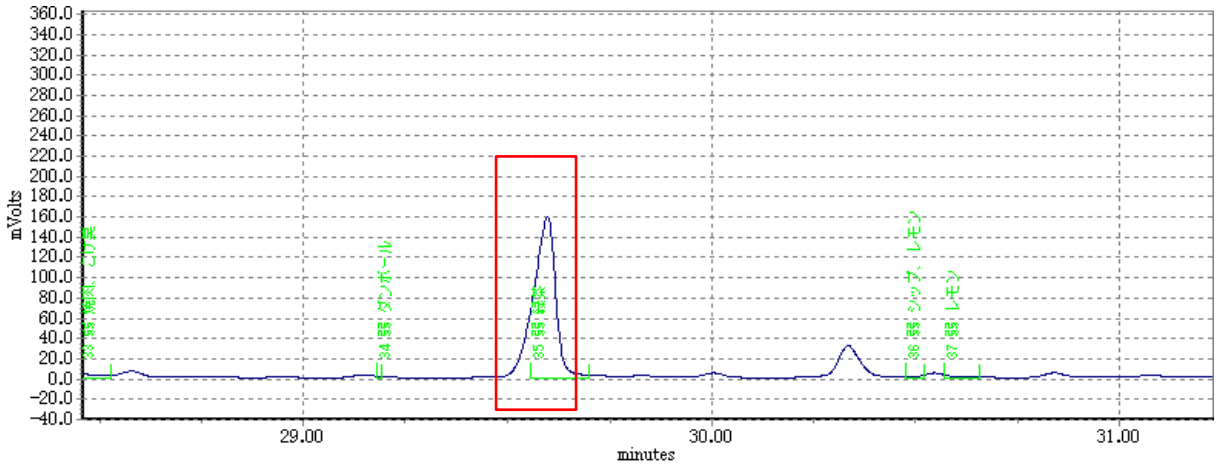
GC/O

Condition	: GC-4000, OPV277
System	: InertCap Pure-WAX
Column	0.25 mm I.D.×30 m df=0.25 μm
Column Temp	: 40°C (5min)→4°C/min→250 °C (5min)
Carrier Gas	: He 1 mL/min
Injection	: Split/Splitless 250 °C,1 μL
Detection	: FID

With multiple sniffing operators, it is possible to obtain an analysis with higher sensitivity and accuracy.



The small amount of curry fragrance that was not detected with FID was detected by GC/O with 2 operators. This compound is presumed as sotolon by sensory test.



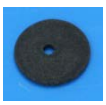
This is a data that 2 operators confirmed the smell of strong green tea by GC/O. This compound is presumed as linalool by sensory test.

Linalool is contained in green tea, and also a main compound of cilantro fragrance that is in curry powder etc.

Determined them by GC.

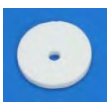
MonoTrap Series

Cat.No	Description	Shape	Size	Active Carbon	Functional Group
1050-72101	MonoTrap DCC18	Disk	O.D.10mmx thick 1mm	Yes	C18
1050-72201	MonoTrap RCC18	Rod	5mm	Yes	C18
1050-71101	MonoTrap DSC18	Disk	O.D.10mmx thick 1mm	No	C18
1050-71201	MonoTrap RSC18	Rod	5mm	No	C18



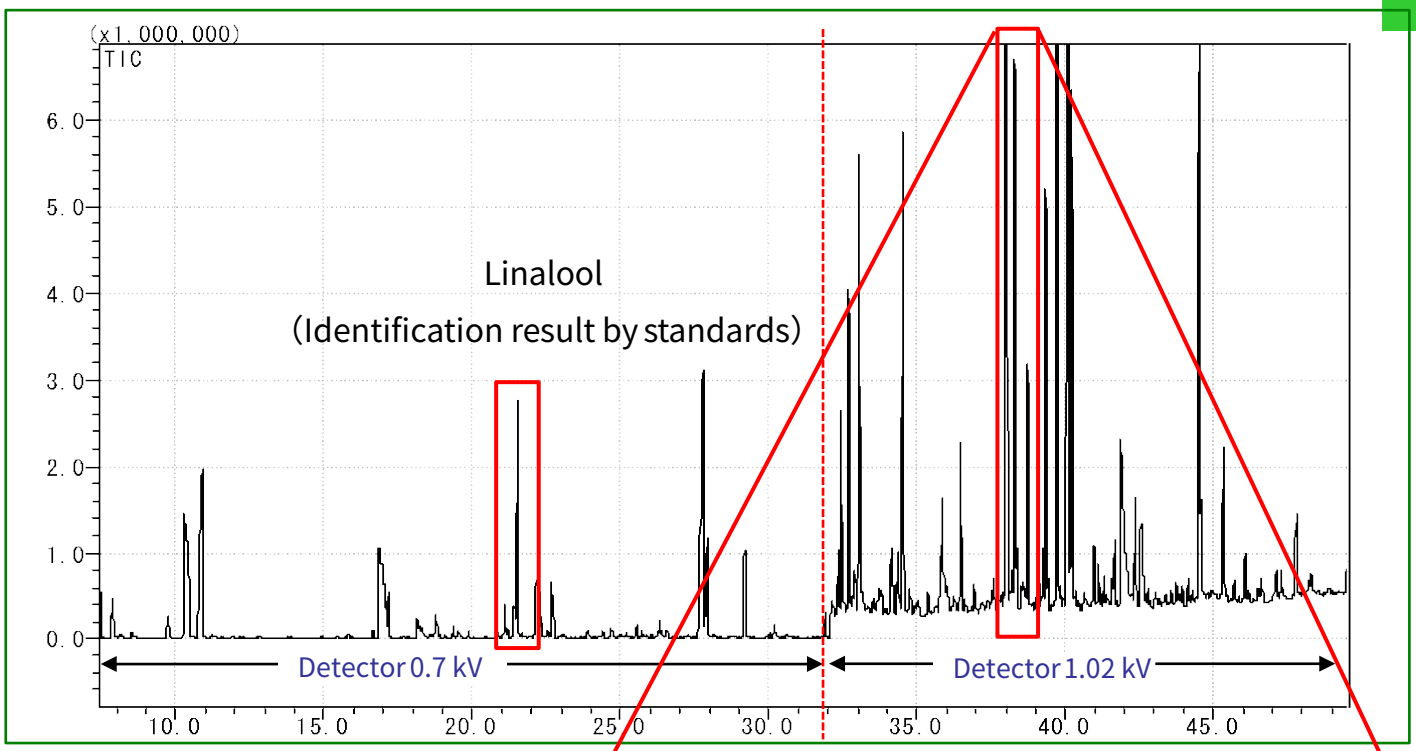
DCC18

RCC18



DSC18

RSC18



GC/MS Condition

System： SHIMADZU GC-2010, GCMS-QP2010

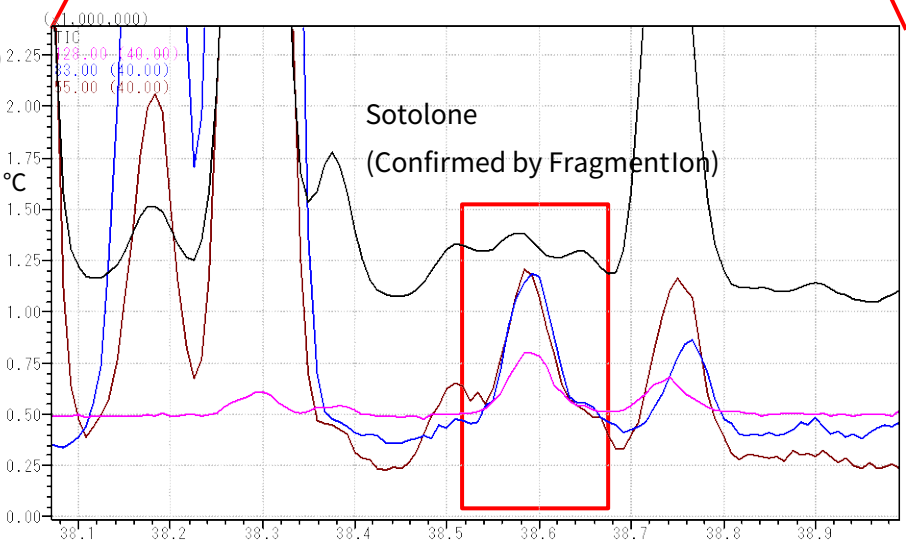
Column： InertCapPure-WAX
0.25 mm I.D.×30 m df=0.25 µm

Column Temp： 40°C (5 min)→4 °C/min→250 °C

Carrier Gas ： He 95 kPa

Injection ： Split/Splitless
250 °C,1 µL

Detection ： MS *m/z*: 35-400



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