

GC/MS data from Meat Flavor Reaction

Mr. Katsumi Umano, an attendee from one of our Reaction Meat Flavor classes volunteered the information below. The flavor is a simple meat flavor reacted under typical process conditions. As listed there are a number of different functional groups, sulfur and nitrogen compounds. Meat flavors are composed of a number of different ingredients that are necessary to give acceptable meat flavor character. Model systems are helpful to understand which chemicals are generated from the Maillard reaction, but do not represent the flavor profiles of commercial meat flavors.

The Headspace analysis and data was developed by: Katsumi Umano, Takatakoryo Co., Ltd. Japan

Ingredients	Weight
Cysteine HCL	0.80
Beef Broth	2.00
Xylose	0.10
Dextrose	0.80
Salt	2.00
Onion Juice	0.40
AYE 6006	7.50
Antifoam	0.10
Water	14.00

GCMS Headspace Volatiles Of Sample

#	<i>R.Time</i>	<i>R.Index</i>	<i>Conc#</i>	<i>Compounds</i>
1.	5.338	0	3.051	methanethiol
2.	5.616	0	2.432	acetaldehyde
3.	7.783	775	3.295	isobutanal
4.	7.882	781	3.476	acetone
5.	9.383	841	0.713	2-methylfuran
6.	10.353	875	5.656	2-butanone
7.	10.758	890	4.356	2-methylbutanal
8.	10.889	894	5.240	3-methylbutanal
9.	11.578	916	41.661	ethanol
10.	12.072	931	0.310	2-ethylfuran
11.	12.835	954	0.413	2,3-butanedione
12.	12.967	958	1.015	3-pentanone
13.	15.592	1040	0.481	2,3-pentanedione
14.	16.314	1063	0.573	dimethyl disulfide
15.	20.324	1190	0.232	3-methylbutanol
16.	22.068	1245	0.161	thiazole

17.	22.592	1261	0.476	2-methyltetrahydrofuran-3-one
18.	22.788	1268	0.287	2-methylpyrazine
19.	23.327	1285	0.330	acetoin
20.	23.787	1299	0.410	3-mercaptobutan-2-one + hydroxy.
21.	24.495	1324	0.391	2,5-dimethylpyrazine
22.	24.663	1330	0.357	2,6-dimethylpyrazine
23.	24.813	1335	0.056	2-ethylpyrazine
24.	25.029	1342	0.138	ethyl lactate
25.	25.217	1349	0.118	3-hydroxypentan-2-one
26.	25.419	1356	0.070	2,3-dimethylpyrazine
27.	25.979	1376	0.042	4,5-dimethylthiazole
28.	26.154	1382	0.102	2,4,5-trimethylthiazole
29.	26.252	1385	0.395	2-ethyl-6-methylpyrazine
30.	26.832	1406	0.271	furfuryl mercaptane
31.	27.574	1434	7.215	acetic acid
32.	27.849	1444	0.292	2-ethyl-3,6-dimethylpyrazine
33.	28.338	1462	0.053	2-ethyl-3,5-dimethylpyrazine
34.	29.117	1492	0.017	decanal
35.	29.418	1503	2.948	2-acetylfuran
36.	30.662	1552	0.771	isobutanoic acid
37.	32.925	1645	0.796	furfuryl alcohol
38.	33.170	1655	0.655	3-methylbutanoic acid
39.	33.318	1661	0.068	2-methyl-3-(methyldithio)furan
40.	37.064	1826	0.165	3-methylthiophen-2-carboxaldehyde
41.	39.137	1915	0.777	phenylethyl alcohol
42.	40.751	1976	0.790	2-acetylpyrrole
43.	42.373	2030	0.038	gamma-nonactone
44.	42.847	2044	0.336	octanoic acid