

VOLATILE COMPOUNDS IN THE THERMOPLASTIC EXTRUSION OF BOVINE RUMEN

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Table 1S. Compounds extracted from raw and extruded bovine rumen

KI ^a	Compound ^b	Raw (%RA ^c)	Extruded (%RA ^c)	Odor ^d	Major ions (<i>m/z</i>) Relative abundance (%)						
					43	41	57	42	71	56	70
708	Heptane ^{**24,28}	14.1	-	Cooked meat ²⁷	100	57	28	24	22	20	12
714	1-Heptene ^{**28}	3.7	12.8	Sulfurous ²⁷	100	73	71	47	41	27	26
724	2,4-Dimethyl- hexane ^{**26}	-	1.2	Not found	100	55	46	30	19	11	9
728	4-Methyl-2-pen- tanone ^{**26}	6.0	-	Cooked cabbage ³⁰	100	31	21	16	13	10	5
753	Toluene ^{**24,28,31}	1.3	1.2	Fruity, ²⁷ bitter, ²⁷ paint ²⁹	100	60	19	18	15	11	11
792	Hexanal ^{**22,24,26,28,31,32}	12.4	-	Rancid, ²⁷ grass, ²⁹⁻³⁰ tallow ²⁹	100	76	58	49	31	20	14
800	Ethyl butyrate [*]	2.8	-	Apple ²⁹	100	46	35	22	16	13	12
852	<i>m</i> -Xylene ^{**24,26,28} or <i>p</i> -Xylene ^{**28}	0.5	-	Fruity, ²⁷ sickly, ²⁷ fatty, ²⁷ plastic ²⁹	100	30	26	18	14	12	10
860	<i>m</i> -Xylene ^{**24,26,28} or <i>p</i> -Xylene ^{**28}	3.5	-	Fruity, ²⁷ sickly, ²⁷ fatty, ²⁷ plastic ²⁹	100	45	25	21	14	13	10
884	<i>o</i> -Xylene ^{**26,28}	10.9	-	Sweet ²⁷	100	40	27	16	15	12	11
896	Heptanal ^{**22,26,28,31,32}	2.3	-	Green, ³⁰ burnt, ³⁰ fatty, ²⁹ citric, ²⁹ rancid ²⁹	100	89	82	62	43	39	33
1023	Limonene ^{**26,28}	3.0	6.8	Lemon, ²⁹ orange ²⁹	100	81	66	55	36	31	29

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Table 1S. cont.

KI ^a	Compound ^b	Raw (%RA ^c)	Extruded (%RA ^c)	Odor ^d	Major ions (<i>m/z</i>) Relative abundance (%)						
					43	41	57	44	56	55	42
1099	Nonanal ^{*22,24,26,31,32}	1.7	-	Green, ^{29,30} moldy, ³⁰ fatty, ²⁹ citric ²⁹	43 100	41 98	57 82	44 75	56 45	55 39	42 30
1100	Undecane ^{*28}	-	1.3	Solvent ²⁹	43 100	41 54	57 54	71 27	56 26	55 21	42 18
1200	Dodecane ^{*24,26,28,31}	0.8	-	Solvent ²⁹	43 100	41 68	57 47	71 26	56 14	55 12	42 12
1327	Tridecane ^{*24, 26,28,31}	1.2	-	Solvent ²⁹	43 100	41 64	57 46	71 30	56 23	55 14	42 10
1400	Tetradecane ^{*24,26,28,31}	2.4	4.3	Solvent ²⁹	43 100	41 75	57 47	71 34	56 19	55 17	42 14
1542	Pentadecane ^{*24,26,28}	0.9	3.6	Solvent ²⁹	43 100	41 69	57 54	71 37	56 36	55 14	42 11
1600	Hexadecane ^{*24,26,28}	1.2	3.7	Solvent ²⁹	43 100	41 81	57 51	71 44	56 35	55 29	42 26
1700	Heptadecane ^{*24,28}	0.7	2.9	Solvent ²⁹	43 100	41 95	57 58	71 52	56 28	55 20	42 12
1800	Octadecane ^{*24,26}	0.8	2.6	Solvent ²⁹	43 100	41 83	57 49	71 46	56 27	55 23	42 16
1900	Nonadecane [*]	-	1.2	Solvent ²⁹	43 100	41 90	57 57	71 44	56 29	55 21	42 15

^a calculated Kovats Index; ^b references for volatile compounds previously reported in cooked beef; ^c relative area; ^d references for odor of volatile compounds. * compound identified by MS+KI; ** compound identified only by MS