

65 **Table S2.** Volatile flavor compounds (area unit $\times 10^6$) in Hanwoo and Chikso loin during 28 days of aging.

Compound	LRI	Breed	Aging period (d)				SEM ¹⁾	Aroma description
			0	7	14	28		
<i>Alcohols</i>								
(3E,5E)-Octa-3,5-dien-2-ol	1431	Hanwoo	0.12 ^c	0.23 ^{bc}	0.27 ^b	0.46 ^a	0.025	Green ⁽¹⁾
		Chikso	-	-	-	-	0.000	
		SEM ²⁾	0.015	0.021	0.022	0.010		
(E)-Oct-2-en-1-ol	1626	Hanwoo	0.35 ^b	0.44 ^b	0.64 ^b	1.71 ^{ax}	0.109	Citrus, green, soapy
		Chikso	0.23	0.35	0.40	0.20 ^y	0.048	
		SEM ²⁾	0.062	0.046	0.068	0.134		
2-Methylbutan-2-ol	1020	Hanwoo	0.26	0.22	-	0.07	0.055	Pungent
		Chikso	0.08	0.17	0.16	0.06	0.033	
		SEM ²⁾	0.070	0.044	0.037	0.011		
2-Methylpropan-2-ol	884	Hanwoo	3.26	2.21	3.50	0.58	1.720	Camphor
		Chikso	0.79	1.54	1.29	0.58	0.471	

		SEM ²⁾	0.894	0.707	2.244	0.153		
3-Methylbutan-1-ol	1217	Hanwoo	-	-	0.20 ^b	0.71 ^{ax}	0.042	Fruity, malty, oily
		Chikso	-	-	0.32 ^a	0.42 ^{ay}	0.040	
		SEM ²⁾	0.000	0.000	0.076	0.031		
Ethanol	927	Hanwoo	1.64 ^{dx}	4.14 ^{bx}	2.85 ^{cy}	23.97 ^{ax}	0.190	Alcoholic, ethereal, sweet
		Chikso	1.03 ^{dy}	1.94 ^{cy}	5.83 ^{bx}	22.65 ^{ay}	0.090	
		SEM ²⁾	0.105	0.074	0.127	0.237		
Heptan-1-ol	1466	Hanwoo	0.29 ^b	0.52 ^b	1.39 ^b	8.69 ^{ax}	0.668	Herbal, musty, sweet
		Chikso	0.57	0.72	1.41	0.98 ^y	0.285	
		SEM ²⁾	0.113	0.115	0.434	0.916		
Hexan-1-ol	1363	Hanwoo	1.20 ^c	2.40 ^c	14.41 ^b	90.50 ^{ax}	2.165	Ethereal, fruity, sweet
		Chikso	1.38 ^b	1.75 ^b	12.78 ^a	17.87 ^{ay}	2.035	
		SEM ²⁾	0.334	0.389	3.482	2.296		

Non-1-en-4-ol	1671	Hanwoo	0.12 ^b	0.34 ^{bx}	0.83 ^a	1.07 ^{ax}	0.087	Grassy, honey ⁽²⁾
		Chikso	0.10	0.08 ^y	0.29	0.07 ^y	0.073	
		SEM ²⁾	0.041	0.057	0.144	0.012		
Non-2-en-1-ol	1727	Hanwoo	-	-	-	0.88	0.077	Mushroom, melon ⁽³⁾
		Chikso	-	-	-	-	0.000	
		SEM ²⁾	0.000	0.000	0.000	0.109		
Oct-1-en-3-ol	1460	Hanwoo	4.38 ^b	6.51 ^b	8.61 ^b	21.68 ^{ax}	1.154	Fishy, fatty, mushroom ⁽⁴⁾
		Chikso	3.44	5.30	6.09	2.36 ^y	0.850	
		SEM ²⁾	0.889	0.801	0.989	1.303		
Octan-1-ol	1566	Hanwoo	0.19 ^b	0.32 ^b	0.50 ^b	1.68 ^{ax}	0.133	Waxy, green, mushroom
		Chikso	0.35	0.51	0.59	0.41 ^y	0.103	
		SEM ²⁾	0.064	0.071	0.120	0.182		
Pent-1-en-3-ol	1170	Hanwoo	0.66 ^c	0.91 ^{bex}	1.13 ^{bx}	1.43 ^{ax}	0.063	Buttery, green, fruity

		Chikso	0.46 ^{ab}	0.41 ^{aby}	0.60 ^{ay}	0.25 ^{by}	0.048	
		SEM ²⁾	0.082	0.041	0.052	0.035		
Pentan-1-ol	1260	Hanwoo	4.21 ^c	6.34 ^{bx}	7.81 ^{bx}	11.29 ^{ax}	0.400	Balsamic, oily, sweet
		Chikso	3.58	3.51 ^y	4.05 ^y	1.80 ^y	0.547	
		SEM ²⁾	0.602	0.432	0.588	0.150		
Subtotal		Hanwoo	16.68 ^c	24.57 ^{bcx}	42.14 ^b	164.70 ^{ax}	5.031	
		Chikso	12.01 ^b	16.27 ^{by}	33.82 ^a	47.66 ^{ay}	3.725	
		SEM ²⁾	2.895	2.066	6.377	5.006		
<i>Aldehydes</i>								
(2E,4E)-Nona-2,4-dienal	1730	Hanwoo	0.13 ^c	0.34 ^{bc}	0.49 ^{bx}	0.92 ^{abx}	0.054	Fatty, green, nutty
		Chikso	-	0.23	0.23 ^y	0.06 ^y	0.043	
		SEM ²⁾	0.039	0.051	0.062	0.040		
(E)-Hept-2-enal	1349	Hanwoo	0.53 ^{cx}	1.10 ^{abx}	1.17 ^{ax}	0.79 ^{bcx}	0.074	Fatty, green, almond
		Chikso	0.11 ^{by}	0.42 ^{ay}	0.40 ^{ay}	0.04 ^{by}	0.036	

		SEM ²⁾	0.094	0.061	0.027	0.015		
2-Phenylacetaldehyde	1676	Hanwoo	-	-	0.73 ^b	2.05 ^a	0.101	Cocoa, floral, green
		Chikso	-	-	1.07 ^b	2.32 ^a	0.121	
		SEM ²⁾	0.000	0.000	0.167	0.147		
3-Methylbutanal	911	Hanwoo	-	-	0.99	0.82 ^x	0.068	Fatty, malty, ethereal
		Chikso	-	-	0.98 ^a	0.54 ^{by}	0.077	
		SEM ²⁾	0.000	0.000	0.134	0.058		
Heptanal	1203	Hanwoo	1.04 ^b	3.18 ^a	4.06 ^{ax}	4.19 ^{ax}	0.392	Fatty, green, rancid
		Chikso	0.55 ^b	2.08 ^a	2.15 ^{ay}	0.49 ^{by}	0.324	
		SEM ²⁾	0.260	0.514	0.409	0.136		
Hexanal	1100	Hanwoo	9.18 ^{cx}	26.79 ^{abx}	32.26 ^{ax}	21.15 ^{bx}	2.079	Fatty, green, fruity
		Chikso	1.52 ^{by}	15.99 ^{ay}	15.75 ^{ay}	2.39 ^{by}	1.158	
		SEM ²⁾	0.674	2.118	1.023	2.311		
Nonanal	1414	Hanwoo	0.45 ^c	1.06 ^{bcy}	1.46 ^b	2.51 ^{ax}	0.145	Fatty, green, fishy
		Chikso	0.65 ^b	2.10 ^{ax}	1.75 ^{ab}	0.82 ^{by}	0.252	

		SEM ²⁾	0.109	0.243	0.277	0.146		
Octanal	1308	Hanwoo	-	0.24 ^{by}	0.32 ^{ab}	0.42 ^{ax}	0.027	Fatty, green, citrus
		Chikso	0.10 ^b	0.50 ^{ax}	0.38 ^a	0.13 ^{by}	0.051	
		SEM ²⁾	0.018	0.064	0.032	0.034		
Pentanal	996	Hanwoo	0.41 ^c	1.32 ^{ax}	1.64 ^{ax}	0.80 ^b	0.071	Malty, nutty, fruity
		Chikso	-	0.53 ^{by}	0.63 ^{ay}	-	0.049	
		SEM ²⁾	0.050	0.080	0.044	0.065		
Subtotal		Hanwoo	11.74 ^{bx}	34.03 ^{ax}	43.12 ^{ax}	33.66 ^{ax}	2.221	
		Chikso	2.94 ^{by}	21.85 ^{ay}	23.35 ^{ay}	6.79 ^{by}	1.828	
		SEM ²⁾	1.173	3.076	1.404	1.933		
<i>Esters</i>								
Ethyl butanoate	1050	Hanwoo	-	-	-	0.15 ^x	0.004	Fruity
		Chikso	-	-	-	0.09 ^y	0.003	
		SEM ²⁾	0.000	0.000	0.000	0.007		
Methyl 2-hydroxypropanoate	1337	Hanwoo	1.00 ^a	0.73 ^{ab}	0.73 ^{abx}	0.64 ^{bx}	0.068	not reported

		Chikso	0.78 ^a	0.80 ^a	0.43 ^{by}	0.56 ^{by}	0.039	
		SEM ²⁾	0.079	0.061	0.047	0.014		
Methyl heptanoate	1303	Hanwoo	0.24 ^b	0.24 ^{bx}	0.19 ^b	0.45 ^{ax}	0.043	Fruity, floral, sweet
		Chikso	0.33 ^a	0.14 ^{aby}	0.11 ^{ab}	0.07 ^{by}	0.051	
		SEM ²⁾	0.078	0.018	0.022	0.044		
Methyl hexanoate	1202	Hanwoo	5.05 ^a	3.73 ^{abx}	2.68 ^{bx}	4.22 ^{ax}	0.335	Fruity, ether, sweet
		Chikso	3.80 ^a	2.11 ^{aby}	1.33 ^{by}	0.62 ^{by}	0.434	
		SEM ²⁾	0.672	0.265	0.241	0.147		
Methyl octanoate	1406	Hanwoo	0.38 ^{bx}	0.43 ^b	0.48 ^{bx}	0.69 ^{ax}	0.034	Green, herbal, sweet
		Chikso	0.28 ^y	0.34	0.32 ^y	0.28 ^y	0.031	
		SEM ²⁾	0.026	0.032	0.036	0.035		
Subtotal		Hanwoo	6.66 ^a	5.12 ^{abx}	4.07 ^{bx}	6.15 ^{ax}	0.348	
		Chikso	5.18 ^a	3.40 ^{aby}	2.21 ^{by}	1.62 ^{by}	0.500	
		SEM ²⁾	0.701	0.328	0.301	0.226		

Fatty acids

Acetic acid	1496	Hanwoo	0.54 ^c	1.06 ^{bcx}	2.64 ^b	5.02 ^a	0.379	Pungent, sour, vinegar
		Chikso	0.35 ^c	0.33 ^{cy}	1.37 ^b	3.80 ^a	0.187	
		SEM ²⁾	0.079	0.093	0.340	0.477		
Butanoic acid	1661	Hanwoo	0.66 ^{bx}	0.54 ^{bx}	1.44 ^{bx}	2.97 ^{ax}	0.216	Buttery, sweat, fruity
		Chikso	0.19 ^{cy}	0.16 ^{cy}	0.74 ^{by}	1.70 ^{ay}	0.087	
		SEM ²⁾	0.104	0.019	0.131	0.283		
Hexanoic acid	1883	Hanwoo	2.05 ^b	1.48 ^{bx}	2.82 ^b	6.41 ^{ax}	0.700	Fatty, sweat, sour
		Chikso	1.34 ^{ab}	0.30 ^{by}	1.32 ^{ab}	1.83 ^{ay}	0.244	
		SEM ²⁾	0.277	0.013	0.392	0.933		
Subtotal		Hanwoo	3.24 ^b	3.07 ^{bx}	6.90 ^{bx}	14.40 ^{ax}	1.280	
		Chikso	1.88 ^{bc}	0.80 ^{cy}	3.43 ^{by}	7.33 ^{ay}	0.485	
		SEM ²⁾	0.418	0.114	0.847	1.686		

Furan

2-Methyloxolane	856	Hanwoo	0.13 ^{bx}	0.29 ^a	0.22 ^{ab}	0.26 ^{ax}	0.023	not reported
		Chikso	0.05 ^y	0.41	0.29	0.03 ^y	0.088	
		SEM ²⁾	0.012	0.124	0.029	0.013		

Hydrocarbons

1,4-Xylene	1156	Hanwoo	0.07	0.05	0.05 ^y	0.05 ^y	0.011	not reported
		Chikso	0.09	0.10	0.09 ^x	0.08 ^x	0.008	
		SEM ²⁾	0.011	0.013	0.005	0.005		

2,4-Dimethylhept-1-ene	861	Hanwoo	0.26	0.28 ^y	0.27	0.24 ^y	0.072	not reported
		Chikso	0.35	0.71 ^x	0.59	0.67 ^x	0.114	
		SEM ²⁾	0.064	0.094	0.109	0.107		

Decane	1002	Hanwoo	0.36	0.36	0.38	0.44	0.042	Alkane
		Chikso	0.21	0.48	0.44	0.46	0.091	
		SEM ²⁾	0.057	0.070	0.087	0.065		

Dodecane	1199	Hanwoo	0.26 ^b	0.28 ^{by}	0.29 ^b	0.71 ^{ax}	0.027	Alkane
		Chikso	0.22	0.37 ^x	0.39	0.33 ^y	0.049	

		SEM ²⁾	0.046	0.022	0.056	0.024		
Toluene	1060	Hanwoo	0.55 ^{ax}	0.55 ^{ax}	0.52 ^{ax}	0.41 ^b	0.015	Sweet
		Chikso	0.36 ^{by}	0.33 ^{by}	0.46 ^{ay}	0.37 ^b	0.012	
		SEM ²⁾	0.016	0.016	0.011	0.012		
Subtotal		Hanwoo	1.50	1.76	1.69	1.96	0.136	
		Chikso	1.23 ^b	2.00 ^{ab}	2.46 ^a	2.13 ^{ab}	0.243	
		SEM ²⁾	0.152	0.190	0.246	0.187		
<i>Ketones</i>								
(3E,5E)-Octa-3,5-dien-2-one	1542	Hanwoo	0.06 ^c	0.12 ^{bcx}	0.15 ^{bx}	0.25 ^a	0.019	Fatty, fruity, mushroom
		Chikso	0.04	0.05 ^y	0.06 ^y	-	0.013	
		SEM ²⁾	0.010	0.016	0.020	0.016		
3-Hydroxybutan-2-one	1311	Hanwoo	17.71 ^{cx}	20.31 ^{cx}	63.78 ^a	41.90 ^b	4.335	Buttery, fatty, sweet
		Chikso	7.70 ^{cy}	12.96 ^{bcy}	59.77 ^a	35.3 ^{ab}	5.431	
		SEM ²⁾	0.465	0.908	9.179	3.360		

Butane-2,3-dione	994	Hanwoo	0.98 ^{cx}	1.22 ^{bc}	3.44 ^a	1.92 ^b	0.186	Buttery, caramel, pungent
		Chikso	0.59 ^{by}	1.02 ^b	3.68 ^a	1.49 ^b	0.251	
		SEM ²⁾	0.082	0.056	0.401	0.154		
Propan-2-one	812	Hanwoo	2.99	3.03	2.35 ^y	3.56	0.306	Fruity, ethereal, solvent
		Chikso	3.13	4.33	3.59 ^x	3.74	0.521	
		SEM ²⁾	0.379	0.672	0.289	0.229		
Subtotal		Hanwoo	21.74 ^{cx}	24.68 ^{cx}	69.73 ^a	47.63 ^b	4.579	
		Chikso	11.46 ^{cy}	18.36 ^{bcy}	67.10 ^a	40.55 ^b	5.666	
		SEM ²⁾	0.399	1.453	9.648	3.284		
Total		Hanwoo	62.22 ^{cx}	94.09 ^{bx}	168.54 ^b	269.07 ^{ax}	8.899	
		Chikso	35.38 ^{cy}	63.88 ^{bcy}	133.31 ^a	106.96 ^{aby}	11.097	
		SEM ²⁾	4.874	6.087	17.955	4.635		

66 ¹⁾ Standard error of the mean (n = 12), ²⁾ (n = 6).

67 ^{a-d} Different letters within the same row indicate significant differences ($p < 0.05$).

68 ^{x,y} Different letters within the same column indicate significant differences ($p < 0.05$).

69 LRI, linear retention index; -, not detected.

70 The aroma descriptions for each volatile organic compound are from FooDB library (foodb.ca) and literature: (1) Wang et al., 2016; (2) Xu et
71 al., 2021; (3) Sekhon et al., 2010; (4) Stetzer et al., 2008.