

1 **Table 2:** Effect of particle size, temperature, type, and concentration of solvent on changes in flavor active bitter compounds

Particle Size (mm)	Temperature (°C)	Concentration of Solvent (v/v%)	ϕKSS		δKS		Thomosidic acid		Sinapine	Sinapic Acid	Canolol
			(μg %SAE/g %DW)	(μg SAE/g DW)	(μg SAE/g DW)	(μg SAE/g DW)	(μg SAE/g DW)	(μg/g DW)	(μg/g DW)	(μg/g DW)	(μg/g DW)
0.5 mm	140°C	30% °EtOH	423.53 ±	12.76	569.03 ±	16.01	228.71 ±	21.42	2350.00 ±	79.10 ±	9.91 ±
		40% EtOH	925.42 ±	32.35	1056.14 ±	38.64	541.50 ±	16.91	4869.12 ±	147.55 ±	8.10 ±
		60% EtOH	763.45 ±	75.17	1388.19 ±	48.34	822.56 ±	46.93	6671.58 ±	198.16 ±	47.74 ±
		70% EtOH	952.80 ±	33.58	2725.38 ±	30.93	1795.71 ±	180.35	9757.71 ±	432.05 ±	203.29 ±
		30% °MeOH	773.54 ±	48.11	1041.12 ±	38.27	564.29 ±	13.98	4153.79 ±	150.81 ±	11.94 ±
		40% MeOH	1025.87 ±	112.39	1203.77 ±	83.95	529.73 ±	29.61	4464.86 ±	72.33 ±	20.83 ±
		60% MeOH	220.67 ±	26.68	1021.74 ±	47.10	270.38 ±	53.36	4494.62 ±	71.82 ±	15.67 ±
		70% MeOH	500.08 ±	70.22	1855.12 ±	23.67	1410.60 ±	207.05	6160.44 ±	592.55 ±	179.61 ±
1.0 mm	140°C	30% EtOH	212.36 ±	18.42	538.31 ±	29.34	305.35 ±	17.40	2630.46 ±	81.09 ±	13.90 ±
		40% EtOH	179.33 ±	4.70	293.78 ±	16.97	103.60 ±	5.94	1078.76 ±	260.67 ±	26.76 ±
		60% EtOH	663.18 ±	32.70	1321.10 ±	7.11	758.73 ±	55.50	5896.32 ±	260.01 ±	87.37 ±
		70% EtOH	655.94 ±	91.98	1892.20 ±	10.08	1339.62 ±	101.51	5797.95 ±	398.69 ±	238.63 ±
		30% MeOH	557.33 ±	37.61	671.63 ±	37.48	331.69 ±	34.29	2478.50 ±	47.14 ±	21.20 ±
		40% MeOH	422.34 ±	27.27	748.28 ±	48.60	422.34 ±	27.27	2842.48 ±	31.14 ±	26.24 ±
		60% MeOH	470.89 ±	32.56	677.43 ±	1.51	382.29 ±	0.46	3060.95 ±	293.01 ±	43.33 ±
		70% MeOH	950.34 ±	56.04	2347.79 ±	44.25	1364.79 ±	16.98	8206.31 ±	675.26 ±	187.12 ±
0.5 mm	160°C	30% EtOH	132.04 ±	4.70	324.81 ±	12.26	220.76 ±	30.65	1806.70 ±	88.69 ±	16.75 ±
		40% EtOH	713.21 ±	30.99	1423.91 ±	53.32	881.39 ±	48.29	6721.77 ±	205.79 ±	15.11 ±
		60% EtOH	703.43 ±	56.04	1658.42 ±	41.94	888.99 ±	69.62	6913.73 ±	246.82 ±	249.58 ±
		70% EtOH	653.75 ±	11.37	3307.61 ±	56.60	2185.33 ±	120.68	12082.81 ±	550.96 ±	297.98 ±
		30% MeOH	1032.76 ±	95.57	1769.61 ±	74.13	874.26 ±	77.21	6100.58 ±	281.17 ±	10.62 ±
		40% MeOH	945.42 ±	13.78	942.79 ±	66.71	754.34 ±	182.43	3656.16 ±	143.51 ±	25.22 ±
		60% MeOH	788.04 ±	92.81	1687.69 ±	169.78	1041.97 ±	105.25	7366.38 ±	243.78 ±	173.27 ±
		70% MeOH	536.46 ±	84.48	1971.82 ±	14.88	1425.79 ±	113.94	5533.98 ±	626.03 ±	251.72 ±
1.0 mm	160°C	30% EtOH	563.51 ±	9.85	651.23 ±	6.79	326.62 ±	9.61	2849.35 ±	89.99 ±	23.84 ±
		40% EtOH	240.35 ±	2.47	377.58 ±	32.05	426.46 ±	14.46	4329.83 ±	191.75 ±	64.67 ±
		60% EtOH	582.44 ±	7.12	1701.65 ±	27.95	961.67 ±	43.71	7792.17 ±	165.47 ±	72.95 ±
		70% EtOH	506.57 ±	38.60	2509.03 ±	29.50	1693.58 ±	65.86	6944.35 ±	473.37 ±	125.36 ±

Table 2 (cont'd)

0.5 mm	180°C	30% MeOH	431.01 ± 19.05	768.74 ± 33.12	359.51 ± 30.99	2852.97 ± 148.04	163.64 ± 16.25	42.58 ± 2.38
		40% MeOH	447.51 ± 40.02	680.26 ± 45.54	383.71 ± 61.37	3184.11 ± 149.76	43.57 ± 10.31	32.13 ± 3.89
		60% MeOH	776.68 ± 83.43	960.46 ± 138.32	960.46 ± 138.32	6706.03 ± 535.48	237.91 ± 41.59	192.06 ± 18.37
		70% MeOH	676.04 ± 77.82	1665.96 ± 124.64	1482.51 ± 272.82	8165.73 ± 158.53	501.64 ± 140.63	281.33 ± 35.46
		30% EtOH	51.06 ± 40.92	1585.41 ± 49.94	65.60 ± 8.72	769.38 ± 24.57	84.28 ± 1.24	52.62 ± 6.36
		40% EtOH	133.95 ± 42.32	395.01 ± 37.90	239.64 ± 15.61	2228.62 ± 77.84	181.89 ± 5.31	77.24 ± 12.59
		60% EtOH	417.21 ± 40.22	1058.33 ± 38.95	653.53 ± 44.18	4240.96 ± 104.62	215.43 ± 2.91	217.58 ± 7.34
		70% EtOH	718.54 ± 36.52	3358.75 ± 90.12	1967.23 ± 158.57	5716.92 ± 375.24	675.62 ± 65.04	212.10 ± 18.76
1.0	180°C	30% MeOH	204.08 ± 14.59	609.28 ± 25.28	597.53 ± 21.22	3072.81 ± 136.20	86.40 ± 23.80	101.49 ± 23.61
		40% MeOH	583.45 ± 76.96	634.79 ± 75.82	581.09 ± 95.73	2308.56 ± 118.78	116.01 ± 12.02	84.53 ± 7.63
		60% MeOH	663.16 ± 83.59	1681.52 ± 72.77	890.77 ± 37.04	5265.03 ± 285.80	277.83 ± 17.82	153.64 ± 20.33
		70% MeOH	714.49 ± 47.80	3687.18 ± 95.28	2416.61 ± 90.00	6162.62 ± 360.52	806.56 ± 21.57	216.18 ± 19.44
		30% EtOH	237.15 ± 20.37	621.43 ± 30.48	352.20 ± 19.12	2879.21 ± 60.17	150.76 ± 3.92	59.02 ± 3.15
		40% EtOH	98.55 ± 7.51	283.02 ± 9.33	186.63 ± 10.88	1846.17 ± 28.03	170.46 ± 8.09	20.90 ± 6.03
		60% EtOH	903.42 ± 64.20	2181.98 ± 136.64	1312.03 ± 21.67	6617.90 ± 260.27	397.36 ± 2.11	308.55 ± 4.72
		70% EtOH	659.67 ± 14.50	2742.36 ± 13.98	1682.31 ± 86.85	6184.98 ± 134.47	595.39 ± 62.95	342.48 ± 37.83
		30% MeOH	115.03 ± 13.81	375.86 ± 9.68	290.80 ± 10.17	1534.56 ± 40.30	132.49 ± 2.14	49.06 ± 8.27
		40% MeOH	560.68 ± 26.02	1212.32 ± 30.48	598.51 ± 43.39	4854.27 ± 289.56	312.28 ± 36.12	182.61 ± 28.62
		60% MeOH	679.42 ± 77.55	1473.98 ± 94.02	603.08 ± 4.19	3814.86 ± 17.49	185.60 ± 2.24	214.76 ± 14.68
		70% MeOH	612.62 ± 42.10	2691.18 ± 17.56	1971.61 ± 90.88	7468.67 ± 193.10	859.02 ± 12.09	467.05 ± 49.98

Results are expressed as mean values ± standard deviations. [‡]KSS: kaempferol 3-*O*-(2'''-*O*-sinapoyl- β -sophoroside); [§]KS: kaempferol 3-*O*- β -sophoroside; nd: not detected; [‡]MeOH: methanol; [°]EtOH: ethanol; [‡]SAE: sinapic acid equivalents; μ g: microgram; g: gram; mm: millimeter; [‡]DW: dry weight; °C: centigrade