



Erratum

Erratum to “Comparative chemical attributes of native North American hop, *Humulus lupulus* var. *lupuloides* E. Small”
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The Publisher regrets the following errors in Table 1, page 857. Some of the data entries for “averages of means” and for “averages of $cv \times 10$ ” were either

shifted out of place or lost. These data are placed correctly in the following table, allowing readers to make summary comparisons of the 16 columns of data.

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Table 1
Chemical attributes of cone extracts from North American native hop plants, *Humulus lupulus* var. *lupuloides*, 1989

Name of population	No. of plants	% Alpha acids			10 × cv ^a	% Beta acids			10 × cv	Alpha ratio ^b			10 × cv	% Cohumulone ^c			10 × cv
		Min	Max	Mean		Min	Max	Mean		Min	Max	Mean		Min	Max	Mean	
Souris-E	1 (1)	0 ^d	0	2.9	0	0	0	2.2	0	0	0	68	0	0	0	54	0
Logan-N	2 (2, 3)	5.12	5.52	5.34	0.49	3.88	4.01	3.94	0.23	56	59	57.5	0.37	46	54	50.0	1.13
Minot-E	8 (4–11)	0.86	4.93	2.85	5.19	1.09	2.93	2.48	3.79	38	65	51.8	1.92	40	61	51.6	1.43
Burlington-N	8 (12–21) ^e	0.86	4.00	2.48	4.15	1.27	3.64	2.50	3.12	32	60	48.5	1.90	49	87	59.4	2.08
Mohall-W	7 (22–28)	1.57	7.33	4.62	4.42	1.73	6.09	3.72	3.95	38	67	54.3	1.95	51	67	57.0	0.95
Northgate-E	10 (29–38)	1.34	6.51	3.70	4.24	1.80	4.83	2.63	3.42	43	63	57.3	1.23	58	77	67.2	0.80
Glen Ewen-S	1 (39)	0	0	3.5	0	0	0	3.8	0	0	0	47	0	0	0	60	0
Oxbow-S	6 (40–45)	1.13	3.62	2.04	6.03	1.98	6.26	3.64	5.22	30	38	35.2	0.81	45	74	54.2	2.56
Midale-W	1 (46)	0	0	6.1	0	0	0	3.3	0	0	0	65	0	0	0	56	0
Indian Head-E	6 (47–52)	3.09	7.05	4.50	3.22	3.05	6.08	4.21	4.22	42	55	51.3	0.97	62	72	67.8	0.52
Total	50																
Averages of means		1.20	5.57	3.80		2.11	4.83	3.24		39.9	58.1	53.6		50.1	70.3	57.7	
Averages of cv × 10					3.96				3.42				1.31				1.35
Amer. hop cultivars	14	6.10 ^f	14.60	10.08	3.12	3.10	6.90	4.81	2.64	51	78	66.7	1.14	19	53 ^f	35	2.51
Euro. hop cultivars	20	3.70	12.20	6.98	3.65	2.50	6.30	4.22	2.87	43	72	62.1	1.36	22	40	27.6	2.09
Averages of cv × 10					3.38				2.76				1.25				2.30

American hop cultivars include: Cascade, Centennial, Chinook, Cluster, Columbia, Comet, Eroica, Galena, Horizon, Mt. Hood, Nugget, Olympic, Talisman, and Willamette. European hop cultivars include: Bramling, Brewer's Gold, Bullion, Fuggle, Hallertauer, Hersbrucker, Huller Bitter, Landhopfen, Northern Brewer, Perle, Pride of Kent, Progress, Record, Saazer, Spalter, Styrian, Tett-nanger, Wye Challenger, and Wye Target.

^a cv = Coefficient of variation = standard deviation/mean of attribute values; cv is a measure of sampled-plant diversity, allowing comparisons of attributes of differing numeric ranges. The multiple, C × 10, simplifies comparisons of diversity among chemical attributes within and among plant populations, and between native genotypes and hop cultivars.

^b Alpha ratio = alpha acids/alpha + beta acids.

^c % Cohumulone = the proportion of cohumulone in total alpha acids, i.e., relative to humulone + adhumulone.

^d Only a single plant in each of three populations produced the number of cones required for analysis; the value for each is entered as the sample mean.

^e Cone-sample numbers 14 and 16 were damaged; thus were discarded.

^f Note that maximal values of alpha acids in native hop-plant cones approximate minimal alpha acid values for American hop cultivars. Conversely, minimal values for cohumulone (CoH) in cones of native hop plants approximate the maximal CoH values of all European and most American hop cultivars. The 53% CoH content of the American hop cultivar Talisman was the highest of any hop selection considered acceptable for brewing, i.e., 41% CoH (e.g., Cluster, Comet, Eroica) has generally been an upper limit. Most cultivars containing > 35% CoH included native North American hop in their parentage.