

Supporting Information:

**The Effect of Time, Roasting Temperature, and Grind Size
on Caffeine and Chlorogenic Acid Concentrations in Cold
Brew Coffee**

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Table S1. One way ANOVA for the comparison 3-CGA concentrations in 4 coffee samples using the cold brew method.

Analysis of Variance (One-Way)

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Medium Roast, Medium Grind	6	3020.47	503.4116667	581.2997767
Medium Roast, Coarse Grind	6	3220.13	536.6883333	689.2994967
Dark Roast, Medium Grind	6	2372.27	395.3783333	253.1773367
Dark Roast, Coarse Grind	6	2113.48	352.2466667	353.8139467

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	137215.4701	3	45738.49003	97.44081821	4.16351E-12	3.098391212
Within Groups	9387.952783	20	469.3976392			
Total	146603.4229	23				

Table S2. One way ANOVA for the comparison caffeine concentrations in 4 coffee samples using the cold brew method.

Analysis of Variance (One-Way)

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Medium Roast, Medium Grind	6	6967.05	1161.175	4624.00043
Medium Roast, Coarse Grind	6	7843.93	1307.321667	7883.708617
Dark Roast, Medium Grind	6	6643.92	1107.32	12028.74788
Dark Roast, Coarse Grind	6	6082.73	1013.788333	545.1878567

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	271339.0437	3	90446.34792	14.42430888	3.10959E-05	3.098391212
Within Groups	125408.2239	20	6270.411196			
Total	396747.2677	23				

Table S3. Two-tailed t-tests for the comparison of 3-CGA concentrations between cold and hot brewing methods.

Medium Roast, Medium Grind			Medium Roast, Coarse Grind		
	<i>CGA Cold</i>	<i>CGA Hot</i>		<i>CGA Cold</i>	<i>CGA Hot</i>
Mean	509	512	Mean	518	455
Variance	524.41	1764	Variance	2926.81	1900.96
Observations	6	6	Observations	6	6
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	7.731445759		df	9.567988577	
t Stat	-0.153613704		t Stat	2.220971005	
P(T<=t) two-tail	0.882249032		P(T<=t) two-tail	0.053479228	
t Critical two-tail	2.364624252		t Critical two-tail	2.262157163	

Dark Roast, Medium Grind			Dark Roast, Coarse Grind		
	<i>CGA Cold</i>	<i>CGA Hot</i>		<i>CGA Cold</i>	<i>CGA Hot</i>
Mean	388	433	Mean	361	343
Variance	259.21	1391.29	Variance	761.76	106.09
Observations	6	6	Observations	6	6
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	6.800590635		df	6.36619708	
t Stat	-2.713191043		t Stat	1.496669114	
P(T<=t) two-tail	0.034957519		P(T<=t) two-tail	0.185118934	
t Critical two-tail	2.446911851		t Critical two-tail	2.446911851	

Table S4. Two-tailed t-tests for the comparison of 3-CGA concentrations between cold and hot brewing methods.

Medium Roast, Medium Grind			Medium Roast, Coarse Grind		
	<i>Caff Cold</i>	<i>Caff Hot</i>		<i>Caff Cold</i>	<i>Caff Hot</i>
Mean	1183	1040	Mean	1233	967
Variance	15376	6889	Variance	5791.21	6544.81
Observations	6	6	Observations	6	6
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	8.731343422		df	9.962819612	
t Stat	2.347471417		t Stat	5.86637376	
P(T<=t) two-tail	0.046865881		P(T<=t) two-tail	0.000238839	
t Critical two-tail	2.306004135		t Critical two-tail	2.262157163	

Dark Roast, Medium Grind			Dark Roast, Coarse Grind		
	<i>Caff Cold</i>	<i>Caff Hot</i>		<i>Caff Cold</i>	<i>Caff Hot</i>
Mean	1079	1058	Mean	985	840
Variance	7191.04	7621.29	Variance	1156	116.64
Observations	6	6	Observations	6	6
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	9.991569977		df	5.998827734	
t Stat	0.422652294		t Stat	9.956136513	
P(T<=t) two-tail	0.682467763		P(T<=t) two-tail	0.000174589	
t Critical two-tail	2.262157163		t Critical two-tail	2.570581836	

Table S5. Two-tailed t-tests for the comparison of 3-CGA and caffeine concentrations between medium roast and dark roast samples using cold brew method.

CGA					
	<i>Medium Roast, Medium Grind</i>	<i>Dark Roast, Medium Grind</i>		<i>Medium Roast, Coarse Grind</i>	<i>Dark Roast, Coarse Grind</i>
Mean	509	388	Mean	518	361
Variance	524.41	259.21	Variance	2926.81	761.76
Observations	6	6	Observations	6	6
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	8.972356378		df	7.437575014	
t Stat	10.58786121		t Stat	6.332078099	
P(T<=t) two-tail	5.53245E-06		P(T<=t) two-tail	0.0003919	
t Critical two-tail	2.306004135		t Critical two-tail	2.364624252	

Caffeine					
	<i>Medium Roast,</i>	<i>Dark Roast,</i>		<i>Medium Roast,</i>	<i>Dark Roast,</i>
Mean	1183	1079	Mean	1233	985
Variance	15376	7191.04	Variance	5791.21	1156
Observations	6	6	Observations	6	6
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	8.837451764		df	6.919639995	
t Stat	1.695788419		t Stat	7.288230387	
P(T<=t) two-tail	0.128368349		P(T<=t) two-tail	0.00033994	
t Critical two-tail	2.306004135		t Critical two-tail	2.446911851	

Table S6. Two-tailed t-tests for the comparison of 3-CGA and caffeine concentrations between medium grind and coarse grind samples using cold brew method.

CGA					
	<i>Medium Roast, Medium Grind</i>	<i>Medium Roast, Coarse Grind</i>		<i>Dark Roast, Medium Grind</i>	<i>Dark Roast, Coarse Grind</i>
Mean	509	518	Mean	388	361
Variance	259081	2926.81	Variance	259.21	761.76
Observations	6	6	Observations	6	6
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	5.112954502		df	8.049660717	
t Stat	-0.043068626		t Stat	2.069821524	
P(T<=t) two-tail	0.967313848		P(T<=t) two-tail	0.072249115	
t Critical two-tail	2.570581836		t Critical two-tail	2.306004135	

Caffeine					
	<i>Medium Roast, Medium Grind</i>	<i>Medium Roast, Coarse Grind</i>		<i>Dark Roast, Medium Grind</i>	<i>Dark Roast, Coarse Grind</i>
Mean	1183	1233	Mean	1079	985
Variance	15376	5791.21	Variance	7191.04	1156
Observations	6	6	Observations	6	6
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	8.298481754		df	6.567059545	
t Stat	-0.841809496		t Stat	2.520212907	
P(T<=t) two-tail	0.424342625		P(T<=t) two-tail	0.045274073	
t Critical two-tail	2.306004135		t Critical two-tail	2.446911851	