Brewing Parameters of Aeropress Coffee Maker

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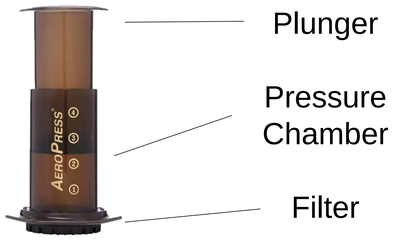
Abstract

Aeropress advertisements boast a characteristically low acidity level [1], but this information is presented without numeric comparison to other coffee brewing methods or the effect this has on the flavor of the brewed beverage. The Aeropress user manual recommends brewing with water at 80°C, in contrast with a widely-accepted standard of 92-94°C [2]. In this experiment, the temperature of brewing water used in an Aeropress brand coffee maker is varied in order to establish a relationship to observed parameters of **acidity** as measured by pH, and **total dissolved solids (TDS)**. Along with a **qualitative flavor assessment**, these parameters are used to determine how coffee extraction affects flavor across the typical range of brewing water temperature. The experiment was repeated on a French Press for comparison. Results show that TDS rises with increasing temperature, correlating with decreasing flavor preference; pH lowers with increasing temperature, but is not correlated to the sensation of acidity.

Brewing Devices

Aeropress



https://aeropress.com/product/aeropress-coffee-maker/

French Press

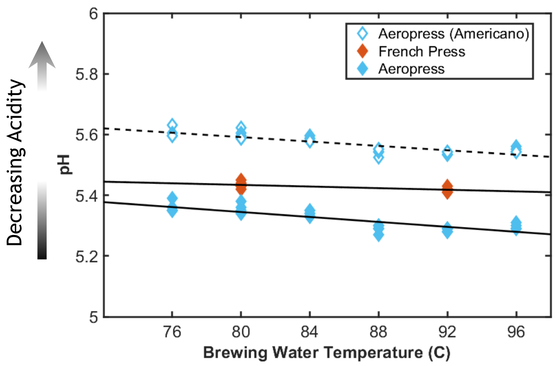
https://www.coffeedesk.com/product/5116/Timemore-French-Press-600-MI

Grounds:Water Ratio	
Aeropress 1:8	French Press 1:16

Brewing Procedure

Brewing Results

pH



Linear fit for pH: f(x) = ax + b

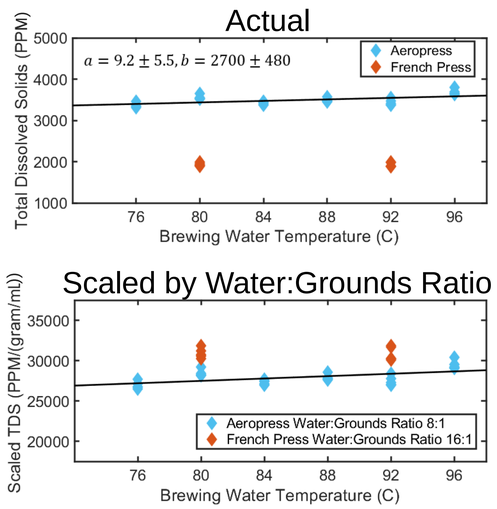
$a = -0.00361 \pm 8.6 * 10^{-4}, b = 5.880 \pm 0.074$

$a = -0.00133 \pm 6.8 * 10^{-4}, b = 5.541 \pm 0.021$

$a = -0.00407 \pm 9.6 * 10^{-4}, b = 5.670 \pm 0.084$

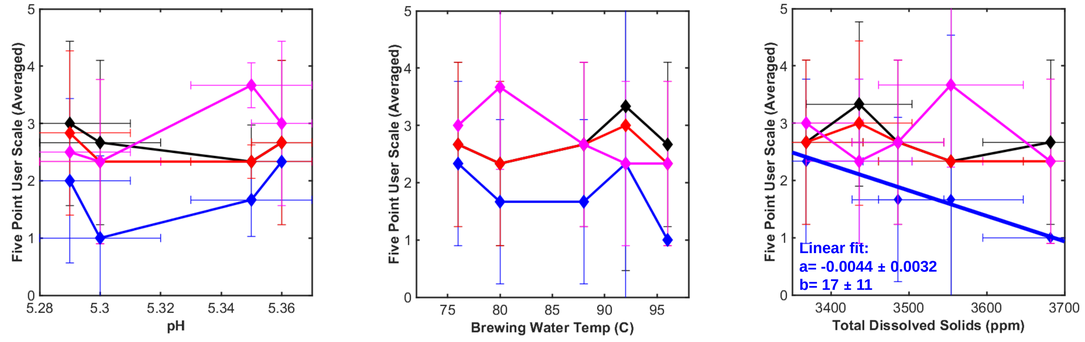
Americano calculated as 1:1 coffee to water ratio

TDS



Five Point Survey For Taste Test

Body
Flavor
Acidity
Aroma



Conclusions

- Across the typical range of brewing water temperature, the solubility of coffee grounds into water is approximated by a linear model
- TDS
  - Increases 9% from 76 to 96 °C
  - Statistically significant decreasing correlation with flavor preference
- pH
  - Lowers 14% (log scale) from 76 to 96 °C
  - No statistically significant correlation to sensation of acidity

Further Work

- Increasing sample size to reduce uncertainty
- Determining effects of varying other brewing parameters such as brewing time and temperature
- Determining which compounds are extracted during the brewing process would provide necessary information to correlate flavor and water temperature

Acknowledgements

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References

[1] "Why Aeropress", last modified April 16, 2019, accessed October 19, 2019, https://aeropress.com/why-aeropress/

[2] "Coffee Standards — Specialty Coffee Association". *Specialty Coffee Association*. https://sca.coffee/research/coffee-standards.

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