

Mackenzie Batali, Andrew Cotter, Lik Xian Lim, William Ristenpart, Jean-Xavier Guinard



Introduction

Many cafes choose to discard brewed coffee 30-60 minutes after brewing, but there is very little hard data to support that choice. Flavor compounds in coffee will evaporate or hydrolyze over time, but it is unclear how quickly that change is perceptible. Additionally, different holding conditions might better preserve coffee quality. This investigation seeks to quantify how sensory attributes change with time and storage condition post brew to determine accurate recommendations for coffee professionals

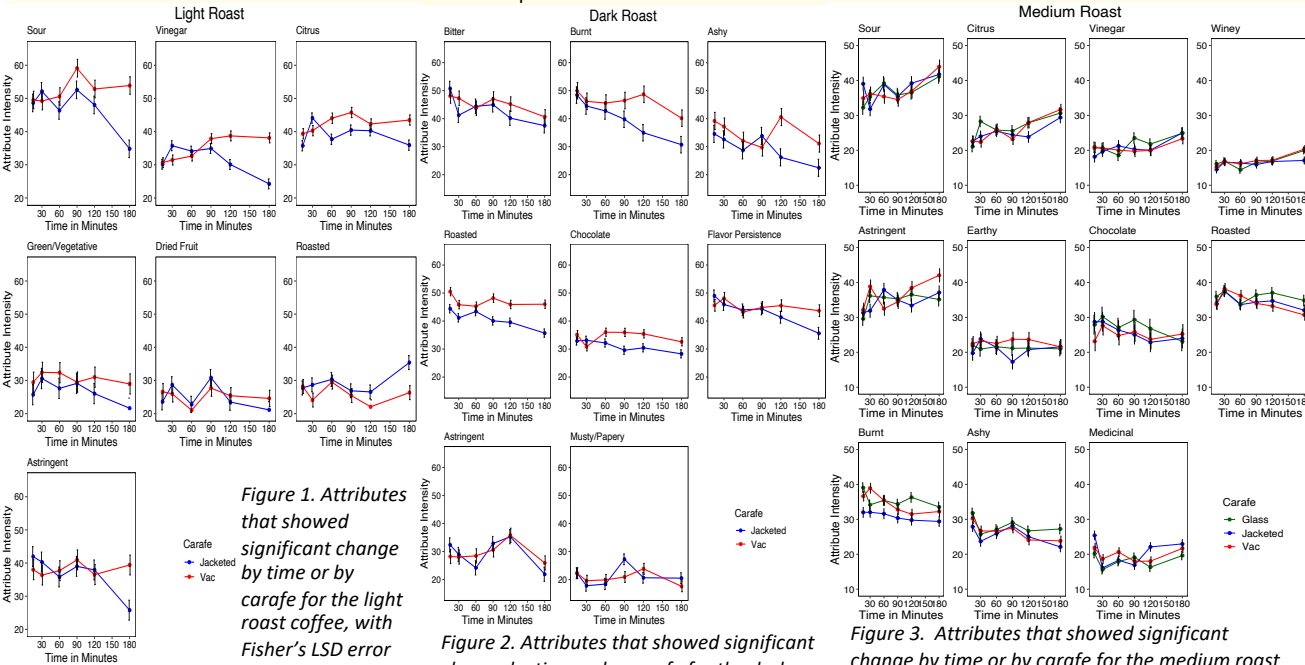


Figure 1. Attributes that showed significant change by time or by carafe for the light roast coffee, with Fisher's LSD error bars

Figure 2. Attributes that showed significant change by time or by carafe for the dark roast coffee, with Fisher's LSD error bars

Figure 3. Attributes that showed significant change by time or by carafe for the medium roast coffee, with Fisher's LSD error bars

Materials/Methods

Three coffees (Kenya light roast, Peet's major Dickason dark roast, and S&D medium roast) were held for up to three hours in either a vacuum carafe, a thermal jacketed carafe, and a glass carafe on a hot plate. A trained sensory panel evaluated each roast-carafe combination at 6 different time points from 15 minutes to 3 hours (see Figures 1-3).

Results/Discussion

Overall, the changes over time were subtler than expected. For the light roast, sour, citrus, vinegar, green/vegetative, and astringent attributes decreased with time and roasted flavor increased over time, with more flavor decrease seen in the jacketed carafe. For dark roast, all attributes in Figure 2 decreased with time, with more drastic change seen in the jacketed carafe, and most attributes only decreasing significantly after 2 hours. Medium roast coffee changed the most over time, increasing in sour, citrus, vinegar, and winey attributes, whereas chocolate, roasted, and ashy flavors decreased over time. For the medium roast coffee, most significant change in attribute intensity was seen after the 90 minute time point.

Conclusion/Perspectives

The first takeaway is that coffee can likely be held for 90 minutes or even more without notable loss in quality. The change in quality is likely due to the loss of aroma volatiles, as seen by many flavor attributes decreasing, and potentially an increase in acidity over time from the hydrolysis of flavor compounds. Finally, unheated, insulated carafes better preserve quality.

