

# The Exploration of Coffee Roasting Degrees and Profiles with Estimation of Chlorogenic Acid and Caffeine in Roasted Coffee

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## Introduction

The flavor of chlorogenic acid (CGA) is sour and slightly bitter, and obviously astringent. Caffeine tastes bitter. These two chemical compositions have a great influence on coffee's flavor. From this discussion, we tried to explore caffeine/CGA variations in different roasting degrees and different roasting curves, then explored the influence of these variations on flavors.

## Materials/Methods

The GTC300 was used to examine the amounts of caffeine and CGA, instead of traditional HPLC. Part1: the roasting levels and roasting profiles. The samples were prepared with roasting level, AL-1 to 8 which the roasting level, Agtron were #102, #90, #81, #74, #65, #54, #45, and #38, respectively. Part2: The roasting profile could be divided into three periods, dehydration (first period, I), Maillard reaction (second period, II) and development (third period, III), was shown in Fig. 1.

## Conclusion/Perspectives

the estimation of caffeine/CGA could explore the variations of roasting coffee beans. And further, we could control flavors by setting roasting degrees and roasting profiles. More explorations of chemical compositions by HPLC and GC should offer further discussions.

## References:

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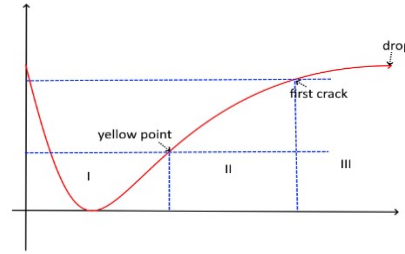


Fig 1. Roasting Periods

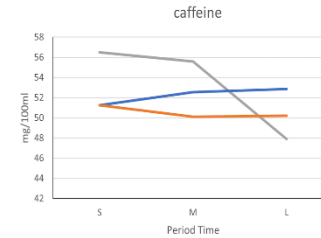


Fig 3. Caffeine/CGA variation at different period time in period I, II, and III

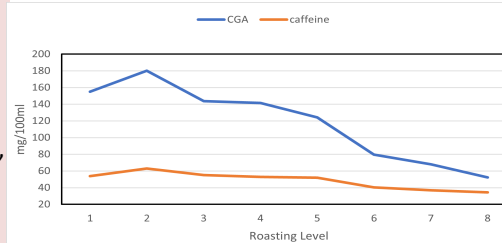
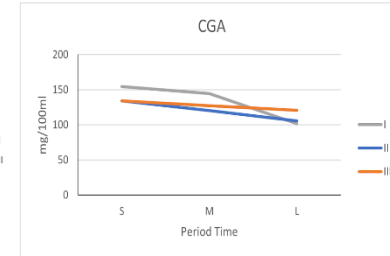


Fig 2. CGA and caffeine variation by roasting level

## Results/Discussion

1. The trend showed that the amounts of CGA and caffeine gradually decreased with roasting level increasing in Fig 2.
2. Level1, called as under-development, the CGA and caffeine were lower than Level 2.
3. Fig 3 showed caffeine decreased more when longer the time of period I. That means caffeine exited more when we used fast roast.
4. In period II, longer the period time, more the amount of caffeine. That means if we would like to decrease bitter, we could shorten the time of period II. As for CGA, whatever period I, II and III, longer the period time, the trends of decreasing were obvious. Especially in period I, the trend of decreasing was more than another period. That implied fast roasting would lead to lower more CGA.