

Master's Thesis

Influence of grinding level on the extraction of key components in espresso coffee

Coffee is one of the most popular beverages in the world, enjoyed not only for its stimulating effects but also as a way to relax and socialize on various occasions. Over the centuries, diverse preparation methods rooted in culture and tradition have evolved, making coffee a highly versatile drink. The flavor of coffee can vary depending on the extraction method used.



This thesis will evaluate the influence of the grinding level on the extraction of key components in espresso coffee. Experiments will be conducted using two different coffee grinders (Mahlkönig and Comandante) and coffee machines (a Decent and an in-house built espresso machine). The concentrations of several key

components (i.e., caffeine, chlorogenic acids, lactones, and organic acids) in the resulting coffee will be analyzed using high-performance liquid chromatography (HPLC). The collected data will help explain taste variations in coffee extraction and guide optimization of the preparation process.

Methods and devices:

- Espresso coffee machine
- High performance liquid chromatography (HPLC)
- Design of experiments (DoE)
- MATLAB

Requirements:

The applicant should be highly motivated, organized, and able to work independently. Prior experience in coffee preparation, HPLC, MATLAB, and DoE is not required.

Start: Immediately.

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