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Influence of Roasting and Brewing on Physicochemical Properties of *Coffea arabica*: A Review

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Structured Abstract

Background: Coffee is one of the most widely consumed drinks in the world, and its consumption is rising. Based on an annual analysis of world coffee consumption, the International Coffee Organization (ICO) estimates that 9.98 million kg of coffee were consumed worldwide in 2020–2021. Coffea is the scientific name for coffee, and under this genus there is *Coffea arabica* which is commonly known as Arabica coffee and *Coffea canephora* that widely known as Robusta coffee.

Methods: This review aims to determine the influence of roasting and brewing process on physical properties (colour changes, weight loss and moisture content) and also the effect of roasting and brewing process on chemical properties (caffeine level, tannin content and antioxidant activity) of *Coffea arabica*. Hence, through this study, it will be discussing the best parameters for the roasting and brewing process to produce the greater quality of coffee according to consumer preferences.

Results: The formation of the various flavours that make coffee pleasurable is most likely influenced by roasting. The beans go through a number of intricate chemical reactions that are poorly understood throughout the roasting process, which causes significant physical changes on the compounds that give the beverage its aroma and sensory properties. Meanwhile, the brewing process is another factor that influences the chemical composition of the beverage. There are numerous methods for brewing coffee. High-temperature processes and low-temperature processes are two general categories. Both the roasting and brewing process also affect the production of coffee.

Conclusion: When coffee beans are roasted and brewed, numerous chemical changes occur, including the activation of the Maillard process and the destruction of polyphenols. As the roasting time of coffee beans increased, we characterised how the antioxidant concentrations and antioxidant characteristics varied. The colour changes from light to dark according to the degree of roasting. As the roasting degree increases, the weight loss and moisture content of coffee beans decrease. Meanwhile, the caffeine level for cold-brew coffee showed lower levels compared to the hot-brew coffee produced. At the same time, tannin content gives the same pattern such as antioxidant activity since it relates to each other.

Keywords: Coffee, *Coffea arabica*, Roasting, Brewing

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