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EFFECT OF ROASTING CONDITIONS ON SENSORY RESPONSE TO
COFFEE BREW: EXPLORING CONSUMER PERCEPTION

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The sensory characteristics of coffee beverages play an important role on coffee drinkers experience. Previous studies have reported that several factors affect coffee sensory properties, such as: plant varieties, growing region/conditions, processing, roasting levels, grinding size, and brewing methods. Extensive studies have been carried out to explore the relationship between those variables and the coffee aroma and flavor, as well as overall consumer acceptance in ground roasted coffee. However, only few studies have focused on the role of roasting conditions on brewed coffee. Besides, the majority of them either has used trained people to profiling samples, or investigated consumer liking. Although sensory profiling is a useful technique for the food industry in several steps of the process optimization, it is time consuming. Moreover, trained panels describe the product differently or take into account attributes that may be not relevant to consumers. Considering that the way consumers perceive the sensory characteristics of products is particularly important to the food industry in order to create products that meet consumer expectations, alternative methodologies have been developed to achieve this goal, and the check-all-that-apply (CATA) question is one of them. This study aimed at investigating the effect of roasting coffee conditions on sensory characteristics of the brews by consumers. Green coffee Arabica Brazilian beans were roasted in a plant scale semi-fluidized bed roaster at different temperature gradients to obtain three speed conditions (slow, medium and fast), and two roasting degrees (moderately light and dark), yielding six different types of beans. The beans were ground to medium grid and 57 coffee drinkers (at least one cup of black coffee a day: 21 males and 36 females, aged from 18 to 65 years old) participated in the study. They evaluated the six beverages in terms of liking, and also using CATA question, which comprised 20 hedonic and sensory attributes taken from the literature and previous studies developed at Embrapa Food Technology. They were related to *aroma* (characteristic, weak, burnt, chocolate, aromatic, sweet, fragrant, intense); *flavor, mouthfeel, and aftertaste* (characteristic, burnt, rubbery, stale, acid, very bitter, bad flavor, very astringent, intense residual flavor, unpleasant aftertaste); *texture* (low body, full-bodied). Data were analyzed using frequency of mention of each word of the CATA question by counting the number of consumers who used that term to describe each coffee beverage followed by Multiple Factor Analysis (MFA) on the frequency table. Consumer overall liking scores were considered as supplementary variable. The first two dimensions of MFA accounted for by 75.0% of the variance. The first dimension separated slow and fast speeds to obtain moderately light roasting degree from medium speed, and finally, dark roast for the three speed conditions (slow, medium and fast). Brews from moderately light coffees roasted at slow and fast speeds were described following the attributes: characteristic coffee aroma and flavor, aromatic, fragrant, sweet aroma, weak aroma, low body, which were positively correlated to overall liking. Brews from dark coffee roasted at slow and medium speeds were perceived by participants as having burnt aroma and flavor, rubbery, astringent, and unpleasant aftertaste. The results indicate that consumers perceived samples differently depending on roasting conditions.