



PH 310

CONSUMER ACCEPTANCE THRESHOLD FOR IRON AND ZINC CONCENTRATIONS IN BREWS OBTAINED FROM FORTIFIED GROUND ROASTED COFFEE**COSTA, Luciana L.¹, DONANGELO, Carmen M.^{1,2}, DELIZA Rosires³; SILVEIRA, Carmen L. P.⁴, FREITAS Daniela D.G.³; FARAH, Adriana¹.**

¹Universidade Federal do Rio de Janeiro, Brazil; ² Universidad de la República, Montevideo, Uruguay;³ Embrapa Food Technology, Rio de Janeiro, Brazil; ⁴Pontificia Universidade Católica, Rio de Janeiro, Brazil.

An adequate intake of nutrients contributes to the normal growth, development and well being of the human organism, protecting individuals against the risk of diseases caused by nutritional deficiencies. However, micronutrients malnutrition is still observed worldwide, especially in developing countries. Of major concern is the prevalence of iron (Fe) and zinc (Zn) deficiency. Literature data indicate that the intake of these minerals in Brazil is below recommended intakes (DRI), despite the fortification of wheat flour as well as other commercial food products. Considering that coffee is the most popular food product in Brazil, being consumed by all social classes, we developed a fortified brewed coffee with addition of Zn and Fe, aiming to offer 30% of the daily recommended intake of these minerals for adults in a cup of brew. The goal of the present study was to evaluate the consumer acceptance threshold for iron and zinc concentrations in brews obtained from fortified ground roasted coffee. Iron bisglycine chelate and zinc bisglycine chelate were chosen for ground coffee (80% *C.arabica*, 20% *C.canephora*, medium roast, #65 SCAA, USA, fine grid) fortification after sensory tests previously carried out. Fe and Zn analyses in the ground coffee and in the brews were done by inductively coupled plasma atomic emission spectrometry (ICP OES). Acceptance test was used to determine acceptance threshold. Seventy one coffee consumers were invited to participate in the study and the only condition for participation was to consume at least one cup of black coffee per day. Six coffee samples containing increasing percentages of minerals were evaluated (0, 30%, 50%, 80%, 100% and 150% of adult DRI per 50mL cup). Brews at 10% (weight/volume) were prepared in electric coffee makers, served to participants in 50mL porcelain cups coded with three digit numbers at 68 ± 2 °C, in individual computerized sensory booths, following a balanced presentation order. Participants were allowed to choose to sweeten (using sugar or artificial sweetener) or not their brews, according to their habits. Nine-point hedonic scales were used to evaluate the brews acceptability. Statistical analyzes were performed using the program XLSTAT® version 2010.3.01 (Addinsoft). To evaluate the percentage of minerals extraction from the ground coffee into the brew, ANOVA was used, followed by Tukey test, with 95% significance level. Acceptance data were also treated by ANOVA followed by Fischer (LSD) and test for comparison of means. The percentage of mineral extraction from fortified coffees in electric coffee maker was, on average, 95.3% and 48.5% for Fe and Zn, respectively. Sensory analysis, taking into account the percentage of extraction, showed that fortification up to the level of 80% of DRI (11.2 mg and 12.0 mg per 100 g coffee for Fe and Zn, respectively) was well accepted by consumers. Thus, roasted and ground coffee appears to be potentially suitable food vehicle for the fortification with Fe and Zn. However, the bioavailability of these minerals when added to ground roasted coffee matrix should also be considered.

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