

[P2.1.057]

Sensory shelf life estimation of an instant soy-coffee beverage by survival analysis

I. Felberg¹, R. Deliza¹, T. Esteves^{*2}, G. Hough³, A. Farah², D.R. Oliveira¹, A.L. Souza¹, C.M. Donangelo^{2,4}

¹Embrapa Food Technology, Brazil, ²Universidade Federal do Rio de Janeiro, Brazil, ³DESA-ISETA, Argentina, ⁴Universidad de la República, Uruguay

As discussed by Hough et al. (2003), food products do not have their own sensory shelf life, but depend on the interaction between the food and the consumer. To carry out tests at different storage times can be difficult and costly. The application of survival analysis to predict food's shelf life allows presenting samples to consumers with different storage times in a single session with relatively simple methodology. The objective of the present work was to apply survival analysis to estimate the sensory shelf life of a new instant soy-coffee beverage, which was formulated according to Felberg et al. (2010). Instant soy-coffee beverages were stored for 0, 8, 16, 24, 28 and 32 weeks in metallic bags at room temperature (25 ± 2 °C). They were reconstituted with water at room temperature on the day before the test, and kept refrigerated (6 ± 2 °C). The tests were carried out in individual sensory booths with 112 consumers, who drank at least one cup of coffee a day. Participants were recruited among students and employees of Embrapa Food Technology. Approximately 50mL of each beverage were presented at 12 ± 2 °C to consumers in coded plastic cups following a balanced order of presentation. Consumers were instructed to taste each beverage and answer "yes" or "no" to the question: "Would you regularly consume this beverage?" For shelf life estimation, the log-normal distribution provided a slightly better fit than the Weibull and log-logistic distributions. Estimated shelf lives \pm 95% confidence intervals were 25 ± 3 , 37 ± 4 and 56 ± 11 weeks for 10%, 25% and 50% consumer rejection probability, respectively. Survival analysis results were in agreement with "best before" date of the ingredients used in the soy-coffee beverage formulation, suggesting that such methodology could provide adequate results for this product.

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Keywords: Shelf life, Survival analysis, Soy beverage