

Effect of storage condition on the shelf life of Liquid Coffee Concentrates and their relation with oxygen contents

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Introduction

The causes of the loss of sensory quality of Concentrated Liquid Coffee (CLC) during storage have not been yet clarified. Multivariate statistics were implemented to identify quality markers from the descriptive quantitative sensory attributes, pH, titratable acidity, oxygen, and chlorogenic acids contents were determined.

Materials/Methods

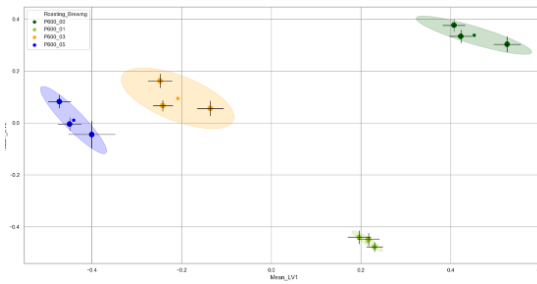
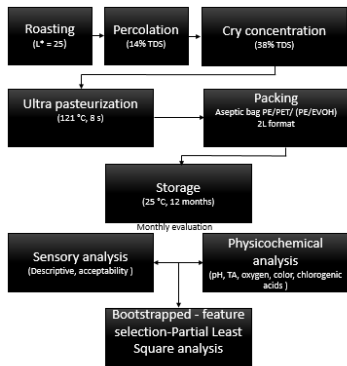


Figure 1. Score plot for the first two latent variables (LV1/LV2).

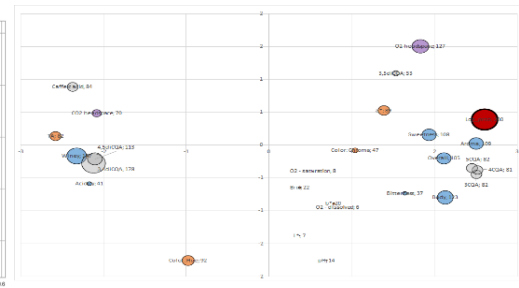


Figure 2: Loadings plot for the concentrate samples.

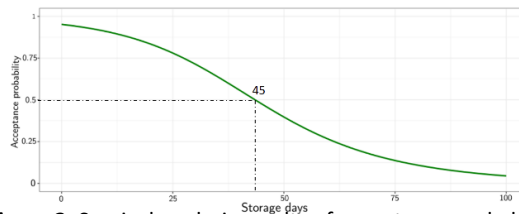


Figure 3: Survival analysis results of acceptance probability vs storage time in days for the logarithmic model

Results/Discussion

The survival analysis for CLC presented an acceptance limit of 45 days. Aroma and winey explained the sensory acceptability. PLS Analysis showed that ACGs and oxygen contents are relevant to explain the changes in the sensory attributes.

Conclusion/Perspectives

Deterioration mechanisms might depend on oxygen availability in the package. Oxygen is dissolved in CLC during production and storage. Thus, it reacts with chlorogenic acids 3CQA and 5CQA; therefore, the aroma was the main sensory attribute affected, decreasing its intensity and the cup acceptability. Posteriorly, the development of undesirable acidity and winey notes appears in the coffee brew.

References:

Müller, C.; Hemmersbach, S.; van't Slo, G.; Hofmann, T. Synthesis and structure determination of covalent conjugates formed from the sulfonyl-roasty-smelling 2-furfurylthiol and di- or trihydroxybenzenes and their identification in coffee brew. *J. Agric. Food Chem.* 2006, 54, 10076–10085, doi:10.1021/jf062728q.