

## UTILIZATION OF AN ECO-FRIENDLY PRESERVATIVE TO IMPROVE THE SHELF LIFE OF CLEAN LABEL PAN BREADS

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Obtaining essential oil from Tahiti lime (*Citrus latifolia* Tanaka) juice residue (rinds, seeds) is a way of adding value to this by-product and favoring the circular economy. Due to its antimicrobial activity, lime essential oil (LEO) can be used as an alternative to replace synthetic preservatives in processed foods. Generally, LEO is obtained by cold pressing. However, this method does not present good selectivity and can result in an essential oil with other rind constituents, reducing its antimicrobial activity. Therefore, supercritical CO<sub>2</sub> fractionation (SCF) can be an option to separate volatile compounds of interest, since mild temperatures can be used during this process, preserving thermolabile antimicrobial compounds (e.g., monoterpenes), increasing their preservative potential. Pan bread is increasingly consumed, as it is a practical food. However, it is a highly perishable product ( $a_w > 0.95$ ) and needs the addition of preservatives to enable its commercialization on a large scale. Thus, the main idea of this work was to evaluate and compare the preservative activity of LEO and fractionated LEO (FLEO) to replace calcium propionate in pan bread. For this, eight pan bread formulations were elaborated: CONTROL (C), without preservatives; STANDARD (S), with 0.35% calcium propionate; three with LEO and three with FLEO, each at concentrations of 0.30%, 0.60% and 1.20%. The pan breads were evaluated throughout their shelf life (for water activity, texture, mold, and yeast counts), until counts  $>10^4$  CFU/g. Data were submitted to Analysis of Variance (ANOVA), followed by the Tukey test for comparison of means ( $p < 0.05$ ) using the software RStudio Desktop 2021.05.18 (version 4.1.0 to Windows). At 0.60% concentration, the natural preservatives doubled ( $p < 0.05$ ) the pan breads shelf life compared to the control formulation and presented the same performance ( $p > 0.05$ ) as the synthetic preservative until the last day of shelf life, without interfering ( $p > 0.05$ ) in water activity and texture of breads. However, FLEO showed no advantages over LEO, suggesting that the SCF process would need to be studied under other conditions. But it was concluded that LEO has potential as a natural preservative in pan bread.