Microbial Profile of novel *Chourição*:
Oil gelations as replacements for animal fat

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Background

Concerns regarding the consumption of trans-fats and saturated fats are increasing, due to their negative health impacts. However, fat reduction in meat products is daunting, as animal fat contributes to texture, mouth feel, flavor, juiciness, as well as energy, and its reduction can lead to dry and less acceptable products. Hence, great efforts are being been made to develop viable alternatives for replacing detrimental fats without affecting the organoleptic properties of the food. This work aimed to reduce the total amount of fat in *chourição*, by substituting 25% animal fat by an oleogel or an emulgel, and to assess its impact on microbiological characteristics of the product.

Methodology

Tested products

- Commercial *Chourição*
- *Chourição* with 25% oleogel
- *Chourição* with 25% emulgel

Procedure

Homogenization after 10x dilution in BPW

Serial decimal dilutions in Ringer solution

Incubation in selective media

Screened microorganisms

- Total viable counts (TVC)
- Lactic acid bacteria (LAB)
- *Enterobacteriaceae*
- *Escherichia coli*
- *Coagulase-positive Staphylococcus*
- *Clostridium perfringens*
- *Listeria* spp. and *L. monocytogenes*
- *Salmonella* spp.
- Sulphite-reducing *Clostridium* spores

Results and Discussion

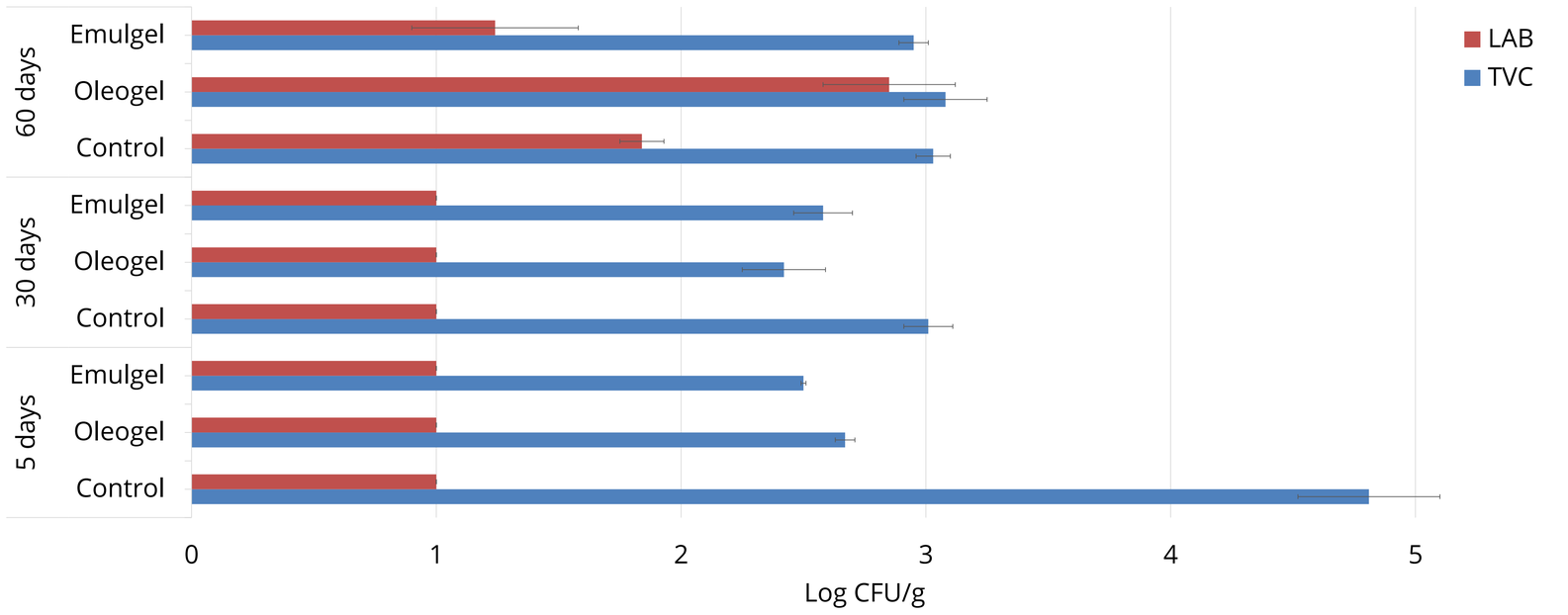

Figure 1 – Total viable counts (TVC) at 30 ºC and total lactic acid bacteria (LAB), for the commercial (Control) and 25% fat replacement with oleogel (Oleogel) or with emulgel (Emulgel) *chourição* products across the entire shelf-life period of 60 days.

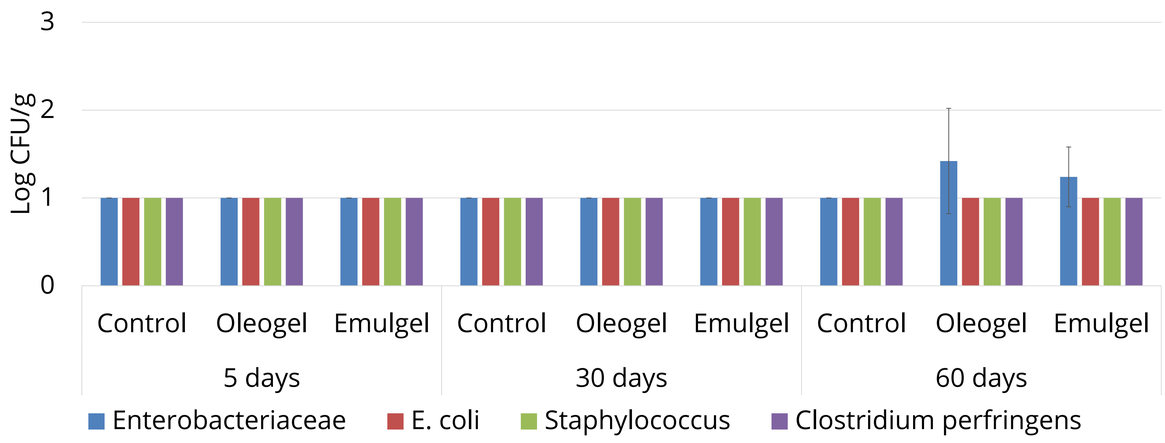

Figure 2 – *Enterobacteriaceae, Escherichia coli,* coagulase-positive *Staphylococcus, Clostridium perfringens enumeration* results for commercial (Control) and 25% fat replacement with oleogel (Oleogel) or with emulgel (Emulgel) *chourição* products across the entire shelf-life period of 60 days.

Detection

- Negative for *Listeria monocytogenes*
- Negative for *Salmonella* spp.
- Sulphite-reducing *Clostridium* spores

- The TVC were similar for all products and in all timepoints, and remained below 3-log cycles, expect for the control *Chourição and only* at the first timepoint, which almost reached 5-log-cycles.
- Towards the end of the shelf-life, levels of LAB (potential spoilers) increased, particularly for Oleogel *chourição.*
- All hazardous bacteria screened for remained bellow the detection/enumeration limits across the entire shelf-life.
- At day 60, *Enterobacteriaceae* were enumerated (reaching 1.5 log-cycles) in *chourição* with both fat replacement.

Conclusion

The results showed that replacing animal fat by gelation of oils at least up to 25%, does not appear to influence the microbiological load of the *chourição* products, making this a viable alternative to develop innovative healthier products.

Acknowledgment

This work was supported by *the Agenda VIIAFOOD – Plataforma de Valorização, Industrialização e Inovação Comercial para o Setor Agroalimentar* (C644929456-00000040), funded by the PRR – *Plano de Recuperação e Resiliência and by the* "NextGeneration" European Financial Funds. The author would also like to thank the scientific collaboration under the FCT project UID/50016/2025 The author T. Bento de Carvalho also acknowledges the financial support provided by her doctoral scholarship (2023.03709.BD, FCT).

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EFFoST 2025 INTERNATIONAL CONFERENCE · 17-19 November · Porto, Portugal