

TECHNO-FUNCTIONAL PROPERTIES OF THE WHEAT GERM FROM “HARINA TRADICIONAL ZAMORANA” QUALITY LABEL AS AFFECTED BY THERMOSTABILISATION

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Background

The wheat germ is a part of the grain embryo that is usually removed during flour extraction because, although it is nutritionally rich [1], due to the presence of unsaturated fats together with both hydrolytic and oxidative enzymes, it rapidly develops rancidity [2]. Among the stabilization methods that have been applied to improve the use of wheat germ, thermostabilisation is one of the most widely used because it inactivates lipase preventing lipid oxidation. However, the effects on wheat germ, especially on the functional properties, have been less studied as they depend on the wheat composition which in turn is related not only to genetic and wheat growing conditions but also to the flour extraction process [3].

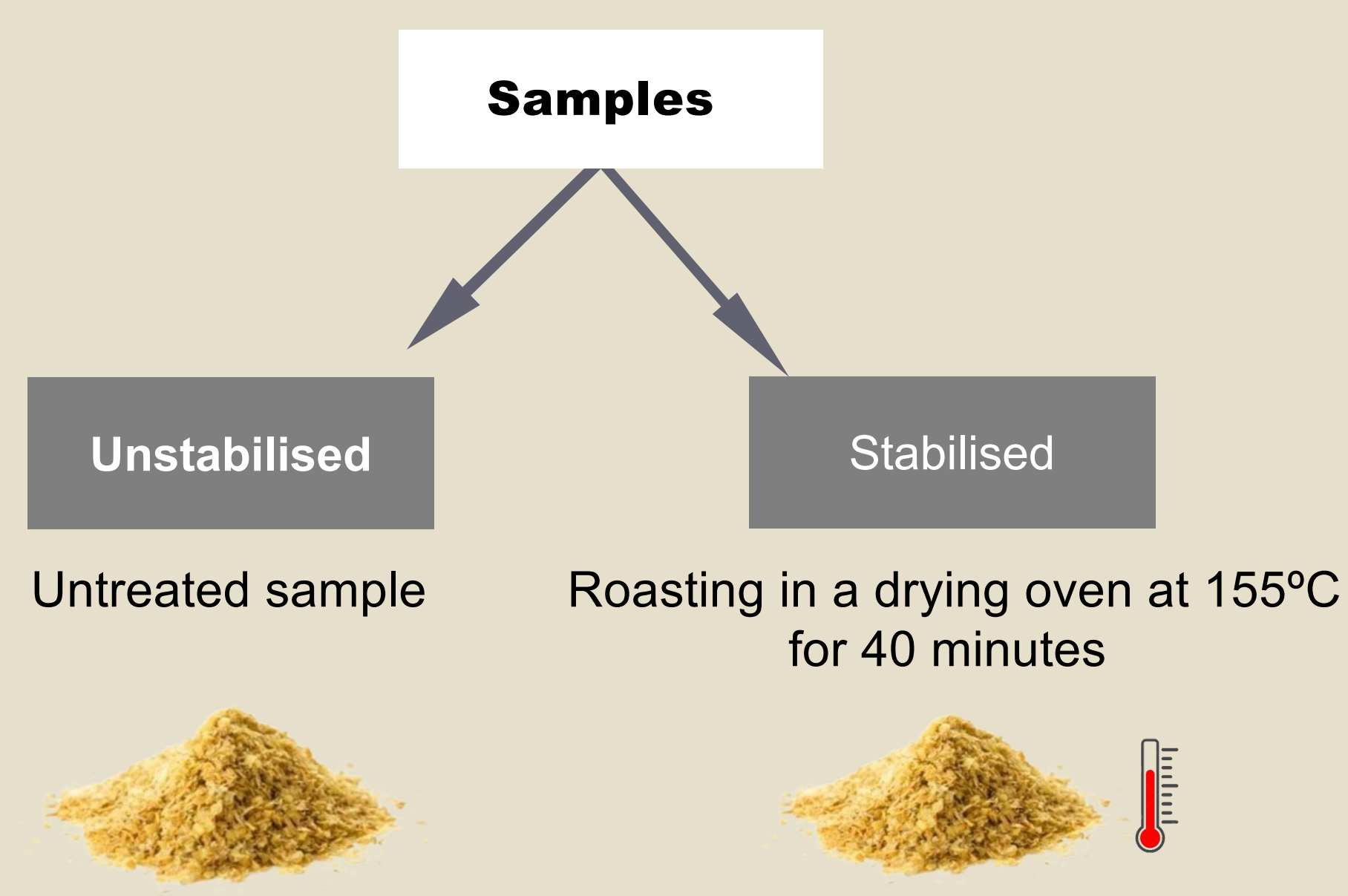
References

- [1] N.T. Dunford. In Bailey's industrial oil and fat products, F. Shahidi (Ed.), New York. John Wiley & Sons.2005, 195–231.
[2] M. G. Megahed, Agriculture and Biology Journal of North America, 2(1), 2011, 163.
[3] L. Xiaojun, C. Chengye, Z. Shengmin, J. Yuanrong, LWT, 191, 2024, 115664.

Target

The aim of the present work was to evaluate the modification of techno-functional properties of the wheat germ obtained during the extraction process of the flour “Harina Tradicional Zamorana” Quality Label after applying a thermal stabilization.

Materials and methods



Techno-functional properties

Swelling capacity

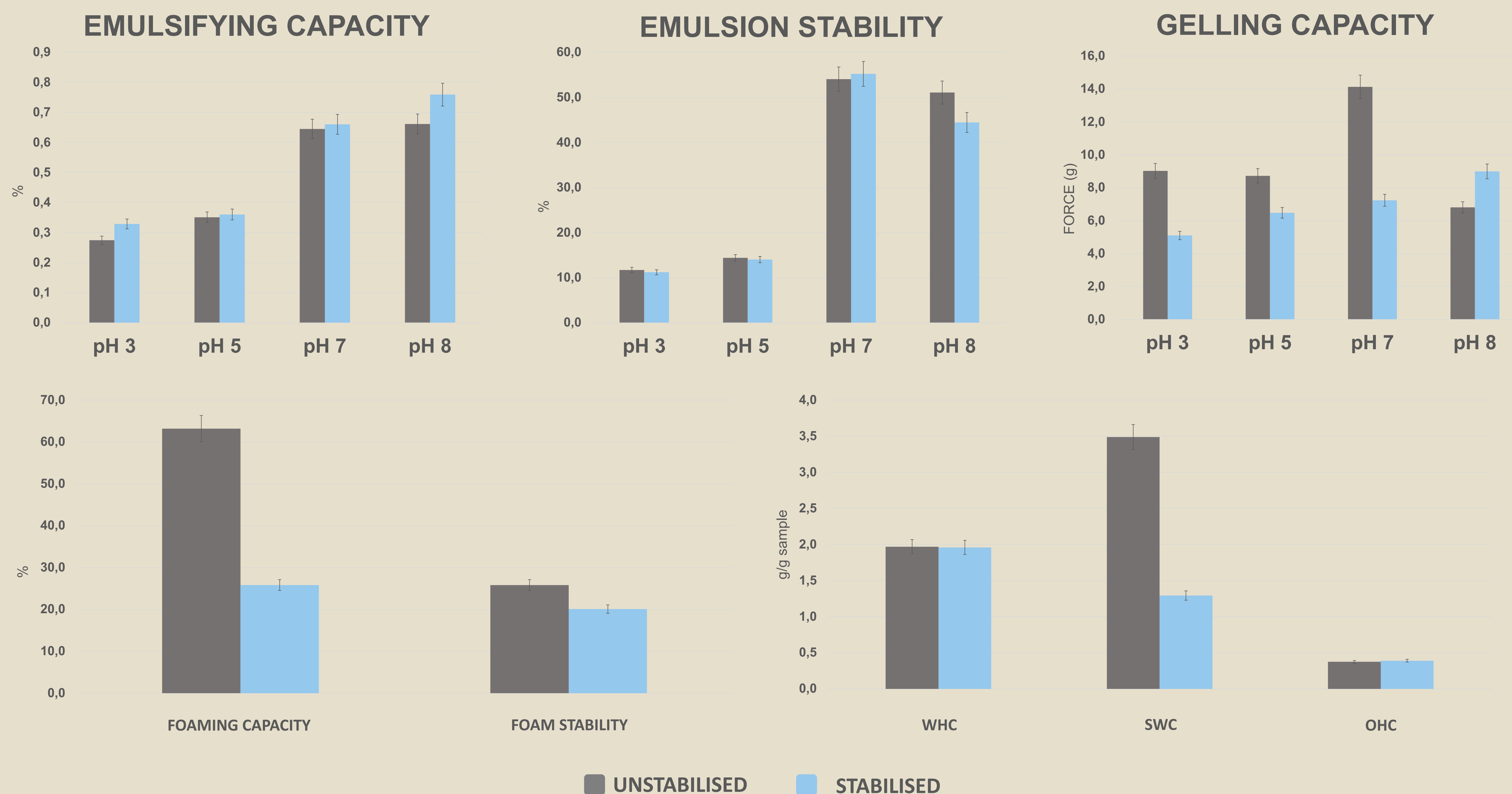
Foaming capacity and stability

Emulsifying activity and emulsion stability at different pHs (3, 5, 7 and 8).

Water and oil holding capacity

Gelling capacity at different pHs (3, 5, 7 and 8)

Results



Conclusions

In conclusion, the thermostabilisation process significantly affected the techno-functional properties of the germ. In addition, a strong influence of pH on these properties was observed. The improvement of the emulsifying and the preservation of good water-holding and swelling capacity of the stabilised germ may be of particular interest for some industrial applications such as those related to the formation of meat emulsions limiting possible rancidity problems. The investigation of the properties of wheat germ for its possible use as a raw material is part of the management of by-products in the industry. It is therefore aligned with SDG12 to ensure sustainable consumption and production patterns, specifically target 12.2, which aims to achieve the sustainable management and efficient use of natural resources.

