

OSL STUDY ON IRRADIATED AND NON-IRRADIATED DRIED TOMATOES AS INGREDIENT IN THE MEDITERRANEAN DIET

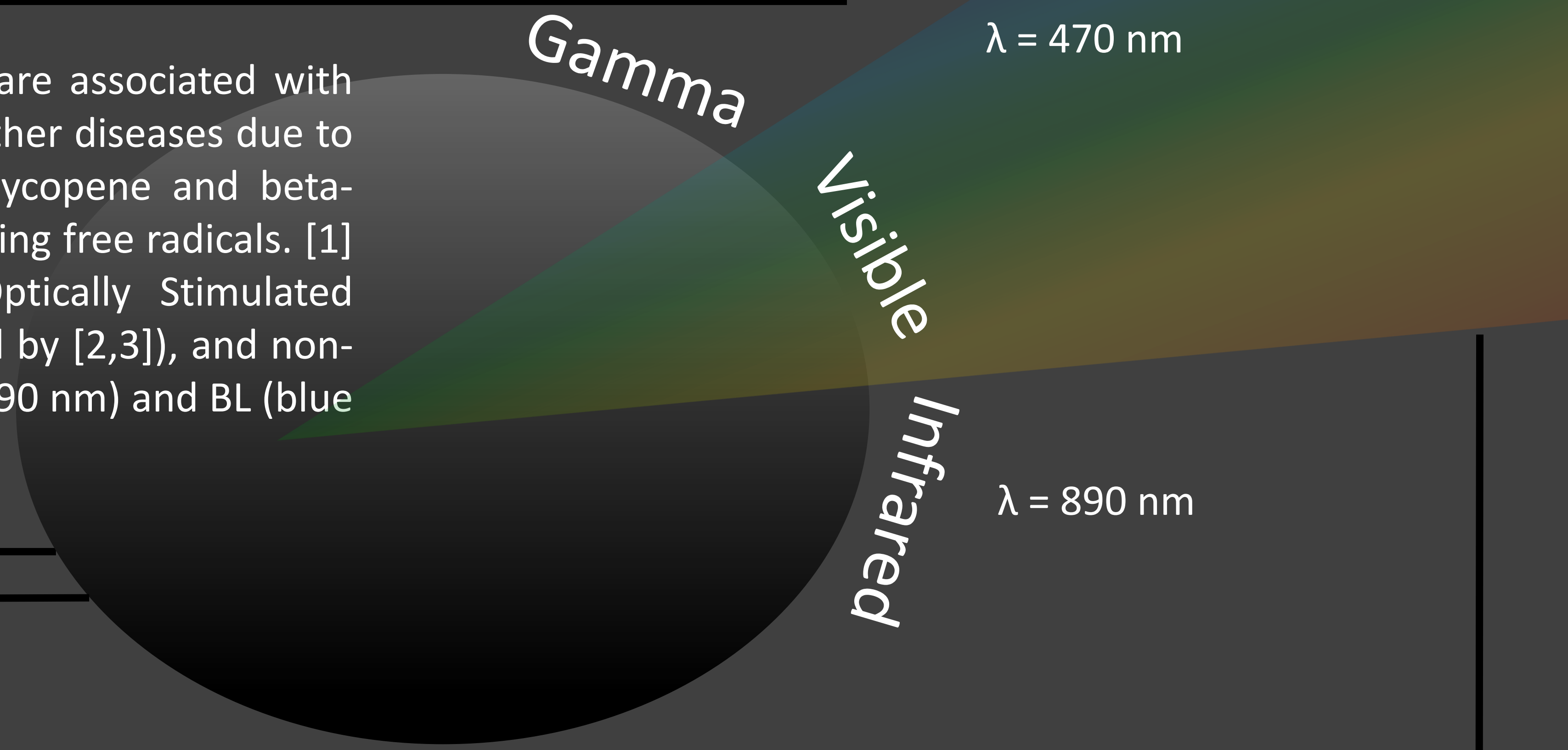
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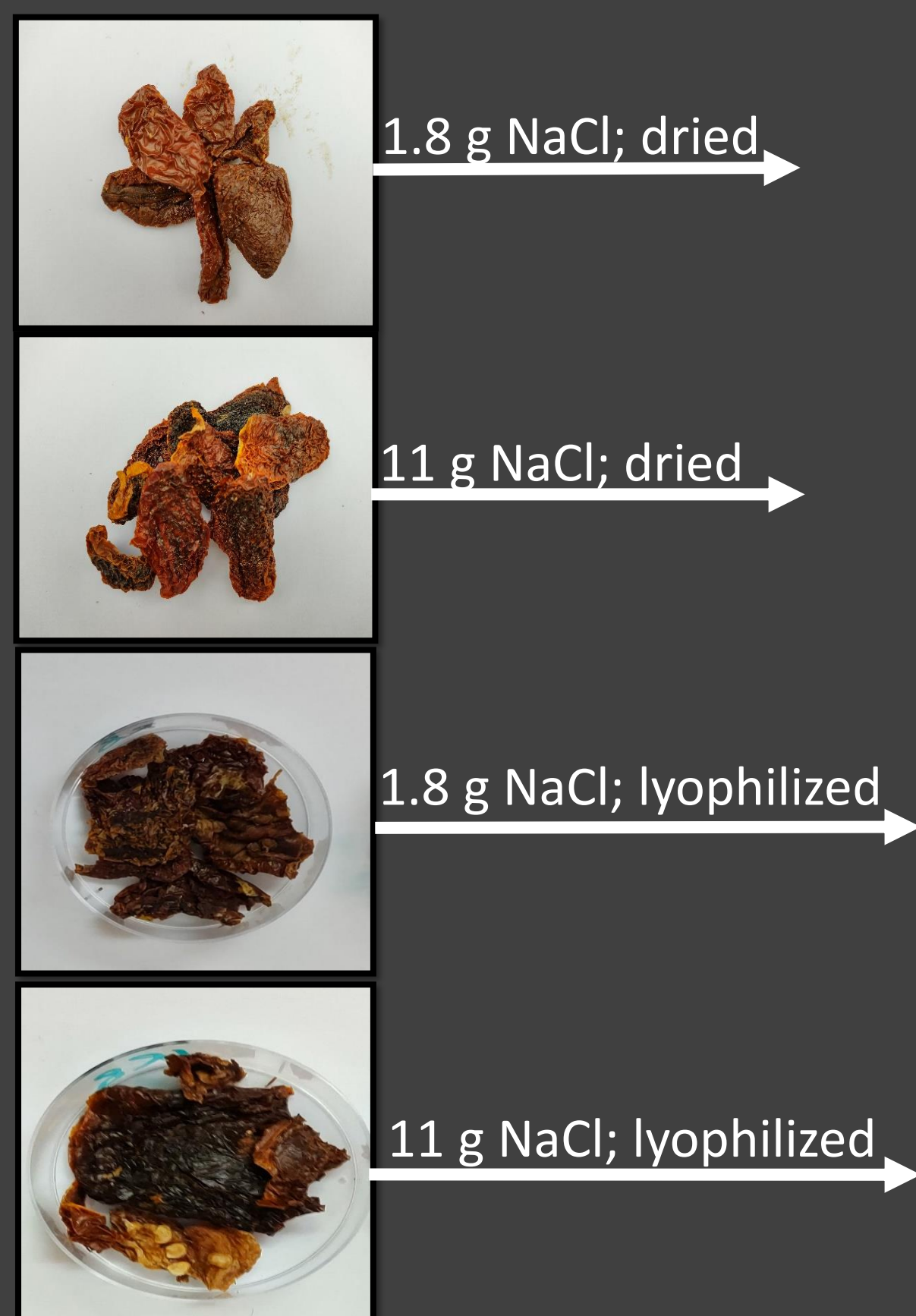
1. Introduction

Tomatoes, as the main ingredient of the Mediterranean diet, are associated with healthy protection as is the reduced risk of some cancers and other diseases due to a significant content of antioxidants, especially carotenoids (lycopene and beta-carotene), ascorbic acid and phenols, which play a role in inhibiting free radicals. [1] The main objective of this study was to compare the Optically Stimulated Luminescence (OSL) response of irradiated (10 kGy, as regulated by [2,3]), and non-irradiated tomato for two types of stimulation: IR (infrared, $\lambda = 890$ nm) and BL (blue light, $\lambda = 470$ nm).



2. Methods

Differently prepared tomatoes:



Irradiated (Total dose of 10 kGy obtained by ⁶⁰Co γ -rays at room temperature in the presence of air in a home-built panoramic irradiator in the Radiation Chemistry and Dosimetry Laboratory at RBI). [4]

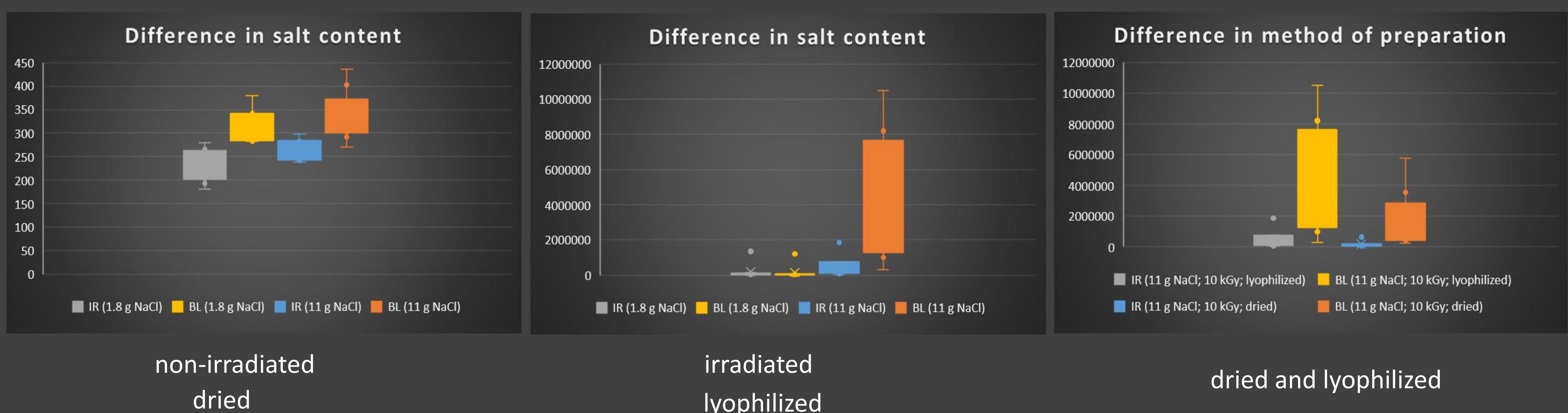
Non-irradiated



SUERC portable OSL reader
2 different stimulations: infrared and blue light

3. Results

OSL response (total counts/60 s)



4. Conclusion

- samples of lyophilized tomatoes with higher salt content and blue light stimulation is far more promising for food as of reduces the limit of detection
- blue light give a stronger signal than infrared stimulation

5. References

- [1] Gomez-Romero, M., Arraez-Roman, D., Segura-Carretero, A., Fernandez-Gutierrez, A., Analytical determination of antioxidants in tomato: Typical components of the Mediterranean diet, *J. Sep. Sci.* **2006**, 30, 452.
- [2] Pravilnik o hrani podvrgnutoj ionizirajućem zračenju (NN, br. 38/08)
- [3] EN 13751:2002, Detection of irradiated food by pulsed Photostimulated Luminescence - screening method
- [4] Majer, M.; Roguljić, M.; Knežević, Ž.; Starodumov, A.; Ferenček, D.; Brigljević, V.; Mihaljević, B., *Applied Radiation and Isotopes* **2019**, 154, 108824.

6. Acknowledgement

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