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EDIBLE WILD FLOWERS: AN INNOVATIVE BUT ANCIENT FOOD

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INTRODUCTION

Edible flowers are often more mentioned in connection with biologically active substances and their presence is today frequent in supermarket. The main factor that determines their use is the appearance, so particular attention must be paid to the shelf life.

Spontaneous edible flowers *Glebionis segetum*, *Malva sylvestris*, and *Tropaeolum majus* and *Papaver rhoeas* were tested in the dark and in the presence of light for 12 days.

Glebionis segetum
Crisantemo campestre

Malva sylvestris
Malva selvatica

Papaver rhoeas
Papavero comune

Tropaeolum majus
Nasturzio

M&M

The flowers have been packaged in ordinary atmosphere using polypropylene (PP) films with OTR 20000 cc/m^2/24h), a MACRO perforated PP was used as Control. Samples were stored in two refrigerator at +4±1°C, one kept in the dark, while the second was with an internal light made by a "COLD LIGHT 6500 K" LED lamp.

Gas composition and weight loss [1]; colour have been registered once the packages have been opened; extract were obtained following [2], antioxidant activity [3], total phenols [4] and enzymatic analyses were performed [5-7].

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2. Pires, T. C. S. P., et al., Food Chem., **2017**, 220, 337–343.
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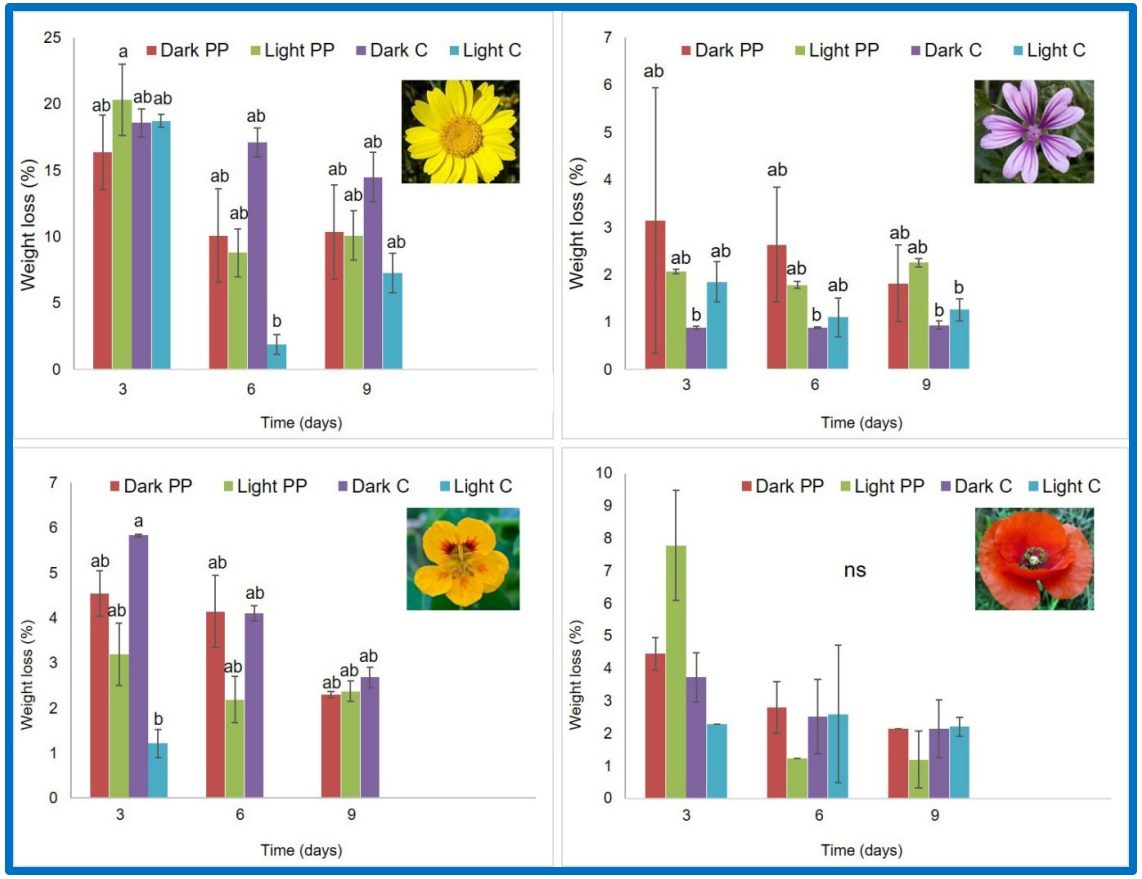
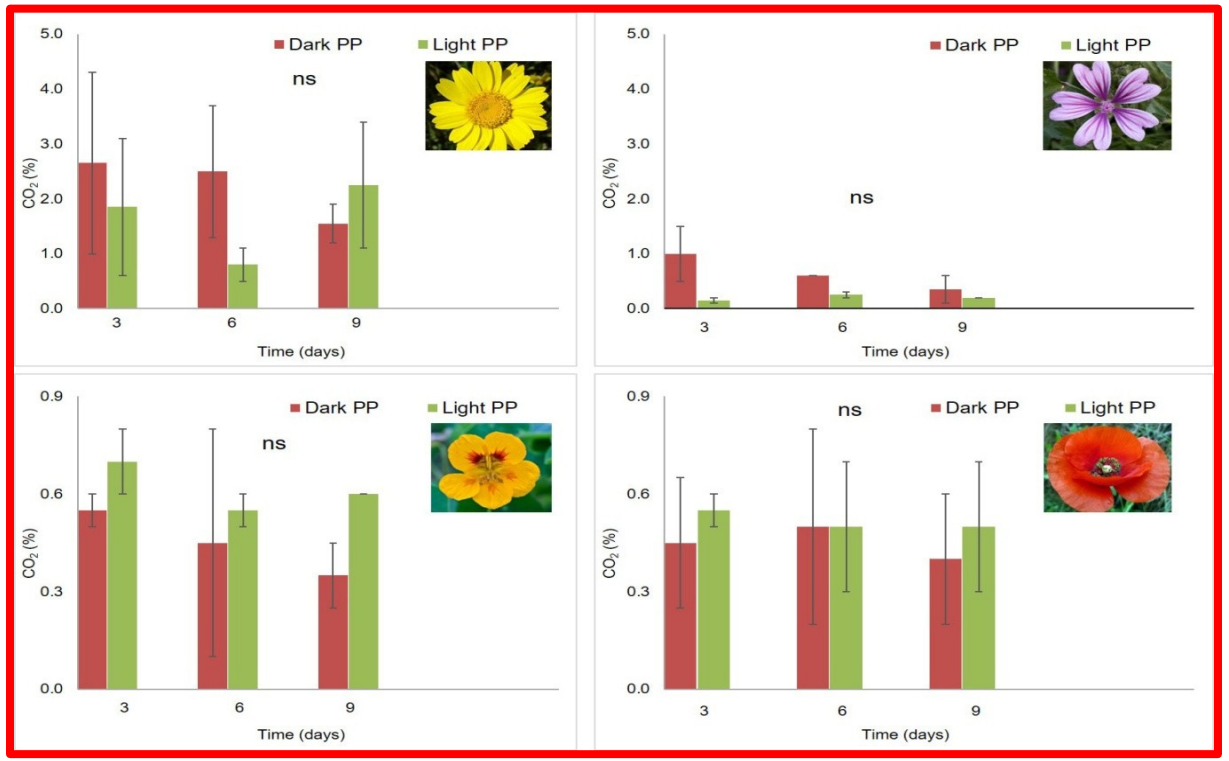
RESULTS

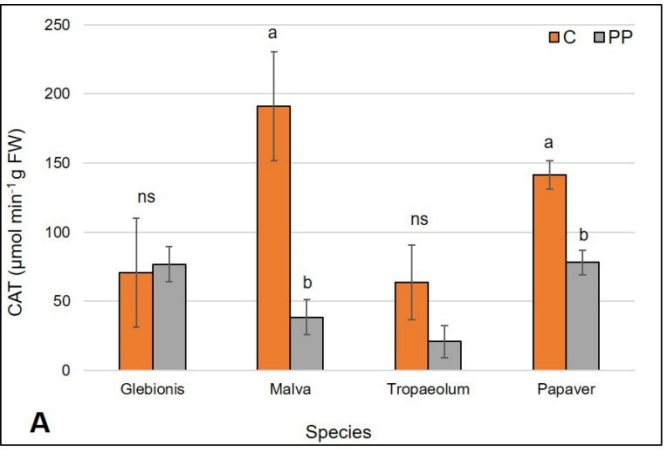


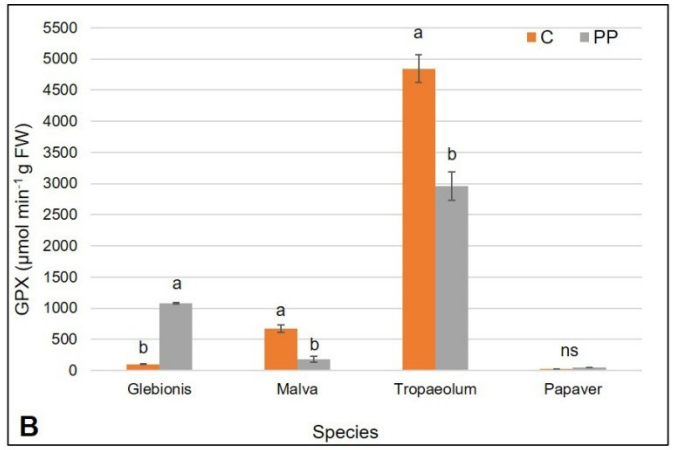
All flowers finished their shelf life at 9 days. In Glebionis the higher decrease is observed just after 3 days, in samples stored under Light in PP films (88%), while the Light control was similar to Dark PP (62%) with the only exception after 3 days . The Malva kept under Light C reached a loss of 68%, the same samples stored in Dark PP film saved the 42% of the starting weight. In Tropaleoum the differences between light and dark storage were less evident. Papaver has petal very thin and sensitive, changes were not statistically significant

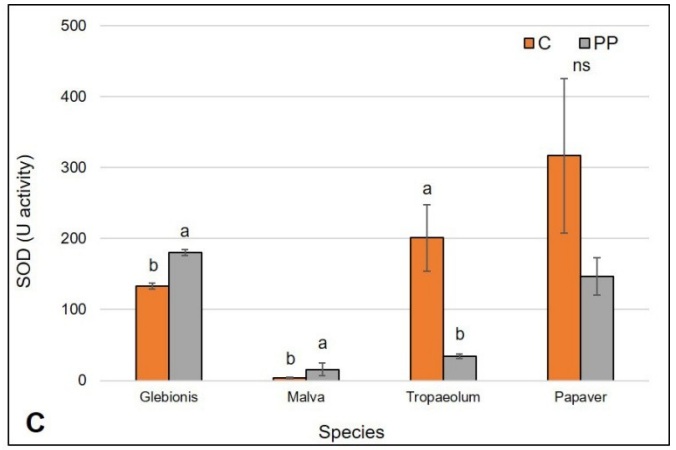
The PP film allows some exchange of CO2 with the external atmosphere, so what can be observed in Glebionis is that the CO2 concentration is always higher in samples kept in the Dark; the same trend is evident in Malva, while the opposite was detected in Tropaleoum and Papaver samples under Light.



When plants are exposed to stress condition, reactive oxygen species (ROS) such as superoxide (O_2^-), hydrogen peroxide (H_2O_2), singlet oxygen (O_2) and hydroxyl radical (OH^-) concentration increase inside plant tissues. The unavoidable exposure to light during the time that edible flowers are on sale influenced the evolution of the quality parameters of this product, producing a stress in vegetables cell.

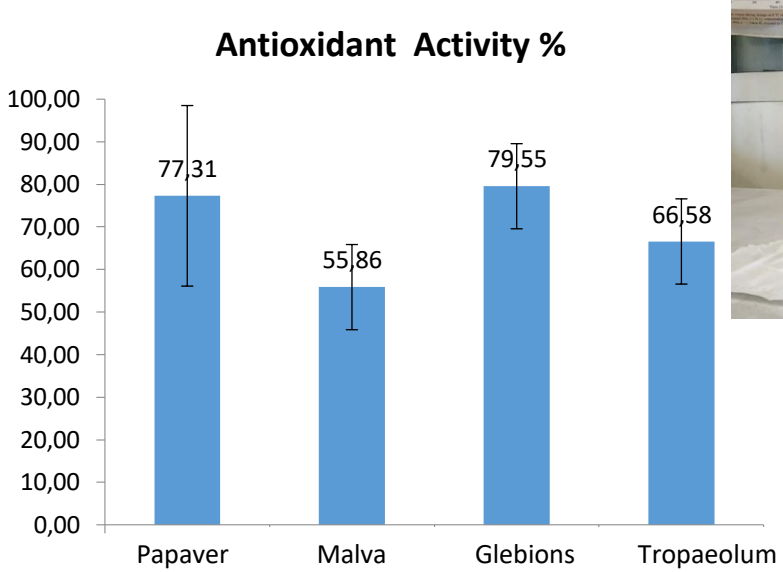


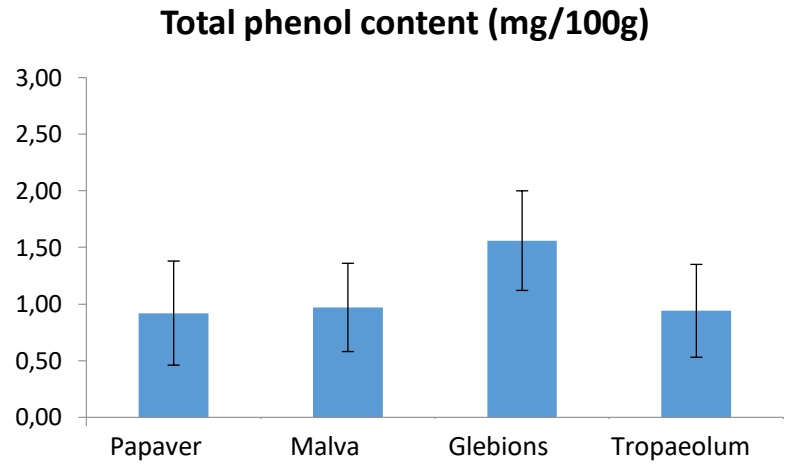




The CAT activity decrease in Malva and Papaver PP Dark at the end of the trial. No significant differences between treatments in Tropaleoum and Glebionis. The GPX activity showed highest values in Glebionis and Papaver PP compared to Control flowers. Increase in the SOD activity was observed in Malva and Glebionis PP.

Considering the TPC it's higher in Glebionis and smaller in Papaver more similar among the other flowers with a medium value of 0.94 ± 0.42mg/100g. Results in TPC are confirmed by AA for the Glebionis with the highest value 79.55 ± 17.7% while the lowest AA% is got by Malva. (Values reported in graphs are means ±SE (n=3).)





In conclusion

- edible wild flowers are highly perishable
- the PP packaging and refrigerated storage in the dark are the best solutions to keep the highest quality for 9 d
- weight loss could be severe in Glebionis
- the light damaged Papaver and Tropaleoum.
- TPC and AA measured at the beginning of the study were related with the diminishing scavenging capacity observed after 9 days, caused by the conservation's stress and measurable with and the increase in ROS.

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