

# APPLICATION OF RAW AND DEFATTED HEMPSEED PRESSCAKE AND SWEETGRASS ANTIOXIDANT EXTRACT IN PORK BURGER PATTIES

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## THE AIM

The aim of the study was to evaluate the physicochemical properties and oxidative stability of pork burger patties produced with

- the addition of dried mechanically pressed hemp seeds (**RH**; 2%),
- fully defatted by supercritical CO<sub>2</sub> extraction hemp seeds (**DH**; 2%),
- sweet grass extract (**SG**; 2%) and
- sweet grass extract with dried pressed hemp seeds additive (**RHSG**; 0.5 and 1.5% respectively).

The patties were compared with the control sample (without additives) during storage on days 0, 4, 8, 15, and 21 at 4 °C in modified atmosphere conditions.

## RESULTS

- Grilling losses were lowest in patties with **DH** flour, 14.3% (24.2% in control).
- The highest grilling loss (26.2%) was in patties with **SG**.
- **RH** (with residual oil) increased the formation of oxidation products in meat patties.
- The application of **SG** as natural antioxidant effectively inhibited the oxidation process (Fig.1).
- All of the used additives affected the total colour difference ( $\Delta E_{Lab}$ ) between the control and samples during storage period (Fig. 2). **Ehk peaks täpsustama, et SG ja RHSG kõige rohkem.**
- The **SG** had the most notable effect on the sensory characteristics both in the case of raw and grilled patties (dark green colour, bitter taste notes).

## CONCLUSIONS

- **RH** and **DH** ingredients may be used in the production of pork patties.
- The **RHSG** combination may substantially mitigate the pro-oxidative effects of residual and highly unsaturated hemp seed oil during storage.
- The use of selected plant-based ingredients in meat products revealed their potential to improve shelf life and the yield of pork burger patties during thermal treatment.

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*Cannabis sativa L.*



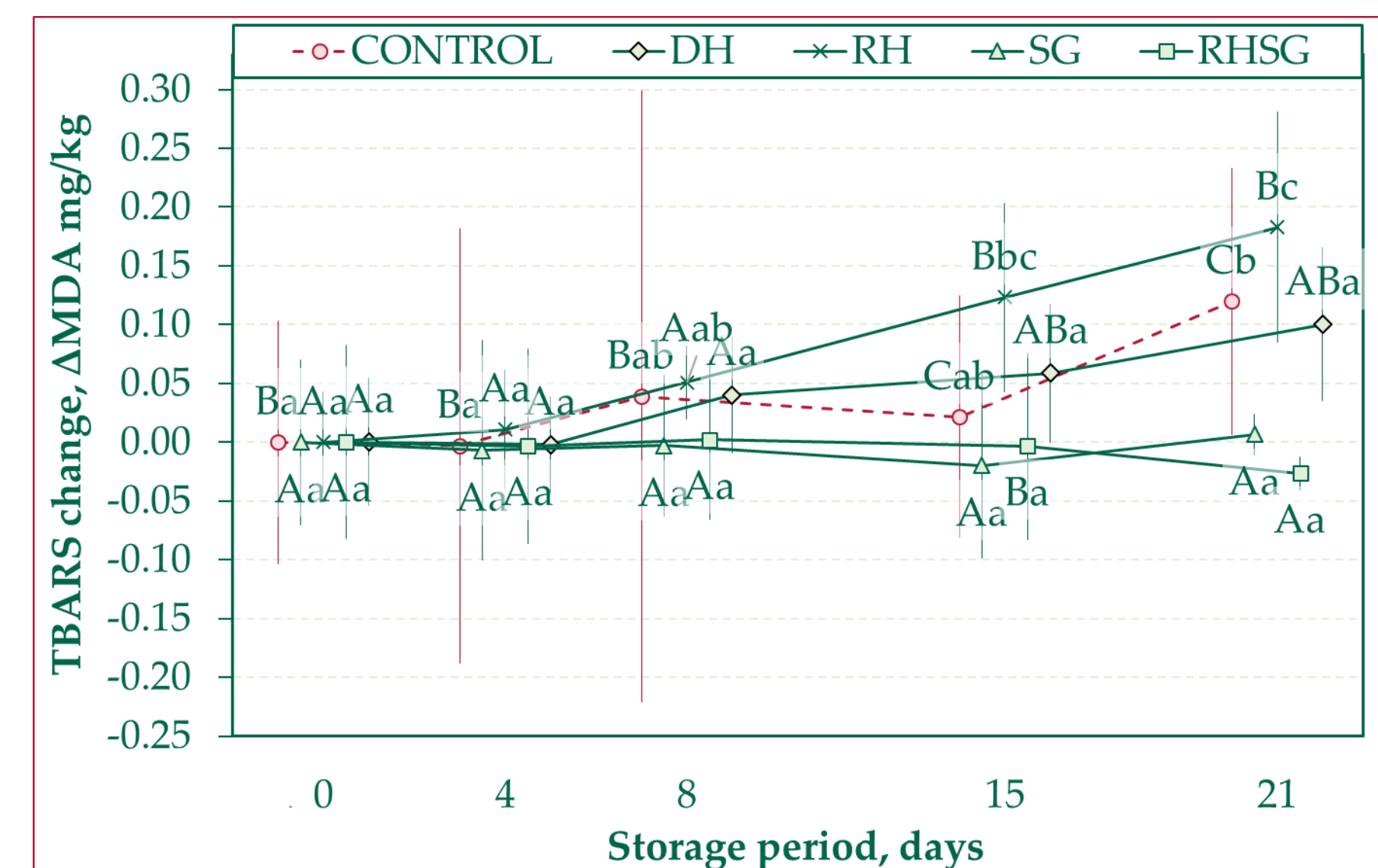
*Hierochloa odorata*



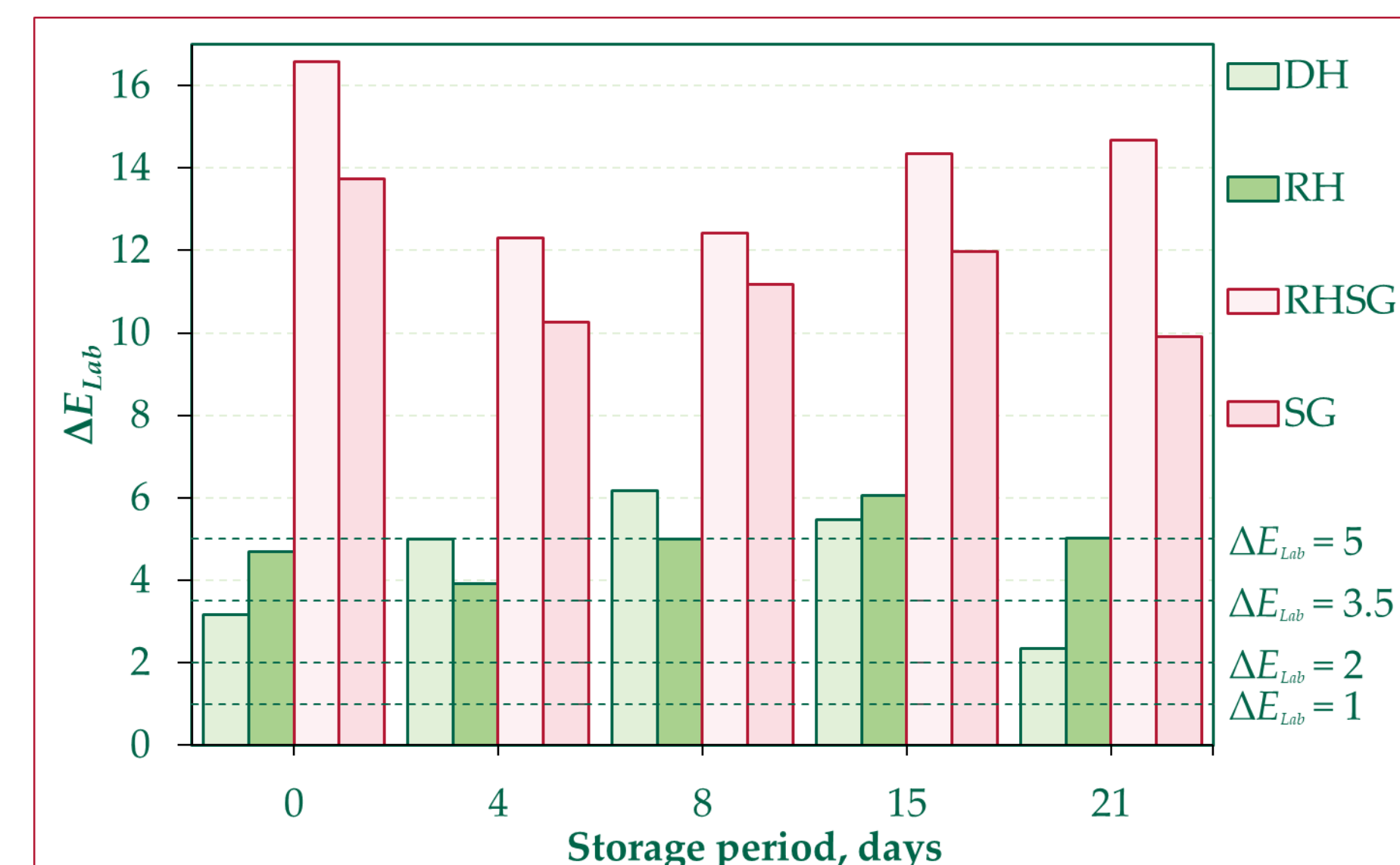
*Hierochloa odorata*  
before extraction



Extraction



**Figure 1.** Changes in the TBARS values of grilled pork burger patties stored in the modified atmosphere during the storage period ( $\Delta$ MDA mg/kg). Different capital letters express a significant difference between the variants within the same storage day by the Tukey's test ( $p < 0.05$ ). Different lower-case letters express a significant difference between the storage days within the same variant by the Tukey's test ( $p < 0.05$ ).



**Figure 2.** The total colour difference ( $\Delta E_{Lab}$ ) between control and test samples during the storage period:

0 <  $\Delta E_{Lab}$  < 1 the observer does not notice a difference,  
1 <  $\Delta E_{Lab}$  < 2 – only an experienced observer may notice the difference,  
2 <  $\Delta E_{Lab}$  < 3.5 – an unexperienced observer also notices the difference,  
3.5 <  $\Delta E_{Lab}$  < 5 – a clear difference in colour is noticed, and  
5 <  $\Delta E_{Lab}$  – an observer notices two different colours.