

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

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Cannabis sativa L.



Hierochloa odorata



Hierochloa odorata
before extraction



Extraction

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 CO₂ 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 (ΔE_{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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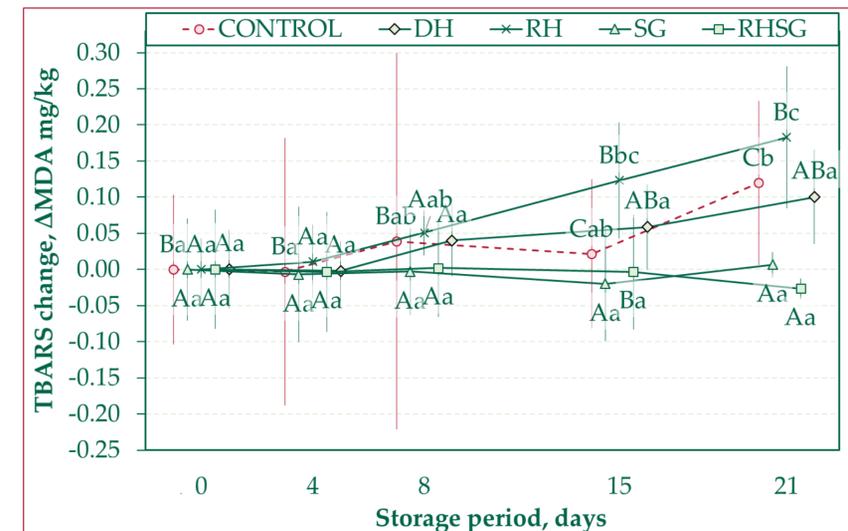


Figure 1. Changes in the TBARS values of grilled pork burger patties stored in the modified atmosphere during the storage period (Δ MDA mg/kg). Different capital letters express a significant difference between the variants within the same storage day by the Tukey's test ($p < 0.05$). Different lower-case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

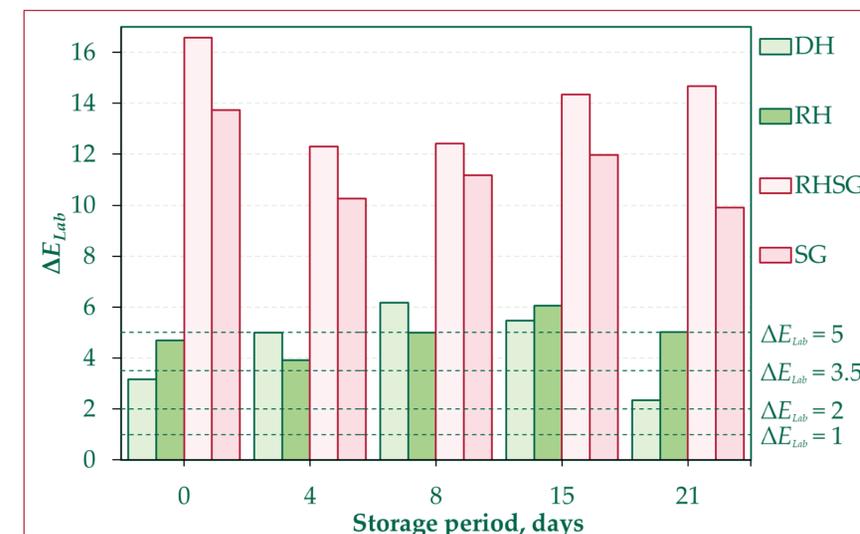


Figure 2. The total colour difference (ΔE_{Lab}) between control and test samples during the storage period:

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