

Stabilization of oxidative processes in functional cooked sausages by optimization of incorporated biologically active substances

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Introduction: Meat and products derived from it are rich sources of nutrients, such as complete proteins, polyunsaturated fatty acids (PUFA) and minerals (Aminzare et al. 2019), but their oxidative deterioration takes place during the technological processing and storage. For inhibition of the oxidative processes nowadays more and more plant based substances are used.

The aim of this study was to inhibit the lipid (TBARS) and protein (protein carbonyls) oxidation also suspend discoloration (L^* , a^* , b^*) of the cross cut surface of cooked "Veal" sausage by addition of optimized concentrations of biologically active substances.

Material and methods: As biologically active substances were used: sodium L-ascorbate (x1) as commonly used, antioxidant with Vitamin C activity; Dihydroquercetin isolate of *Larix sibirica* Ledeb (x2) as a strong five polyphenol antioxidant substance with health beneficial properties and lyophilized (30%) ethanol extract of dry distilled rose *Rosa damascena* Mill petals (x3) as by-product from rose-oil industry containing more over 30 polyphenolic compounds with antioxidant properties (Dragoev et. al 2021).

A full factorial design was performed according to Montgomery, D. C. (2017) with three factors at two levels.

The optimization was done according for target functions as follows: Minimal values of the secondary products of lipid oxidation (TBARS) and products of the protein oxidation (Protein carbonyls), also maximal values of the brightness (L^*) and the red component (a^*) of the color on the cross cut surface. Targeted functions were evaluated after 7 days of refrigerated storage of 0-4 °C.

Results: Functional sausage prepared with optimized concentrations of added biologically active substances after seven days of refrigerated storage was characterized by: TBARS = 0.82 mg MDA/kg; P.C. = 0.119 nmol DNPH/mg protein; L^* = 56.691 and a^* = 18.733.

In comparison the control design point „1" characterized by: TBARS = 1.02 mg MDA/kg (19.61 % higher); P.C. = 0.151 nmol DNPH/mg protein (21.19 % higher); L^* = 56.01 (1.20 % lower) and a^* = 19.36 (3.24 % higher).

Conclusion: Optimal levels of the target functions complex were established with the addition of 0.100 g/kg sodium L-ascorbate; 0.091 g/kg dihydroquercetin isolate of *Larix sibirica* Ledeb and 0.100 g/kg lyophilized ethanol (30%) extract of dry distilled rose *Rosa damascena* Mill petals.

Literature:

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