

Effect of the addition of a natural antioxidant into the marinate of broiler meat upon lipoperoxidation (EPQ)

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Introduction

Many antioxidants barriers are defeated after chicken slaughtering and it is well known the incidence of lipoperoxidation over broiler meat, and therefore a fast deterioration in its nutritional and sensory parameters occur. Marinate process can be useful as a possible way to protect broiler meat from lipoperoxidación. Plant substances with antioxidants properties can be very useful to protect the meat against this process. In this study, a plant extract (EPQ) in different concentrations was assessed in broiler meat marinade.

Objective

Evaluate the antioxidant protection over broiler meat who was protected with EPQ antioxidant into marinate.

Experimental Methods

The marinate solution was prepared with different concentrations of EPQ antioxidants (0.05%; 0.1%; 0.15% and 0.2%). After that the broiler meat was marinated as usual in the process plant and chilled for 0, 2, 4, 6 and 8 days at 7°C and frozen at -70°C for ulterior analyses. The basal and induced lipoperoxidation was evaluated by TBARS analysis. Microbiological quality was assessed by counting colonies of both, faecal coli forms and aerobic mesophilic bacteria, and a sensory evaluation by both trained and not trained panel was also performed.

Statistical Analysis

The statistical design was a factorial 5*5 (5 doses of EPQ * 5 refrigeration times). In the ANOVA analysis was proved the effect of concentration, refrigeration time and the interaction of both of them. The statistical analysis was a Tukey's Studentized Range and was performed with statistical package SAS®.

Results

The microbiological quality was better in the EPQ broiler meat (breast and leg) than the control in all the refrigeration times. The aerobic mesophilic counts in the EPQ breast marinated with 0.05%; 0.1% and 0.15% was $4 \cdot 10^5$ CFU or less while the control was $2 \cdot 10^8$ CFU after 6 days of refrigeration. The faecal coli forms counts was similar, up to 4 days of refrigeration since at this time the EPQ marinated breast had 130 or less CFU while the control had more than double (310 CFU).

Basal lipoperoxidation was less in the EPQ marinated leg and significantly minor in EPQ marinated breast for all the concentrations and refrigeration times (Fig 1). The induced lipoperoxidation also was minor in the EPQ marinated broiler meat, specifically in the marinated legs.

The organoleptic characteristics in raw and cooked meat were perceived as fresh up to the 6th day of refrigeration. The trained panel could not detect (odour or flavour) the EPQ extract.

Figure 1: Basal Lipoperoxidation of poultry breast and leg

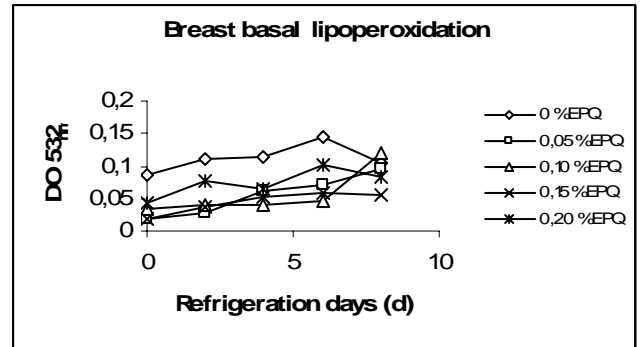
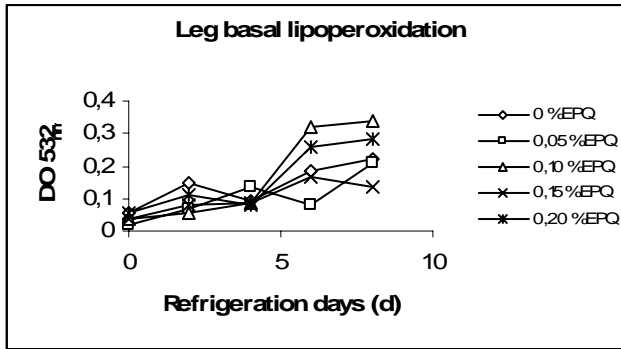
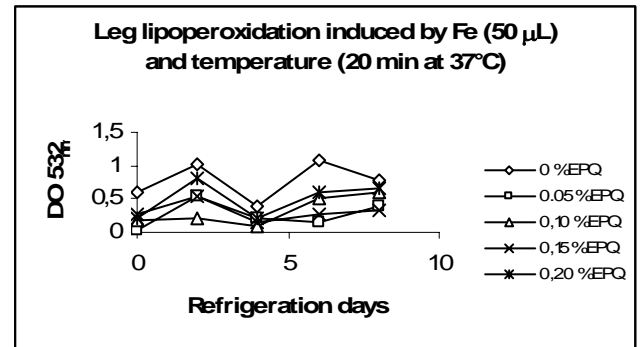
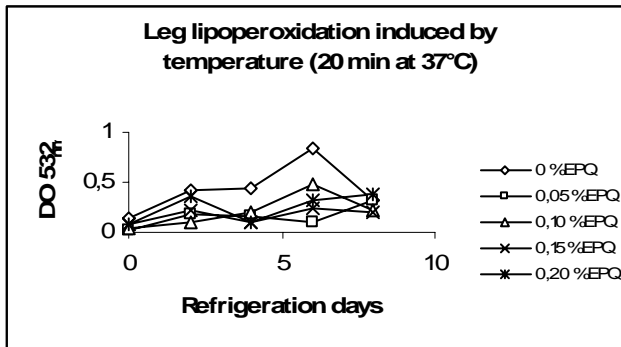


Figure 2: Induced lipoperoxidation in poultry leg



Conclusion

The EPQ application was successful because it was able of delaying the lipoperoxidation process between 2 and 8 days increasing the shelf life of the broiler meat. With regard to microbiological quality, it was better with the EPQ application and the sensory panel could not detect any off odour or flavour as consequence of the EPQ marinated.

Keywords: natural antioxidant, broiler meat, lipoperoxidation