

USE OF PLEUROTUS GENUS ETHANOL EXTRACTS AS ANTIOXIDANT ADDITIVES FOR MINCED PORK

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I. INTRODUCTION

Lipid oxidation is one of the major causes of quality loss in meat and meat products. Thus, synthetic additives such as butylated hydroxytoluene (BHT), have been widely used in the meat industry to improve oxidative stability. However, most consumers perceive food safety risks related to the consumption of meat and meat products treated with synthetic antioxidants [1]. In this context, edible mushrooms have been proposed as an alternative to reduce meat quality loss during cold storage associated to their polyphenol composition and bioactive properties [2]. Therefore, the present study was designed to assess the oxidative stability of minced pork treated with *Pleurotus ostreatus* versus *Pleurotus pulmonarius* ethanol extracts.

II. MATERIALS AND METHODS

Polyphenols from *Pleurotus spp.* powders were extracted with ethanol (1:10) by ultrasound-assisted extraction (40 kHz/25 °C/1 h). The solution was filtered (Whatman No 4-filter paper), dried using a freezer drier, and stored at -20 °C until further analyses. Total phenolic (TPC) and chlorogenic acid (CGA) contents of the powdered extract were determined. Also, free-radical and radical-cation scavenging activities (DPPH and ABTS, respectively) were evaluated [3]. Minced pork (*M. semimembranosus*, 24 h *postmortem*; 1.5% salt, w/w; 20% fat, w/w) was allocated to four treatments Control (without antioxidant); *P. ostreatus* and *P. pulmonarius* extracts (500 ppm); and BHT at 500 ppm, cooked in a water bath (65 °C for 60 min), and subjected to thiobarbituric reactive acid substances (TBARS) test each 15 min [4]. Obtained data (n=6) were subjected to ANOVA and Tukey-Kramer's multiple comparison tests at P<0.05 (NCSSv11).

III. RESULTS AND DISCUSSION

The results indicate that *P. ostreatus* ethanol extract showed higher TPC and CGA values than *P. pulmonarius* counterpart (Fig 1). In regard to antioxidant activity, the synthetic antioxidant showed higher DPPH and ABTS inhibition than Pleurotus spp. extracts.

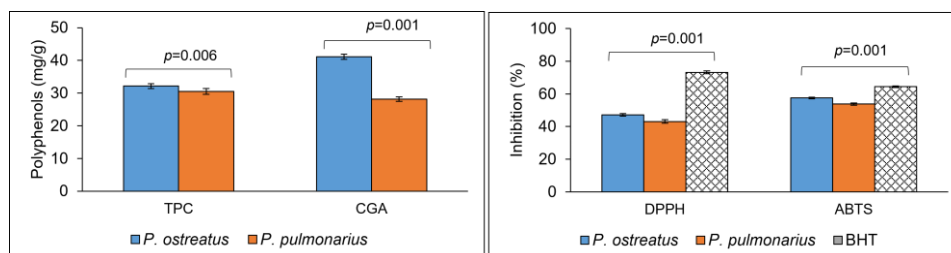


Figure 1. Polyphenols and antiradical activity of *Pleurotus* genus ethanol extract.

Furthermore, in cooked pork samples TBARS values significantly varied with treatment and cooking time (Fig 2). At initial time (0 min), *Pleurotus spp.* extracts showed the lowest TBARS values. These values increased during the cooking period, and at the cooking endpoint (60 min), *Pleurotus spp.* extracts and BHT showed significantly lower TBARS values than control.

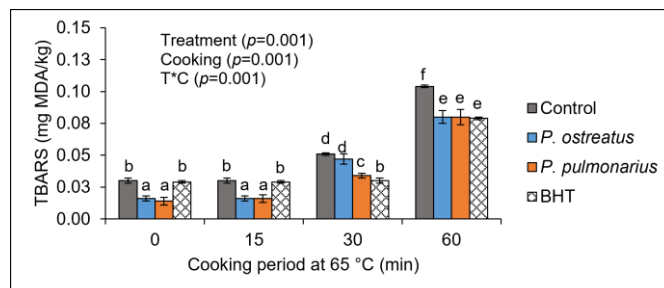


Figure 2. Effect of treatment and cooking period on TBARS values of pork meat.

Phenolic acid and flavonoids are widely distributed and can be obtained through different extraction methods to be used as additives for the foods industry [1,3] and these natural extracts have been proposed to reduce lipid oxidation in meat products [4]. Also, edible mushrooms, including *Agaricus brasiliensis* and *Ganoderma lucidum*, are potential ingredients to reduce lipid oxidation of minced meat [5]. Recently, it has been demonstrated that *P. ostreatus* powders added to cooked pork patties reduced lipid oxidation during refrigerated storage [6].

IV. CONCLUSION

P. ostreatus and *P. pulmonarius* ethanol extracts are alternate sources of polyphenols with antiradical activities that can be safely used in minced pork products to reduce the lipid oxidation.

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