

# ENHANCEMENT OF POLYPHENOLS AND ANTIRADICAL ACTIVITY OF MEAT ADDED WITH *PLEUROTUS OSTREATUS* POWDER

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## I. INTRODUCTION

Lipid oxidation (Lox) is one pivotal mechanism of quality deterioration in stored food. The changes in quality resulted from Lox are deterioration in color, flavor, texture and nutritive value, as well as the production of toxic compounds. However, the oxidative stability of meat and meat products depends on their chemical composition and upon the balance anti- and pro-oxidant that these possess [1]. The synthetic antioxidant can be used to reduced lipid oxidation, but the use natural extracts or powders rich in polyphenols may have superior effects because their bioactive compounds could enhance the antiradical properties in meat and meat products synergistically [1,2]. In the present study, pork patties were formulated with *Pleurotus ostreatus* powder, so that the polyphenols and antiradical activity changes chilled storage were investigated.

## II. MATERIALS AND METHODS

Pork meat (*M. semimembranosus*, 24 h *postmortem*) homogenized with fat (10%), salt (1.5%) and water (5%), for pork patties elaboration (90 g per each). The homogenized meat was treated as follow: untreated pork (control), 2 and 5% of *P. ostreatus* powder (P2 and P5). Patties were placed in polypropylene trays and wrapped with polyvinyl chloride film (17,400 cm<sup>3</sup> O<sub>2</sub>/m<sup>2</sup>/24 h at 23 °C) and were refrigerated storage at 2 °C in the dark for 0 and 9 d. After each day of sampling, two packs of each formulation opened for analysis of composition (total phenolic and flavonoid content, TPC and TFC, respectively) and antiradical activity DPPH• [3]. Data subjected to an analysis of variance and a Tukey-Kramer comparison test (P<0.05) to significant determinate effects between treatments.

## III. RESULTS AND DISCUSSION

It has reported that *P. ostreatus* could serve as an easily accessible item of food rich in natural antioxidant, as a possible food supplement or even as a pharmaceutical agent [4]. The Folin-Ciocalteu, aluminum chloride and DPPH• methods were used to measure the changes in polyphenols contents and antiradical activity of pork patties during chilled storage (Table 1). At day 0, the results showed that TPC, TFC, and DPPH• values increased in pork patties treated with *P. ostreatus* powder (P5 > P2) when compared with the control treatment (P<0.05). At the end of storage (day 9), the highest TPC (51.1%), TFC (88.5%) and DPPH• (33.8%) values obtained in meat samples treated with P5, in comparison with the control (P<0.05). In agree, Suresh et al. [5] reported that incorporation of natural antioxidants, rich sources of polyphenols, to goat meat patties increased the total phenolic content. Also, Longato et al. [6] included natural ingredients in the formulation of chicken patties to improve oxidative stability and antioxidant activity during storage (4 days). Their results showed that DPPH• antiradical activity was increased 10% when compared with the control.

Table 1. Polyphenols content and antiradical activity of raw meat samples during storage time.

Item	Treatment	Day		Difference	
		0	9	$\Delta E0$	$\Delta E9$
TPC	Control	23.7aB	13.2aA	0	0
	P2	25.7bA	25.4bA	2.0	12.2
	P5	27.1cA	27.0cA	3.4	13.8
TFC	Control	2.8aB	1.3aA	0	0
	P2	3.4bB	2.3bA	0.6	1.0
	P5	6.5cA	11.3cB	3.7	10.0
DPPH•	Control	60.2aB	58.3aA	0	0
	P2	67.2bB	58.4aA	7.0	0.1
	P5	88.8cA	88.1bA	28.6	29.8

$\Delta E0$ = result of control samples at day 0 - result of *P. ostreatus* samples on the same day.

$\Delta E9$ = result of control samples at day 9 - result of *P. ostreatus* samples on the same day.

Means in the same row or column with different literal are different ( $P<0.05$ ).

#### IV. CONCLUSION

The addition of *Pleurotus ostreatus* powder enhanced polyphenols presence as well as the antiradical capacity of pork patties. These type of natural ingredients using in the manufacturing of meat products may improve antioxidant activity.

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