

ANTIOXIDANT ACTIVITIES OF *CUDRANIA TRICUSPIDATA*(CT) LEAVES AND FRUITS, AND PRODUCT QUALITY OF PORK PATTIES WITH CT POWDER

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I. INTRODUCTION

Lipid oxidation can be reduced by applying antioxidant agents to the meat products, leading to a retardation of spoilage, and maintenance of quality and safety during storage. *Cudrania tricuspidata* (CT) has been reported to have high amount of antioxidants, such as flavonoid compound [1], which could be useful for the inhibition of lipid oxidation during storage [2]. The study was performed to assess the antioxidant activity of leaves and fruit of CT which was divided by different sieve size(500 μm vs 150 μm) and to evaluate physicochemical properties and antioxidant activity of pork patties with various levels of CT fruits and leave powder.

II. MATERIALS AND METHODS

Fresh CT leaves and fruits were purchased from local market in Hampyeong, Jeonnam Province, South Korea. After washing, leaves and fruit of CT dried at a dry oven (60°C) and freeze dryer, respectively. CT leaves and fruits were homogenized and filtered with 150 μm and 500 μm sieve. Thus, sieved particles higher than 500 μm or less than 150 μm CT leaf and fruit powders were obtained. Then, CT leaves and fruits with different particle size were measured total phenolic compounds (TPC) content, 1,1-Diphenyl-2-picryl hydrazyl (DPPH), Iron chelating ability, Reducing power. After pork hams (Landrace x Yorkshire, grade A) was purchased from the local market (Samho Co., Gwangju, South Korea), then they were trimmed and were to subjected to the treatments: 1) reference, patty with ascorbic acid(AA) 0.10%, 2) patty with freeze drying CT fruit powder 0.5% (CTFP-0.5) and 3) patty with freeze drying CT fruit powder 1.0%(CTFP-1.0%). After pork patties were manufactured, pH, color values, thiobarbituric acid reactive substance (TBARS), peroxide values (POV) were evaluated. Statistical analysis was performed with One-way ANOVA (SPSS, 2000) as a treat combinations of CT power at various parts and sieve size, and pork patties.

III. RESULTS AND DISCUSSION

CT leaf powder, with higher total phenolic contents (Fig. 1), had higher Iron chelating ability, and reducing power than those with CT fruit powder. Also, CT fruit showed higher DPPH scavenging activity than leaves ($P<0.05$). The addition of freeze-dried CT fruits powder in raw pork patties enhanced the red colour and highly effective antioxidant because they inhibited lipid oxidation for 14 days of refrigerated storage as compared to the control (Fig 2). Especially, No differences in antioxidant activities of pork patties were observed between the levels of 0.5 and 1.0% CT fruit powder. Thus, CT fruits could be used as a natural antioxidant to retard lipid oxidation in meat products during refrigerated storage.

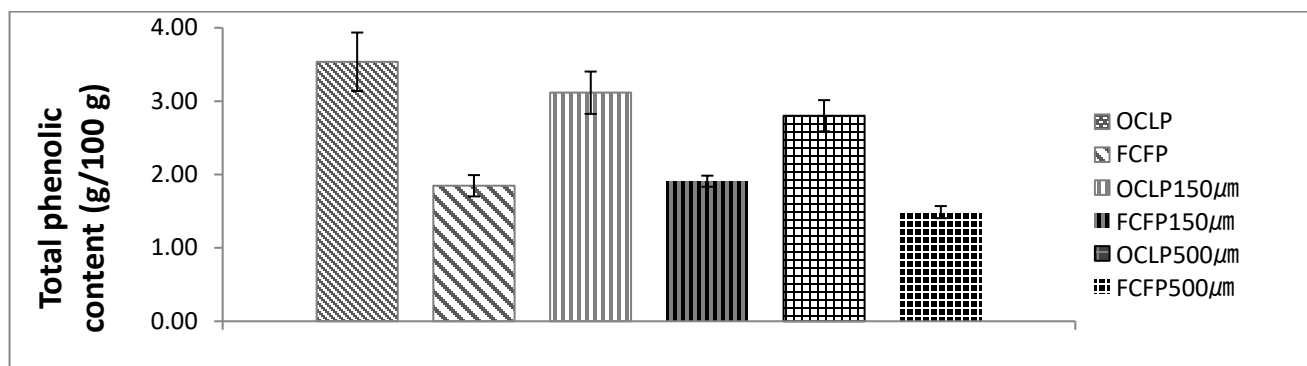


Fig 1. Total phenolic content of oven-dried *Cudrania tricuspidata*(CT) leaf powders(OCLP) and freeze-dried CT fruit powders(FCFP). Treatments: AA= ascorbic acid OCLP=treatment crude hot air drying CT leaf powder ;OCLP500 µm=treatment 500 µm or more hot air dried CT leaf ;OCLP150 µm= treatment 150 µm or less hot air dried CT leaf ;FCFP= treatment crude freeze dried CT fruit ;FCFP500 µm= treatment 500 µm or more freeze dried CT fruit ; FCFP150 µm= treatment 150 µm or less freeze dried CT fruit

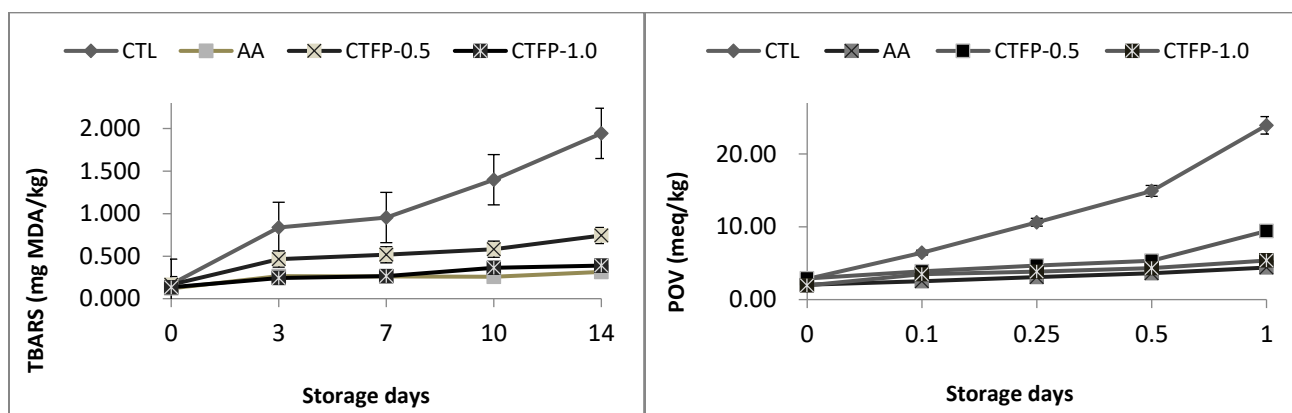


Fig 2. TBARS and POV of pork patties with various freeze dried *Cudrania tricuspidata*(CT) fruit powder during refrigerated storage.

IV. CONCLUSION

CT leaves, with higher total phenolic contents, had higher Iron chelating ability and reducing power than those with CT fruits. Also in 1,1-Diphenyl-2-picryl hydrazyl (DPPH) scavenging CT fruit showed higher activity than leaves. The addition of freeze-dried CT fruits powder in raw pork patties enhanced the red colour and effective antioxidant during 14-days of refrigerated storage. Thus, CT fruits as well as leaves could be used as a natural antioxidant to retard lipid oxidation in meat products during refrigerated storage.

ACKNOWLEDGEMENTS

This study was supported by National Research Foundation (NRF #2017058131).

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