

# EFFECT OF SUPPLEMENTATION OF RESVERATROL ON BROILER MEAT QUALITY

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**Abstract**— The study was performed to investigate the effects of dietary resveratrol on oxidation stability of chicken thigh during cold storage for 5 days. Antibiotics fed group T2 and resveratrol fed groups T5 and T6 showed higher pH value than other groups. Effect of dietary resveratrol on VBN value of chicken thigh meat was not significant. In lipid oxidation of thigh meat, supplementation of vitamin E was strongly controlled TBARS values through storage days. Low dose of resveratrol supplementation was more efficient to reduce lipid oxidation than itself and methylated form, respectively. From this result, it was concluded that the 20 ppm of resveratrol supplementation may lower the oxidation susceptibility of chicken thigh during cold storage for 5 days.

**Index Terms**— Resveratrol, chicken thigh, Meat quality, Antioxidation, VBN, TBARS

## I. INTRODUCTION

Oxidative quality deterioration of meat can be reduced by conventional antioxidants, butylated hydroxyanisole, butylated hydroxyl toluene, tertiarybutyl hydroquinone and propyl gallate. Since such synthetic antioxidants have shown toxicity (Han and Rhee, 2005), the needs of searching natural antioxidants has occurred. Medicinal herb extracts have shown an antimicrobial and antioxidative effect *in vitro*, especially polyphenols of the extracts were readily react with single electron oxidants, resulting in powerful free-radical scavenging activity and complex with metal ion prooxidant to curtail anti-oxidant reactions (Decker and Xu, 1998). However, the effect of supplementation of natural products on the antioxidative activity of animal muscle is still controversial (Vinci et al., 2001). Therefore, the objective of present study was to evaluate the effectiveness of dietary resveratrol on anti-oxidative activity of raw chicken thigh from broilers during cold storage at 4°C for 5 days.

## II. MATERIALS AND METHODS

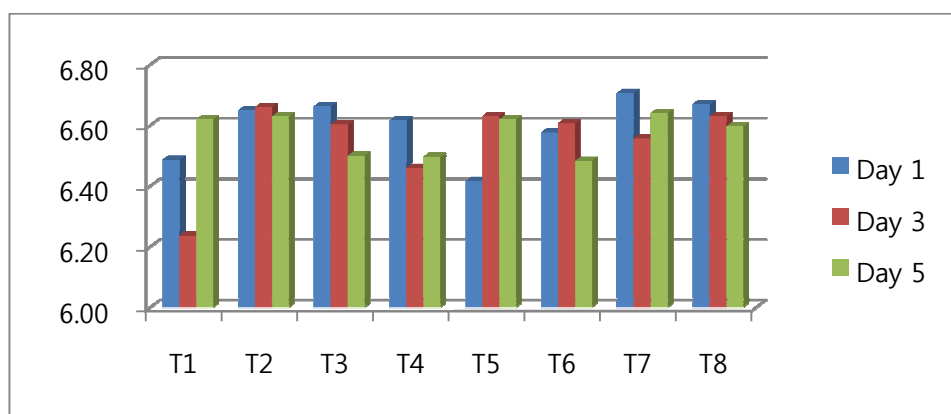
Day-old Ross 320 broiler chickens were obtained from a local commercial hatchery. Chickens were randomly assigned into four groups. A control group (T1) was fed a basal diet without antibiotics and T2 was basal diet with antibiotics (T2), with vitamin E 20 IU (T3), with vitamin E 200 IU (T4), with resveratrol 20 ppm (T5), with resveratrol 200 ppm (T6), 20 ppm of methylated resveratrol (T7) and 200ppm methylated resveratrol (T8). The feeding trial for broilers composed of a starter diet until 21 d of age and grower diet until 35 d of age. Diets of control and treatments group achieved the same energy and protein levels with the extracts addition. At day 36, the broilers were sacrificed and breast and thigh were immediately removed from the carcass then air packaged and stored in a refrigerator (4°C) until used.

## III. RESULTS AND DISCUSSION

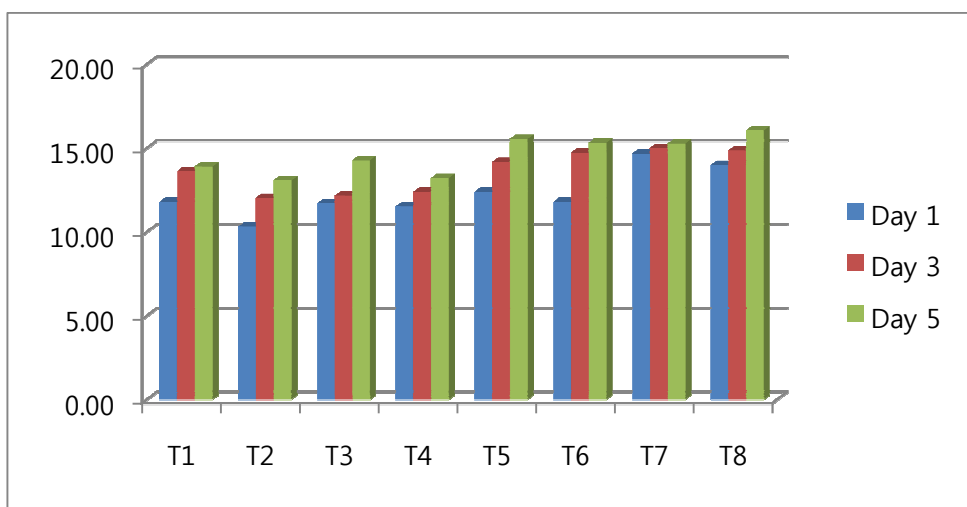
The effect of dietary supplementation with resveratrol and its methylated resveratrol on pH level in chicken thigh meat stored at 4°C for 1, 3, and 5 days is in Fig. 1. T1, control group fed without antibiotics, showed lower value than other group on day 3. Antibiotics fed group T2 and Resveratrol fed groups T5 and T6 showed higher pH value than other groups. Effect of dietary resveratrol on VBN value of chicken thigh meat was shown in Fig. 2. The values increased with increase of storage days, the VBN value was not affected by resveratrol supplementation. In lipid oxidation of thigh meat, supplementation of vitamin E was strongly controlled TBARS values through storage days. Low dose of resveratrol supplementation was more efficient to reduce lipid oxidation than itself and methylated form, respectively. From this result, it was concluded that the 20 ppm of resveratrol supplementation may lower the oxidation susceptibility of chicken thigh during cold storage for 5 days.

## IV. CONCLUSION

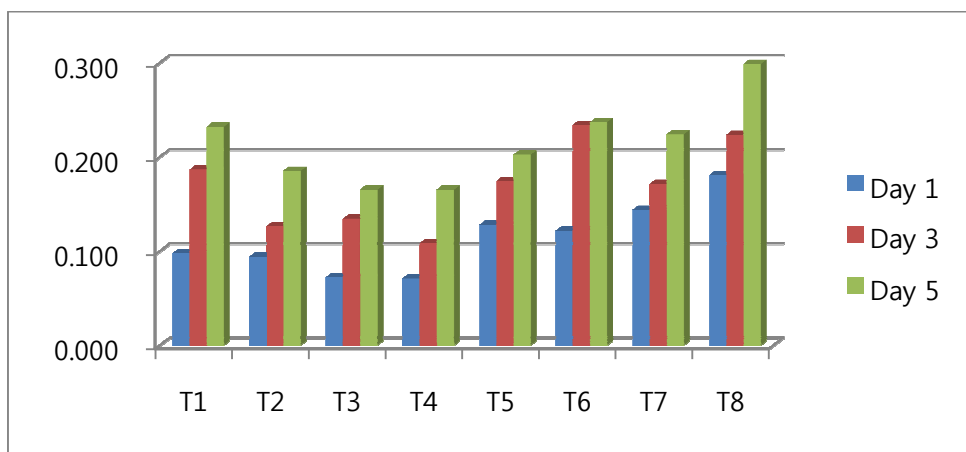
In conclusion, the resveratrol supplementation reduce the oxidation susceptibility of chicken thigh during cold storage. Therefore it can possibly utilized as natural food additives in the meat processing market.



**Fig. 1. Effect of supplementation of resveratrol on change of pH value of chicken thigh meat**



**Fig. 2. Effect of supplementation of resveratrol on change of VBN value of chicken thigh meat**



**Fig. 3. Effect of supplementation of resveratrol on change of TBARS value of chicken thigh meat**