

PE4.67 Change of Freshness and Structure of Fresh and Thawed Chicken Meat during Storage 236.00

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Abstract—This study was conducted to determine change of freshness and structure of chicken meat when it was in fresh and thawed at different temperature. The TBARS value of chicken stored at higher temperature showed higher than that of chicken in lower temperature. This trend was also shown in K-value. In cold storage the meat structure was transformed during storage. When the chicken breast was frozen, TBARS value was affected by thawing temperature, higher thawing temperature resulted in higher TBARS value. Also the meat structure was significantly transformed by thawing temperature at 10°C. This result suggested that combination of VBN, TBARS, and meat structure transform could be indicator of discrimination between fresh and thawed meat in poultry industry.

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Index terms-chicken, freshness, storage, thawing meat

I. INTRODUCTION

Korean government initiated the “chicken quality grade” since 2003 by Agricultural Administration notice (No. 2003-14) and it helps improving chicken meat quality. The grade chicken should be fresh rather than frozen. However, when demand of chicken meat is high in Korea, often the chicken was in frozen and sold in thawed. Therefore the livestock grade evaluators have met the problem to judge the grade of chicken. Because discrimination of fresh chicken and thawed meat is very hard. In this respect this study was conducted to find the way of distinction of the difference by determination of structure and

freshness.

II. MATERIALS AND METHODS

The chickens (ROSS) in 35d of age were reared in the floor. When slaughter, the chicken were fasted for 8 hrs and slaughtered in the local slaughtering house. For the characteristics of fresh chicken meat during storage, chicken were stored at 1 and 4°C for 3 days and assayed every day. Also for the characteristics of frozen chicken meat during storage, chicken were stored at -20°C for 1 day and thawed at 10, 15, and 20°C and stored at 4°C for 3days and assayed every day. TBARS, K-value, meat structure of chicken were determined for change of chicken meat characteristics.

III. RESULTS AND DISCUSSION

Change of TBARS value of fresh chicken during storage was shown in Table 1. TBARS value of chicken stored at 4°C showed higher value than that of chicken stored at 1°C in whole storage days. K-value often used to indicate freshness of meat and fish. As shown Table 2, K value of chicken stored at 4°C (23.05) showed higher than that of chicken stored at 1°C (19.02). This trend was similar to that of chicken storage days. Muscle structure of fresh chicken meat showed that unique round shape of perimysium was shown on the day of slaughtering while the perimysium had changed and transformed during storage. In frozen chicken with different thawing temperature, the TBARS value showed that 0.101 and 0.147 at 10°C and 20°C on storage day 1. This trend was shown compare to storage day 2 and 3. In muscle structure, shape of perimysium was destroyed and highly transformed.

IV. CONCLUSION

To discriminate fresh chicken meat and thawed meat, determination of TBARS value and K-value should be good methods. However, those methods take long time, more fast and precise way should be considered.

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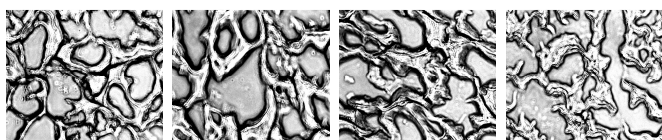
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Table 1. Changes of TBARS value on temperature of fresh chicken meat during storage period (unit : mgMA/kg)

Items	1°C	4°C
0 day	0.055 ± 0.006	0.071 ± 0.005
1 day	0.059 ± 0.004	0.081 ± 0.027
2 day	0.087 ± 0.018	0.108 ± 0.021
3 day	0.110 ± 0.023	0.127 ± 0.003

Table 2. Changes of K-value on temperature of fresh chicken meat during storage period

Items	1°C	4°C
1 day	19.02	23.05
2 day	24.51	27.84
3 day	30.71	31.53



(0 day) (1 day) (2 day) (3day)

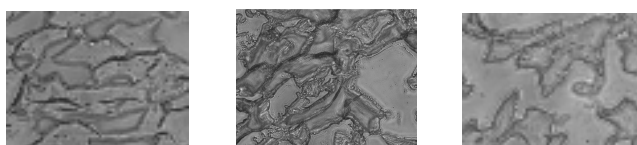
Fig. 1. Picture of Microscopic texture on temperature of fresh chicken meat during storage period

Table 3. Changes of TBARS value on melting temperature of frozen chicken meat during storage period (unit : mgMA/kg)

Items	10°C	15°C	20°C
1 day	19.0	20.8	22.3
2 day	22.5	25.6	27.4
3 day	26.7	32.2	33.0

Table 4. Changes of K-value on melting temperature of frozen chicken meat during storage period

Items	10°C	15°C	20°C
1 day	0.101 ± 0.016	0.108 ± 0.017	0.147 ± 0.026
2 day	0.123 ± 0.007	0.139 ± 0.007	0.184 ± 0.045
3 day	0.149 ± 0.014	0.161 ± 0.011	0.213 ± 0.034



(0 day) (1 day) (2 day)

Fig. 2. Picture of Microscopic texture on melting temperature (10°C) of frozen chicken meat during storage period