ABSTRACT

RAZALI. The Use of Biological Methods and Impedance Value in the Detection of Meat of Slaughtered Dead Chicken. Under the direction of DENNY WIDAYA LUKMAN, SRIHADI AGUNGPRIYONO, and MIRNAWATI SUDARWANTO

In recent years, there has been an increasing an abuse of slaughtered dead chicken for human consumption, so it is important to find a practice method in order to distinguish whether meat chicken from slaughtered dead chicken or not. Experiments were conducted to determine 1) whether breast and thigh meat from slaughtered dead chicken can be identified through quality attributes of meat (Warner-Bratzler (WB) shear value, CIE L* a* b* color, nonprotein nitrogen (NPN), histological changes and 2) probably using the impedance value. Thirty samples of breast and thigh meat were obtained from commercial slaughtering house classified into three groups namely halal slaughtered healthy chicken (AHS), slaughtered dead chicken (AMS), and slaughtered stressed chicken (ALS). Breast (M. pectoralis) and thigh (M. biceps femoris) muscles were used to histological procedures (degenerated and necrotic, muscle fiber diameter, muscle fibers interstitials space, arteriae and venae) and to assess WB, color, NPN and impedance value at 1, 5 and 9 h postmortem (PM).

This study showed that percentage of degenerated and necrotic muscle fibres of breast and thigh meat of AMS and ALS were significantly higher (p<0.05) than of AHS. The muscle fiber interstitials spaces of AMS were significantly (p<0.05) wider than of AHS and ALS. The lumen of arteriae and venae of AMS and ALS were congested by blood retained within. All shear values of the breast meat were not different but the thigh meat were significantly lower (p<0.05) at 9 PM. Statistically the lightness (L*) value of breast and thigh meat of AMS and ALS were lower whereas the redness (a*) value of breast and thigh meat of AMS were significantly higher (p<0.05) than AHS and ALS. There were no significant differences the NPN value among the three groups. This study indicated that the impedance value of AMS were significantly lower (p<0.05) than AHS and ALS, and it can be used to distinguish the breast and thigh meat from slaughtered dead chicken and from the halal slaughtered meat. The impedance value of breast and thigh meat had significant negative correlation with degenerated muscle fiber (p<0.01, r = -0.56), necrotic muscle fiber (p<0.01, r = -0.72), and muscle fiber interstitial (p<0.01, r = -0.52). Whereas the impedance value of breast and thigh meat had significant positive correlation (p<0.01, r = 0.62) with WB value of thigh meat. These means the higher degraded of the tissue the lower value of impedance.

Key words: slaughtered dead chicken, impedance value, Warner-Bratzler shear, L* a* b*, NPN.