

Title The correlation between heme pigment and lipids oxidation of different breeds chicken meat during refrigerated storage

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Abstract

The correlation between heme pigment and lipids oxidation of three breeds chicken breast and thigh meat during refrigerated storage were investigated. When the storage time increased, an increase in pH was observed in broiler and spent hen breast and thigh meat but those for Thai indigenous chicken rather no change in first 6 days storage was obtained. Myoglobin and heme iron content of thigh meat showed a significant decrease from 0 to 9 days storage but rather no change was observed in breast meat. A significant increase in non-heme iron content was obtained only in thigh meat with extended storage time. Thigh meat contained higher lipid, myoglobin, heme and non-heme iron relating to more lipid oxidation compared to breast meat were observed. The heme iron content decreased in a coincidence with an increase in non-heme iron content ($R^2=0.0009-0.9314$), suggesting to the destruction of the heme protein. The increase of malondialdehyde (MDA) content with extended storage time in each meat sample had correlation to the increase in non-heme iron ($R^2=0.0025-0.9859$), lipid content ($R^2=0.0002-0.9953$) and pH ($R^2=0.0308-0.9694$), and the decrease in moisture ($R^2=0.0107-0.9882$), myoglobin ($R^2=0.0064-0.9053$) and heme iron content ($R^2=0.0027-0.9210$) of chicken meat. No significant difference in chemical compositions and lipids oxidation of chicken meat between storage with and without skin was observed. In first 6 days storage, MDA content of broiler thigh meat was the highest among those from the other breeds ($p<0.05$) relating to the highest in myoglobin content, and the decrease in redness value (a^*). This result suggested that myoglobin might be converted to metmyoglobin and this oxidized form of myoglobin could stimulate lipid oxidation.