Investigation of Microorganism Growth and Free Water, Porosity Changes in Fresh Meats and Meat Products during Differen

儲君諺、王維麒

E-mail: 364824@mail.dyu.edu.tw

ABSTRACT

Fresh meats and meat products result in quality decreasing by microorganism growth, but traditional microbiology testing doesn ’ t provide food raw material ’ s information immediately. Before laboratory builded a quality testing index. It was electrical conductivity. Food placed different storage environment. Microorganism growth leaded to electrical conductivity increasing. Electrical conductivity and microorganism were positive related. Previous studies indicated microorganism growth. Which cause could change food structure, and the porosity or water structure were mutated, which cause bound water transferred free water. The changes resulted in electrical conductivity increasing. However, no studies were conducted to verify microorganism growth leading to porosity and free water ratio variation. The study ’ s purpose are measuring free water ratio and porosity variation of meats and meat products in different storage environment. Data with previous laboratory ’ s total viable count and electrical conductivity data were compared. In the study. Three fresh meats and three meat products samples were stored in the room temperature or wet environment for total 72 hours. Both free water ratio and porosity were measured. Regression analysis of free water ratio, porosity and total viable count, electrical conductivity data were conducted. The results show when samples placed in different environments, the total viable count varied with the time during storage. The porosity decreased, but the free water ratio didn ’ t. Fresh meats ’ free water ratio and porosity varied with the total viable count. The pork and beef samples ’ porosity increased with microorganism growth. Both free water ratio and porosity increased in the fish samples. It showed high relativity with electrical conductivity. Because meat products were restructure food, water had been changed into free water during processing. The porosity decreasing resulted from soiled materials. For fresh meats, the fish sample ’ s pulp is tenderer than pork and beef samples,this results in change of bound water to free water during microorganism growth. All meats samples ’ porosity increased, because the structures were destroyed in microorganism growth.

Keywords : meat、processed meat、water mobility、free water ratio、porosity、total viable count、electrical conductivity

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