Ligeng Feng, J Food Process Technol 2017, 8:11 (Suppl)
DOI: 10.4172/2157-7110-C1-074

Effects of temperature on the structure of myofibrillar proteins of blended meat (sliver carp, pork and chicken)

Ligeng Feng
China Agriculture University, China

The temperature changes in secondary structures, conformation and turbidity of pork and silver carp myofibrillar proteins (MP) as well as their mixture (1:1, m/m) were researched. The results indicated that for all three MP samples, turbidity increased; the contents of α-helix and random coil decreased to a constant level, and β-corner added to constant; protein conformation changed and tended to be stable to adapt to the new environment. As a result, the proteins tended to be completely denatured. The thermal denaturation profile of the pure myofibrillar proteins was not completely same as that of the mixed ones. The blended meat could combine the advantages of pork MP and silver carp MP and improved their properties with temperature. The changes of physiochemical properties of myofibrillar protein from silver carp, chicken breast and their mixture (m (silver carp): m (chicken)=1:1) were investigated by measuring the content of salt-soluble protein and sulfhydryl group and the changes of protein conformation and SDS-PAGE during heating. The results showed that the content of salt-soluble protein of the three protein solutions showed decrease and the total content of sulfhydryls of proteins decreased over 60% and the fluorescence intensity of the tryptophan and the content of the α-helix decreased to a stable level with temperature for three proteins. The changes of the blended myofibrillar protein was similar to the chicken breast myofibrillar proteins, which was previously expected to be constant from 0 to 40 oC, then dropped abruptly to the lowest at 50 oC. However, the changes of the myofibril from silver carp basically kept the same at the range of 0~- 30 oC and then reached a low point at 40 oC. The thermal denaturation and SDS-PAGE results explained that myofibrillar of the silver carp denatured at 40 oC and the mixed meat with chicken protein denatured at 50 and 52.5 oC, respectively. It indicated that the accumulation of myosin heavy chains led to changes in the molecular conformation of the protein at denatured temperature during the heating process. In addition, there were differences between blended proteins and single protein, which would improve gel properties of blended proteins by combining the advantage of single protein.

Recent Publications

1. Li Qingzheng, Feng Ligeng, Luo Yongkang (2016) Gel properties of mixed myofibrillar proteins. *Meat Research*; 30(12): 1-6.

2. Lv Jian, Liu Xiaochang, Luo Yongkang, Feng Ligeng (2016) Effect of salt concentration on quality changes of dry – cured bighead carp (*Aristichthys nobilis*) fillets during refrigerated storage. *Fishery Modernization*; 43(4): 59-63.

Biography

Ligeng Feng has her expertise in food science especially on food quality and safety control with meats and aquatic products recently in the college of food science and nutritional engineering of China Agricultural University. She focus on the tasks on research and demonstration of key technologies and equipment for processing medium temperature meat products and the modern agricultural technology system construction project of freshwater fish circulation industry-preservation and quality control (2011-now) supported by the Earmarked Fund for China Agriculture Research System (CARS-46), the National Natural Science Foundation of China and the Beijing Natural Science Foundation.

fengligeng@cau.edu.cn

Notes: