Microstructure and physicochemical properties: Effects of different pretreatment combined with dual-frequency ultrasound on quality of large yellow croaker (*Pseudosciaena crocea*) during cold storage

Weiqing LAN[1,2,3] ○ Peiling YAN[1] Xinyu ZHAO[1] Jing XIE[1,2,3*]

1, College of Food Science and Technology, Shanghai Ocean University, Shanghai 201306, China

2, Shanghai Aquatic Products Processing and Storage Engineering Technology Research Center, Shanghai 201306, China

3, National Experimental Teaching Demonstration Center for Food Science and Engineering (Shanghai Ocean University), Shanghai 201306, China

*Corresponding author: jxie@shou.edu.cn

Abstract: The quality changes of cold-stored (4 ℃) large yellow croaker (*Pseudosciaena crocea*) were studied by using stable chlorine dioxide combined with dual-frequency ultrasound assisted-slightly acidic electrolyzed water (CUSS). The results of microbial indicators demonstrated that CUSS treatment inhibited microbial growth. Moreover, CUSS treatment had lower values of pH, total volatile basic nitrogen (TVB-N) and thiobarbituric acid (TBA), and higher immobilized water content. CUSS treatment also inhibited the degradation of inosine monophosphate and the accumulation of hypoxanthine riboside and hypoxanthine. Through the results of texture profile analysis (TPA), protein degradation, and scanning electron microscopy (SEM), CUSS treatment could effectively protect the protein structure and maintain good texture characteristics of *Pseudosciaena crocea*. According to microbial indexes, K-value and sensory analysis, compared with dual-frequency ultrasound treatment, CUSS treatment could prolong the shelf-life of *Pseudosciaena crocea* for another 6 days. Therefore, CUSS treatment is a potential method to preserve *Pseudosciaena crocea* and improve its protein characteristics.

Key words: Stable chlorine dioxide, dual-frequency ultrasound, slightly acidic electrolytic water, *Pseudosciaena crocea*, quality