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Effects of chitosan oligosaccharides on microbiota composition of silver carp (*Hypophthalmichthys molitrix*) determined by culture-dependent and independent methods during chilled storage

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Abstract

This study evaluated the effects of chitosan oligosaccharides (COS) on the changes in quality and microbiota of silver carp fillets stored at 4 °C. During storage, COS treated samples maintained good quality, as evidenced by retarding sensory deterioration, inhibiting microbial growth, attenuating the production of total volatile basic nitrogen (TVB-N), putrescine, cadaverine and hypoxanthine (Hx), and delaying degradation of inosine monophosphate (IMP) and hypoxanthine ribonucleotide (HxR). Meanwhile, the microbiota of silver carp fillets, subjected or not to COS treatment, was investigated by culture-dependent and culture-independent 16S rRNA gene sequencing methods. Variability in the predominant microbiota in different samples during chilled storage was observed. As storage time increased, the control and 1% (w/v) COS treated samples were rejected by sensory panelists at day 6 and 8, respectively. At the time of sensory rejection, *Pseudomonas*, followed by *Aeromonas*, *Acinetobacter*, and *Shewanella* became the main spoilers in the control samples. However, COS inhibited the growth of *Pseudomonas*, *Aeromonas*, and *Shewanella* significantly. Consequently, *Acinetobacter* followed by *Pseudomonas* became the predominant microbiota in 1% (w/v) COS treated samples. Therefore, COS improved the quality of fillets during chilled storage, which was mainly due to their modulating effects on microbiota.

Biography

Dr. Shiliang Jia is currently working at Beijing Advanced Innovation Center for Food Nutrition and Human Health, College of Food Science and Nutritional Engineering, China Agricultural University, China. He published many articles in reputed journals and attended international conferences.

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