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# Psychrotrophic Bacterial Diversity Analysis of Chinese Freshwater Fish During Storage at 4 °C based on PCR-DGGE

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**Abstract** — In the present study, microbial shifts of three popular freshwater fishes (Crucian carp, Bighead carp and Grass carp) in China during storage at 4 °C were assessed. A denaturing gradient gel electrophoresis based on 16S rDNA polymerase chain reaction (PCR-DGGE) method was conducted at three important points discriminated by Quality Index Method system coupled with Biochemical indicators, pH, total volatile basic nitrogen, K value and total aerobic counts. 28 representative fragments in the DGGE profile were characterized and identified as 7 genera including *Pseudomonas*, *Aeromonas*, *Shewanella*, *Acinetobacter*, *Comamonas*, *Iodobacter* and *Morganella psychrotolerans*. From DGGE profile, *Aeromonas* and *Comamonas* dominated microbiota of fresh samples, but weakened till

the end of storage, indicating their little contribution to the fish spoilage; *Pseudomonas fragi*, *Pseudomonas fluorescens*, *Aeromonas*, *Shewanella putrefaciens* and *Iodobacter* were the predominant bacteria at the spoilage point; as for the middle point, the microflora were rather diverse made up of *Aeromonas*, *Pseudomonas*, *Shewanella* and *Acinetobacter*. Notably, *Iodobacter* and *Morganella psychrotolerans* were first found in freshwater fish, and their spoilage potential need to be future studied. The data obtained contributes to an integrated understanding of the complex changes in three freshwater fishes during 4 °C storage.

**Key Words** — microbial diversity, *Pseudomonas*, specific spoilage organisms