

**Arsenic species contents at aquaculture farm and in  
farmed mouthbreeder (*Oreochromis mossambicus*) in  
blackfoot disease hyperendemic areas**

薛玉梅

Huang. YK;Lin. KH;Chen. HW;Chang. CC;Liu.

CW;Yang MH;Hsueh. YM.

摘要

**Abstract**

A study was conducted to measure the arsenic species in farmed mouthbreeder (*Oreochromis mossambicus*) and culture ponds in water in blackfoot disease (BFD) hyperendemic areas in Taiwan. The relationships between arsenic species of aquaculture ponds and farmed fish were also explored. Biota samples were extracted with methanol/water (1/1, v/v) using a Soxhlet extraction apparatus. The concentrations of arsenite As (III), arsenate As (V), monomethylarsonic acid (MMA), and dimethylarsinic acid (DMA) of extracts were measured by high-performance liquid chromatography (HPLC) linked to a hydride generator and atomic absorption spectrometry (HG-AAS). Moreover, arsenobetaine (AB) was analyzed by HPLC linked to ultra violet (UV) and HG-AAS. Concentrations of arsenic species were determined in 68 mouthbreeder (*O. mossambicus*) samples and 21 culture ponds from Putai and Yichu Townships of Chiayi County and Hsuehchia and Peimen Townships of Tainan County. The mean arsenic levels of culture ponds in Putai, Yichu, Hsuehchia, and Peimen were 75.8, 15.1, 14.4, and 221.0 microg/l, respectively. The water of culture ponds was dominated by As (V). The inorganic arsenic percentage of fish (7.4%) was higher than that reported by other seafood surveys. Except for the MMA and As (III) levels, As (V), DMA, AB, and total arsenic levels in fish significantly increased with inorganic and total arsenic concentrations of the pond water. Inorganic arsenic species are more toxic than methyl arsenic species. Therefore the effect of inorganic arsenic species might result in a greater number of adverse health effects to the general public. It is of importance to evaluate the inorganic arsenic levels of farmed seafood in arsenic-contaminated areas.