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RESEARCH REPORTS

SUSTAINABLE AQUACULTURE FOR A SECURE FUTURE

Title: Fate of the masculinization agent methyltestosterone in the pond environment

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Abstract: Use of all-male tilapia populations prevents unwanted reproduction and produces the sex with the greatest growth potential. One common method for producing all-male populations is to feed developing fry with food impregnated with the synthetic androgen 17 α -methyltestosterone (MT). Although previous studies have shown that MT is rapidly cleared from the fish, little attention has been paid to the possible contamination of the environment by steroid-treated food. Such contamination could pose an exposure risk to workers as well as to other organisms in and around the pond environment. We tested the hypothesis that MT persists in the environment after its use for masculinizing Nile tilapia. Fry were treated with a masculinizing dose of MT (60 mg kg⁻¹) for four weeks beginning at the initiation of feeding in model ponds. Water and soil samples were taken before the onset of treatment and weekly beginning on the last day of treatment (water samples were also taken weekly during the four-week treatment period). The concentrations of MT in water and soil were measured by radioimmunoassay. Concentration of MT in water decreased to background level by 35 days after the onset of feeding (one week after the end of treatment with MT-impregnated food). In contrast, the levels in the soil were 1.4 to 1.7 μ g kg⁻¹ at 28 days after the onset of feeding with MT-impregnated food and remained detectable in the soil at between 0.8 and 1.6 μ g kg⁻¹ through 49 days (three weeks after ending treatment with MT-impregnated food). These results suggest that MT persists in sediments for at least weeks after cessation of MT treatment, which indicates that unintended exposure to MT may occur.

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