

A morphometrical study of the intersex of Thai medaka, *Oryzias minutillus*, inhabiting suburbs of Bangkok, Thailand and its histological view of the gonads

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Thai medaka, *Oryzias minutillus*, were collected from 10 localities in the suburbs of Bangkok, Thailand. Sex ratios (male to female) were normal almost 1:1 in localities 1, 2, 4, 5, 7 and 9. Those ratios were 1:1.3, 1:1.4, 1:1.3, 1:1.1, 1.3:1 and 1.1:1, in order. In contrast, in localities 3, 6, 8, and 10, sex ratios were unbalanced. Those ratios were 1:2.9, 1:3.4, 1:3.0 and 1:2.8, respectively. Furthermore, in those populations, many intersexes were found. The percentages of the intersexes occupied in each population were 15.6, 21.4, 16.7 and 17.9, respectively. In the secondary sex characters of the intersexes, the values (%) of dorsal fin height (HD) divided by standard length (SL), and anal fin height (HA) divided by SL were there between the values of normal males and females. Testes of the intersexes appeared to be undeveloped. In ovaries, number of mature oocytes was smaller in the intersexes than that in normal females. Aromatase is an enzyme to accelerate the production of estrogen in females. The aromatase immunoreactivity was detected in both ovaries of normal females and intersexes. In total meaning, however, the expression of aromatase may be poor in the intersexes, because mature oocytes are poor in the number. In both testes of normal males and intersexes, aromatase activity was not detected. DDT in the sediment of the ponds in which the percentages of intersex were high was detected in localities 3 and 6 (0.2 ppm, each). The pH values of the water were relatively low in those ponds. Taking these results into considerations, it was suggested that in the intersexes, secondary sex characters and developing gonads might be affected by agricultural chemicals.

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