

Abstract Submitted
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Trial of Growth Control of Farm-raised Fish by Plasma-generated Reactive Species¹ HIDEKI MOTOMURA, YOSHIKI KUBOTA, RYO FUKUSHIMA, YOSHIHISA IKEDA, MASAFUMI JINNO, Ehime University — As one of the biological applications of plasmas, growth control of agricultural products attracts attentions. There are many papers on growth enhancement of crops by plasma treatment. However, there are few published papers concerning growth enhancement of fishery products excepting reports of goldfish growth enhancement in 1980s. In this study, growth characteristics of edible fish (tilapia) under the plasma treatment has been investigated. An arc discharge reactor was employed and plasma treated air was introduced to two aquariums with a flow rate of 2.5 L/min. Measured concentrations of main reactive species were 43 ppm for NO, 23 ppm for NO₂ and 7.5 ppm for O₃. Each aquarium had 60 L capacity and contained 15 tilapia fish. The plasma treated air was supplied to an aquarium once a day and to the other aquarium twice a day with total duration of 10 min. Compared to no plasma treatment case, the growth rate decreased by 18% by once a day plasma treatment, whereas almost same growth rate was observed by twice a day plasma treatment. A possible reason of growth suppression is excess concentrations of nitrite and nitrate in water. The relationship between their concentrations and growth characteristics under several treatment conditions will be shown at the conference.

¹Tirapia fish was supplied from SEFREC of Ehime University.

Hideki Motomura
Ehime University

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