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SESSION TRACK: Integrated Environmental Assessment and Management

REQUESTED SESSION: Integrated Understanding of Biogeochemical Cycling of Mercury around Ocean Environmen... [Noriyuki Suzuki]

REVIEWER COMMENTS:

Noriyuki Suzuki: [No Comments]

Kohji Marumoto: [No Comments]

REVIEWER RECOMMENDATIONS:

Noriyuki Suzuki: [No Recommendation]

Kohji Marumoto: [No Recommendation]

REQUESTED PRESENTATION TYPE: Platform

Student Presentation Award:

TITLE: Comprehensive assessment for controlling factor of total Hg level in skipjack tuna from Western North Pacific Ocean

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AGREE TO BE RECORDED: TRUE

ABSTRACT BODY: Fish represent the primary source of mercury (Hg) to human populations. The predominant Hg form for the human intake is methylmercury (MeHg), since this form is highly bioaccumulative in aquatic environment. Despite low level of MeHg in natural water, bioconcentration to microseston magnify the concentration in 3-5 orders, then food chain transfer contribute to further increase of MeHg in higher pradors. Migratory pelagic marine species such as tuna are particularly significant source of MeHg to human. It is important to establish the model which can predict possible change in MeHg in pelagic fishes considering change in Hg input to ocean or global climate. However, current understanding are not sufficient to explain highly variable MeHg level among individuals, populations, and species due to confounding of biogeochemical, ecological, and biochemical factors. Even among the same species, considerable geographical variation have been reported. In this study, we measured total Hg (THg) level in muscle of 251 skipjack tuna collected from Western North Pacific Ocean covering Kuroshio-Oyashio transition zone (KOTR, n=50), Kuroshio zone (KR, n=122), Japan Sea (JS, n=20), East China Sea (ECS, n=51), and North Equator Counter Current zone (NECC, n=13). The year of sampling were ranged from 1997 to 2003, and all samples were cryogenically archived to environmental specimen bank, Ehime University. Average THg level in muscle (fresh weight) were 0.24 ± 0.21 (KOTR, n=), 0.30 ± 0.25 (KR), 0.35 ± 0.14 (JS), 0.32 ± 0.27 (ECS), 0.08 ± 0.02 ?g/g (NECC). There are some geographical variation, while inter-regional variation was also large. Although the predominant factor affecting inter-region variation was body size, other parameters were also significant. In the presentation, we will provide comprehensive data analysis for the controlling factor of THg level in this species considering physiological parameters, trophic position, regional variation, temporal/seasonal variations, and mercury stable isotope signature.

KEYWORDS: Bioaccumulation, Metals