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Trophic Dilution Of Pahs Through Benthic Food Web In Tidal Flat

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Polycyclic aromatic hydrocarbons (PAHs) are natural, ubiquitous substances in coastal environments. They are also known to have potent toxicity such as carcinogenicity and mutagenicity. There are numerous fishery resources in costal ecosystems. Therefore, trophic transfer of PAHs in coastal ecosystems is an important to understand pollutant contamination. The objective of this research is to reveal bioaccumulation of PAHs in food web using carbon and nitrogen stable isotope ratios in tidal flat of river mouth. Recently, there are some reports on bioaccumulation of pelagic marine food web. In this research, we focused on bioaccumulation of PAHs in benthic food web. The carbon and nitrogen stable isotope ratios were measured for 9 macrobenthos and potential food sources (marine particulate organic matter: MPOM and microphytobenthos) at tidal flat and surrounding reed marsh at the Yoshino River, Tokushima Prefecture of the Shikoku Island, Japan in October 2005. Sixteen PAHs as priority pollutants were measured 9 macrobenthos and potential food sources in October 2011. The concentrations of PAHs in potential food sources were 7,400 - 10,400 ng/g-lipid, the concentrations of PAHs in 9 macrobenthos were 110 - 760 ng/g-lipid. Significant negative relationships were found between the nitrogen stable isotope ratios and lipid concentrations of 7 PAHs (fluorene, phenanthrene, fluoranthene, pyrene, chrysene, benzo(a)pyrene, and benzo(k)fluoranthene). These results confirm that PAHs undergo trophic dilution in benthic food web.