（学位第３号様式）

学　位　論　文　要　旨

氏　名	ヌルルナディア　ビンチ　モハメド　ユソフ
題　目	Endocrine disrupting chemicals bioaccumulation through food chain and their effects on fish （魚類による内分泌攪乱化学物質の食物連鎖経由生物濃縮とその影響に関する研究）

Endocrine Disrupting Chemicals (EDCs) are known to impair the reproduction in fish by intersex, altered mating behavior and reduced testicular growth. Target EDCs in this study consist of natural (E1 and E2) and estrogenic chemicals (NP, OP and BP) which were reported as potentially estrogenic to aquatic organisms.

This study consists of five experiments examining the bioaccumulation of EDCs through food chain which representing by commercial diet, polychaete and benthic fish. In experiment 1, bioaccumulation of EDCs was determined in polychaete through dietary exposure. Biomagnification factor (BMF) values indicated EDCs were not biomagnified in polychaete. Besides, E1 concentration was below detection limit and speculated to be biotransformed. In experiment 2, EDCs concentration was measured in wild polychaete collected from Osaka Bay. EDCs concentrations were unexpectedly high in polychaete compared to sediment; thus, predicted to biomagnify the compounds from the sediment and possibly transfers through food chain. Therefore, bioaccumulation of EDCs was determined in benthic fish, *Pleuronectes yokohamae* through dietary exposure in experiment 3. BMF values also demonstrated no biomagnifications and this finding were verified by no induction of vitellogenin in fish serum. In each exposure experiments, higher EDCs concentration were observed in exposed groups compared to control suggesting the assimilation in *P. yokohamae*. This assumption has been affirmed in experiment 4 by the high assimilation efficiencies (AE) computed in *P. yokohamae* by dietary exposure with percentage of over 88–96% (except NP). Therefore, low bioaccumulation of EDCs in homogenate fish tissues and presence of compounds concentration below detection limit (BP, E1 and E2) in this study were probably due to intensive metabolism. EDCs had been reported to be metabolized and biotransformed into glucuronide conjugates in fish; hence glucuronidation activity was analyzed in the microsomal of intestine and liver of *P. yokohamae* in experiment 5. High UGT activity in the microsomes of intestine and liver suggesting efficient metabolism and elimination of BP form the *P. yokohamae* body. Thus, it can be justified that BP was not bioaccumulated/biomagnified in the previous dietary exposure due to glucuronidation. The other target EDCs were assumed to be glucuronidated as well based on the verification by other authors who conducted studies specifically on fish.

In the present study, EDCs were not bioaccumulated through the food chain. This finding has been verified by high glucuronidation activities in intestine (first-pass metabolism organ) of *P. yokohamae*.