POPS LEVELS IN BLUE CRAB AND EDIBLE FISH FROM EASTERN MEDITERRANEAN COASTS

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Abstract
The levels of organochlorinated pesticides (OCPs) and polychlorinated biphenyls (PCBs) were determined in fish and crab samples collected from the Eastern Mediterranean coasts. The concentrations of OCPs and PCBs ranged from 1.1-8.6 and 9-47.5 ng g^{-1} wet weight, respectively. Concentrations of ΣDDT and ΣPCB in sea food samples were lower than the tolerance level established by the FDA (U.S. Food and Drug Administration).

Keywords: Pesticides, Mediterranean Sea, Fishes

Introduction
OCPs and PCBs have been recognized as Priority Organic Pollutants (POPs) and they have adverse effects on humans and on ecosystems, according to the Stockholm Convention of 2009 [1]. The aquatic ecosystems have been contaminated by POPs. Biota, that provides relevant information on impacts of pollutants, defines ecological status of aquatic systems [2]. In this study levels of OCPs, PCBs were measured in different biota samples; blue crab, sea bream and gray mullet in Eastern coasts of Mediterranean in Turkey. POPs levels were compared with the recommended limits of POPs concentrations in sea food, suggested by different authorities.

Material and Methods
A total of 29 blue crabs, 30 thirty sea bream and 30 gray mullets were collected from Dalyan Lagoon, Fethiye, Beymelek Lagoon, Tasucu, Akyatan Lagoon and Goksu Delta in 2013 (Fig. 1). Biota samples were analysed according to (DFG Method S 19, 1999). Quantitative analysis of OCPs and PCBs were performed with GC–MS. Biota (IAEA-435) sample was used as a control for the analytical methods.

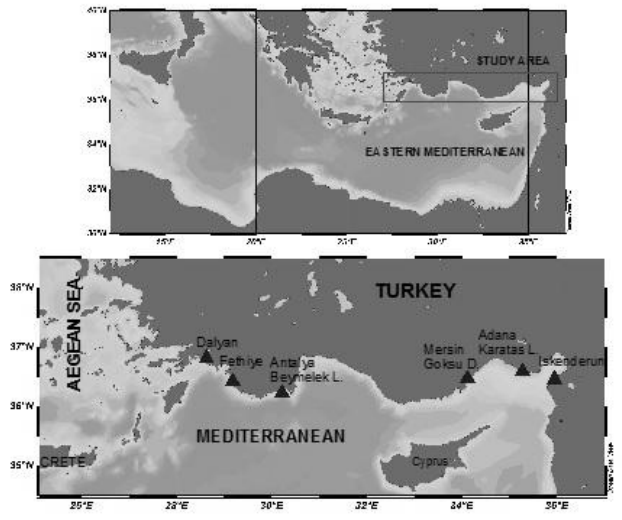

Fig. 1. Study area

Result and Discussion
ΣOCPs and PCBs were found between 1.1 and 2.7 and 17-30 in blue crab; 2-8.6 and 48-487 ng g^{-1} wet weight in fish samples respectively, indicated that the concentrations of OCPs were generally low in blue crab compared to fish samples (Fig. 2). Concentrations of ΣDDT and ΣPCB in sea food samples from the Mediterranean coast of Turkey were lower than the action level established by the FDA [3].

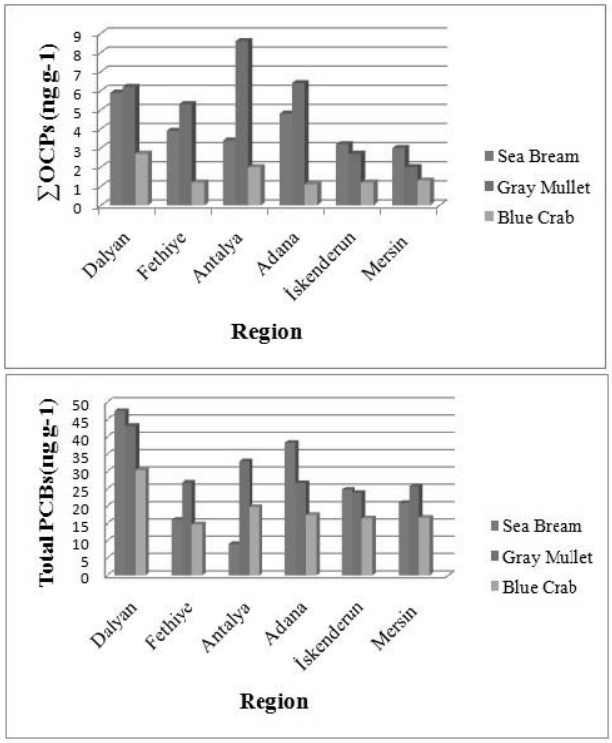

Fig. 2. Total concentrations of OCPs (ng g^{-1})

Conclusion
The contamination levels of OCPs and PCBs in fish and crabs at six sites from the Mediterranean coast of Turkey showed that POPs were at the lower range compared to the other areas in the world and the study area is less affected by anthropogenic pollution.Distribution of DDTs indicated that historical residues remained and significant degradation has occurred. Blue crab samples compared to fish samples it was concluded that blue crab has lower contamination level than sea bream and gray mullet in terms of pesticides and PCBs.

References
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