



Examination of barnacles' potential to be used as bioindicators of persistent organic pollutants in coastal ecosystem: A Malaysia case study

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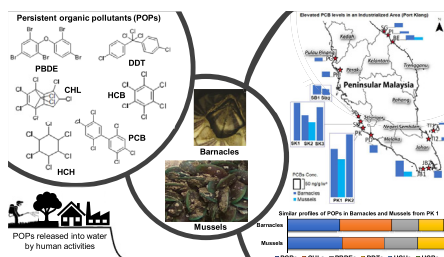
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HIGHLIGHTS

- Coastal biomonitoring survey on POPs was conducted using barnacles from Malaysia.
- Elevated levels of PCBs and PBDEs were found in barnacles from a populated area.
- Compositions of CHLs, DDTs and HCHs indicated their recent use.
- Almost similar profiles of POPs were observed between barnacles and mussels.
- Barnacles can be useful bioindicators of POPs in coastal ecosystems worldwide.

GRAPHICAL ABSTRACT



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ABSTRACT

Barnacles are ubiquitous in coastal ecosystems of different geographical regions worldwide. This is the first study attempting to assess the suitability of barnacles as bioindicators of persistent organic pollutants (POPs) in coastal environments. Barnacles were collected from the coasts around Peninsular Malaysia and analyzed for POPs including polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs) and organochlorine pesticides (OCPs). Among POPs, PCBs showed the highest concentrations with elevated contributions of CB28 and CB153. As for PBDEs, BDE47 was the most frequently detected congener, while BDE209 was detected in barnacles from two stations in Port Klang and the levels reached up to >70% of total PBDE concentrations. Concentrations of OCPs detected in barnacles were in the order of CHLs > DDTs > HCHs > HCB and 4,4'-DDE and *cis*- and *trans*-chlordane were the predominant OCP compounds. A comparison with previous studies in Malaysia showed consistent levels of POPs. Green mussels collected from selected barnacles' habitats, for the sake of a comparison, showed

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