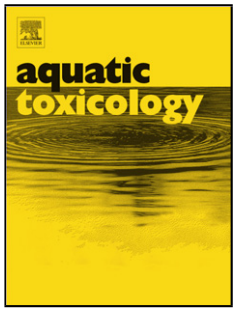

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Microplastic does not magnify the acute effect of PAH pyrene on predatory performance of a tropical fish (*Lates calcarifer*)

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Highlights:

- South China Sea is highly polluted with plastics and oil
- The combined effects of plastics and oil on juvenile barramundi were tested
- Juvenile baramundi were affected by exposure to pyrene, but not to microplastics
- Pyrene and pyrene-microplastic mixture reduced feeding rates of the juvenile
- Pyrene and pyrene-microplastic mixture impaired swimming paths of juvenile

Abstract

Microplastic (MP) leads to widespread pollution in the marine ecosystem. In addition to the physical hazard posed by ingestion of microplastic particles, concern is also on their potential as vector for transport of hydrophobic contaminants. We studied experimentally the single and interactive effects of microplastic and pyrene, a polycyclic aromatic hydrocarbon, on the swimming behaviour and predatory performance of juvenile barramundi (*Lates calcarifer*). Juveniles (18+ days post hatch) were exposed to MPs, or pyrene (100nM), or combination of both and feeding rate and foraging activity (swimming) were analyzed. Exposure to MPs alone did not significantly influence feeding performance of the juveniles, while a concentration-response series of pyrene showed strong effect on fish behaviour when concentrations were above 100 nM. In the test of combined MP and pyrene exposure we observed no effect on feeding while swimming speed showed a significant decrease. Thus, our results confirm that short-time exposure to pyrene impacts performance of fish juveniles, while additional exposure to microplastic influenced their activity but not their feeding rate at the given