*Phuket mar. biol. Cent. Res. Bull.***76:** 101–110 (2019)

DETERMINATION OF POLYCYCLIC AROMATIC HYDROCARBON METABOLITES (1-HYDROXYPYRENE AND 2-NAPHTHOL) BY GAS CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY IN SOME ROCKY SHORE MOLLUSCS CONTAMINATED WITH CRUDE OIL

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ABSTRACT: After an oil spill accident occurred along the coast of Rayong Province, Thailand in July, 2013, we investigated the effect of crude oil and polycyclic aromatic hydrocarbons (PAHs) on intertidal rocky shore molluscs in Ao Prao (Prao Bay), Samed Island. Gas chromatography-tandem mass spectrometry (GC-MS/MS) was used to determine 1-hydroxypyrene (1-HOP) and 2-naphthol (2-NAP) concentrations in three intertidal rocky molluscs; whelk (*Morula musiva*), coil snail (*Planaxis sulcatus*) and rock oyster (*Saccostrea cucullata*). We used those metabolites as biomarkers to identify molluscs contaminated by petroleum hydrocarbons. Samples were collected 5 times during August 2013 to May 2015. Results showed that 1-HOP and 2-NAP were detected in the mean concentration range of 0.039–1.421 and 0.001–0.403 ng/g wet weight, respectively. 1-HOP concentrations in an intertidal rocky shore predator, whelk (*M. musiva*), were highest among all species probably due to its feeding behaviours. Metabolite concentrations in all molluscs decreased over time. In conclusion, 1-HOP is a suitable biomarker in intertidal rocky shore molluscs contaminated with petroleum hydrocarbon, and GC-MS/MS is an effective equipment to detect these metabolites.

Keyword: 1-HOP, 2-NAP, bioaccumulation, biomarkers, GC-MS/MS, trophic chain