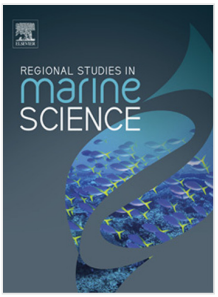
Accepted Manuscript



Assessment of PAHs occurrence and distribution in brown mussels (*Perna perna* Linnaeus 1758) subject to different levels of contamination in Brazil

Ana Beatriz A. Ramos, Cássia O. Farias, Cláudia Hamacher, Michelle Araújo

PII: S2352-4855(16)30162-1
DOI: http://dx.doi.org/10.1016/j.rsma.2017.05.005
Reference: RSMA 248

To appear in: *Regional Studies in Marine Science*

Received date: 12 September 2016
Revised date: 5 May 2017
Accepted date: 7 May 2017

Please cite this article as: Ramos, A.B.A., Farias, C.O., Hamacher, C., Araújo, M., Assessment of PAHs occurrence and distribution in brown mussels (*Perna perna* Linnaeus 1758) subject to different levels of contamination in Brazil. *Regional Studies in Marine Science* (2017), http://dx.doi.org/10.1016/j.rsma.2017.05.005

Assessment of PAHs occurrence and distribution in brown mussels (*Perna perna* Linnaeus 1758) subject to different levels of contamination in Brazil

Ana Beatriz A. Ramos[a,*], Cássia O. Farias[a], Cláudia Hamacher[a], Michelle Araújo[a]

[a] LAGOM/Faculdade de Oceanografia, Universidade do Estado do Rio de Janeiro, 20550-013 Rio de Janeiro, Brasil

* Corresponding author. Cel.: +55 21981684133.
E-mail address: bia.29.ramos@gmail.com (Ramos, A.B.A).

bia.29.ramos@gmail.com , cassiaofarias@gmail.com , claudia.hamacher@gmail.com , mxhelly@gmail.com

Abstract

Polycyclic aromatic hydrocarbons (PAHs) are broadly studied due to their deleterious effects on organisms and humans. In this paper we assess the use of brown mussels (*Perna perna)* as indicators of PAH contamination in two contrasting Brazilian coastal areas, subject to different levels of anthropogenic impact. PAHs were analyzed by GC-MS in three mussels size-classes samples. Bulk PAHs (∑PAHs) concentration varied between 432.69-700.25 $ng.g^{-1}$ in the less contaminated region (South Brazil - FMAS), and 544.91-848.78 $ng.g^{-1}$ in the more polluted area (Guanabara Bay - BG). Concentrations of ∑16PAHs varied between 38.96-63.47 $ng.g^{-1}$ and 62.92-243.59 $ng.g^{-1}$ in FMAS and BG, respectively. Our results show that FMAS and BG mussels display low to moderate contamination, confirming the use of these organisms as sentinels of environmental contamination. All samples had benzo(a)pyrene concentrations below the established European Union threshold.

Keywords:

Polycyclic aromatic hydrocarbons (PAHs)
Perna perna
Native Mussels
Cultured Mussels
Bioaccumulation
Regional contamination

1. Introduction

Increasing oil and gas industrial offshore activities in Brazil generated an augmentation in coastal ecosystem contamination by oil-derived hydrocarbons as chemical compounds contaminate water, sediments, and affect the aquatic biota.

Polycyclic aromatic hydrocarbons (PAHs) contamination have been extensively studied in (aquatic) organisms (Baumard et al., 1998a; Francioni et al., 2007a; Francioni et al., 2007b; Moon et al., 2012; Woottoon et al., 2003; Yoshimine et al., 2012; Zhao et al., 2014; among others) due to their toxicity to aquatic organisms and humans (Pereira