

{rokbox title=|Mytilus galloprovincialis :: Foto: Salud Deudero (COB-IEO)|
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Antoni Sureda, Antonio Box, Silvia Tejada, Andreu Blanco, Josep Caixach and **Salud Deudero** (2011).

[Biochemical responses of
Mytilus galloprovincialis
as biomarkers of acute environmental pollution caused by the
Don Pedro
oil spill \(Eivissa Island, Spain\).](#)

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Abstract: In the present work, the potential use of several antioxidant and detoxification biomarkers in the digestive gland of wild mussels (*Mytilus galloprovincialis*) for biomonitoring the marine pollution induced by the *Don Pedro*

oil spill has been investigated. Two locations from the East to South-East of Eivissa (Ibiza) and Formentera islands were selected, one extensively affected by the oil spill and the other one not affected and considered as the control area. Mussels were sampled one, two and six months after the Don Pedro accident. Polycyclic aromatic hydrocarbon (PAH) levels were significantly increased in the soft tissues of mussels in the affected area one month after the disaster, returning to normal values after six months. Markers of oxidative damage in lipids – malondialdehyde, and in proteins – carbonyl derivatives, and antioxidant enzyme – catalase, superoxide dismutase and glutathione peroxidase, activities significantly increased as result of the spill oil after one month, returning to basal values at two month sampling time.

Glutathione/glutathione disulfide ratio (GSH/GSSG), as a marker of the redox status, was reduced after one and two months indicating a more oxidized situation. Markers of detoxification – glutathione-S-transferase and cytochrome P4501A activities and metallothionein gene expression – were significantly increased by the oil spill one month after the accident, returning to the basal values at two month sampling time. In conclusion, the Don Pedro accident induced a transient situation of PAHs pollution resulting in enhanced antioxidant and detoxification defense systems in the wild mussel

M. galloprovincialis

returning to normal levels six months from the spill. The selected biomarkers are a useful tool for biomonitoring the response to acute exposure to pollutants in marine mussels.

Keywords: Biomarkers; *Mytilus galloprovincialis*; Antioxidant enzymes; Detoxification; Oil spill;

PAHs