

Supplementary File for

Impact of Physically and Chemically Dispersed Crude Oil on the Antioxidant Defense Capacities and Non-Specific Immune Responses in Sea Cucumber (*Apostichopus japonicus*)

Xishan Li ¹, Yuhang Zou ^{1,2}, Hao Xuan ^{3,*}, Wei Yang ¹, Guoxiang Liao ², Chengyan Wang ¹ and Deqi Xiong ^{1,*}

¹ College of Environmental Science and Engineering, Dalian Maritime University, Dalian 116026, China

² National Marine Environmental Monitoring Center, Dalian 116023, China

³ Appraisal Center for Environment and Engineering, Ministry of Ecology and Environment, Beijing 100006, China

* Correspondence: xuanhao@acee.org.cn (H.X.); xiongdaq@dlmu.edu.cn (D.X.); Tel.: +86-0411-8472-9615 (D.X.)

Supplementary Material

Table S1. Contents of 16 priority PAHs (Σ PAHs) listed by the US Environmental Protection Agency (EPA) [1] in the physically (Low-energy water-accommodated fractions, LEWAF) and chemically (Chemically enhanced water-accommodated fractions (dispersed by GM-2 chemical dispersant), CEWAF) dispersed Oman crude oil exposure solutions.

Number of Rings	PAH	PAH content ($\mu\text{g/L}$)	
		LEWAF	CEWAF
2-ring	naphthalene	0.93	1.87
	acenaphthylene	0.05	0.12
	acenaphthene	0.17	0.44
	fluorene	0.15	0.20
3-ring	phenanthrene	0.21	0.75
	anthracene	0.07	0.16
	fluoranthene	0.07	0.14
4-ring	pyrene	0.05	0.18
	benzo[a]anthracene	0.06	0.22
	chrysene	0.05	0.32
	benzo[b]fluoranthene	0.08	0.12
	benzo[k]fluoranthene	0.06	0.17
≥ 5 -ring	benzo[a]pyrene	0.07	0.25
	indeno[1,2,3-cd]pyrene	0.07	0.31
	dibenzo[a,h]anthracene	0.11	0.28
	benzo[g,h,i]perylene	0.05	0.15
Σ PAHs		2.25	5.68

Table S2. The water quality characteristics of the maintenance water and exposure solutions.

Item	Temperature (°C)	Salinity (‰)	pH	Dissolved oxygen (mg/L)
Maintenance water	16.1 ± 0.5	32.0 ± 0.5	7.15 ± 0.32	7.95 ± 0.21
Control	16.1 ± 0.5	32.0 ± 0.5	7.15 ± 0.32	7.95 ± 0.21
DISP	16.3 ± 0.4	32.1 ± 0.2	7.35 ± 0.27	7.74 ± 0.27
LEWAF	16.5 ± 0.5	32.0 ± 0.4	7.09 ± 0.15	7.65 ± 0.35
CEWAF	16.1 ± 0.6	32.1 ± 0.7	7.01 ± 0.11	7.57 ± 0.37

References

1. EPA. Method 610: Polynuclear aromatic hydrocarbons. U.S. Environmental Protection Agency (EPA): Washington, DC, USA, 1984; p 25.