Evaluation of the accumulation and origin of polycyclic aromatic hydrocarbons (PAHs)in water, Sediment and brown algae *Cystoseira indica* in the northern coast of Makoran Sea

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Abstract

Polycyclic aromatic hydrocarbons (PAHs), due to their high toxicity, are important organic compounds in the soil and water ecosystems and are very dangerous for aquatic animals. This study was carried out on the northern coast of the Gulf of Oman in November 2017. PAHs concentration was determined in coastal sediment, water and brown algae (Cystoseira indica) in ten different sampling sites along the northern coasts of Oman Sea. The concentration of PAHs compounds was measured by HPLC. The mean concentration of total PAHs compounds in the sediment, water and algae (C.indica) samples were 62.98 ng/g.dw, 3.71 µg/l, and 6.003 ng/g.dw, respectively. Significant differences were found between the highest and lowest rate of contamination in Chabahar Bay and Pasabandar sites, respectively ($P<0.05$). These cases indicate that contamination of polycyclic aromatic hydrocarbons in sediments on the northern coast of the Makoran Sea is lower than global standards. The Fluoranthene/Pyrene and Chrysene/benzo (a) anthracene pointed to petrogenic origin and in some cases pyrolytic source was established. This finding revealed a negative eco-risk effects occasionally occur in this area.

Keywords: Polycyclic aromatic hydrocarbons, Makoran Sea, Algae, Sediment, Water, *Cystoseira indica*.