

Ethoxyresorufin-*O*-deethylase activity in oil effluent exposed crustacea (*Macrobrachium malcolmsonii*)

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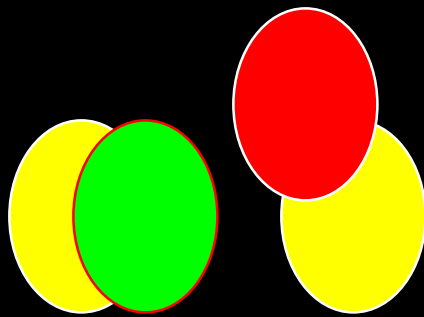
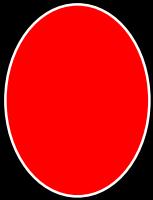
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Introduction

- **Cytochrome P450 is a heme protein involved in the metabolism of xenobiotic compound**
- **CYP 1A (EROD) is widely used as biomarker to organic pollution in marine environment**
- **Knowledge of induced response of CYP1A in invertebrates is poor**

CYP1A induction mechanism in vertebrate organism

Toxic compound

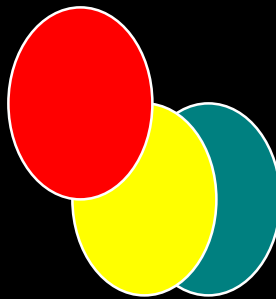


Ah Receptor & HSP90

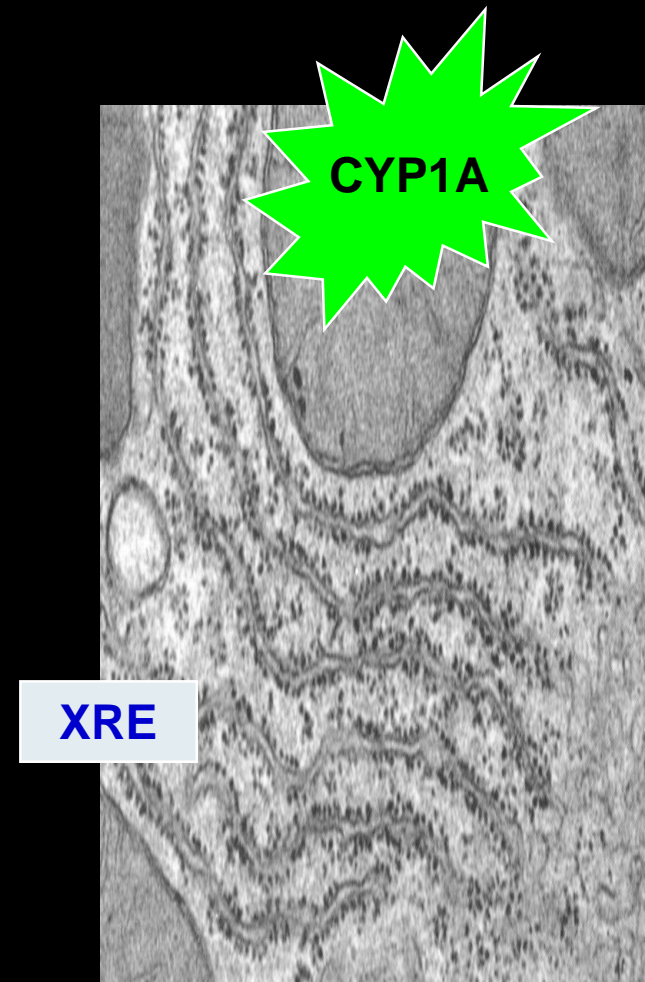


ARNT

CYP1A induction mechanism in vertebrate organism



*Toxic compound
Ah Receptor &
ARNT complex*



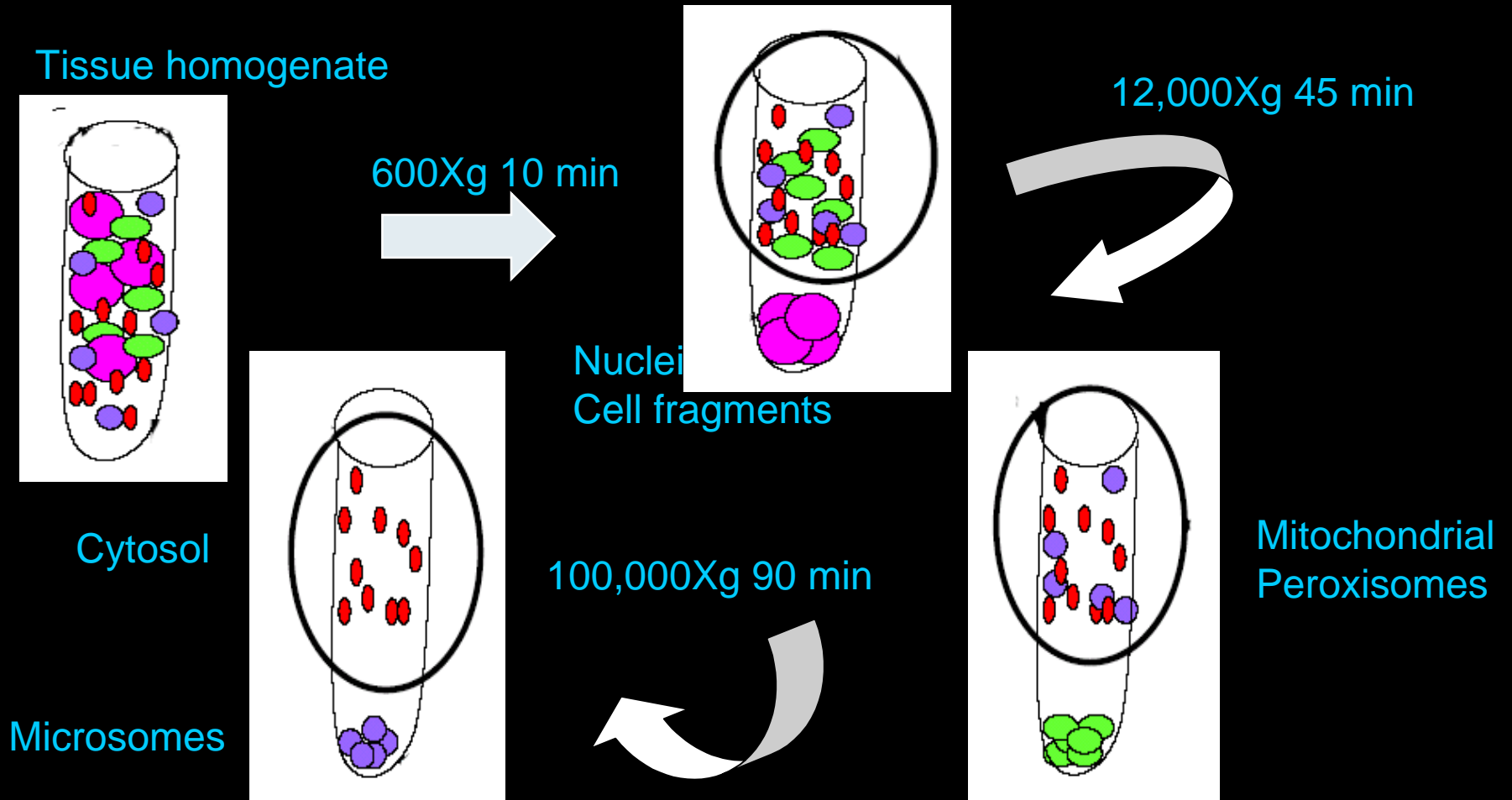
Objectives

- **There is no detailed information available on invertebrates AhR functional relationship with hydrocarbon and CYP1A inducibility.**
- **In this study we made an attempt to find out the presence of EROD (CYP1A) activity in crustacean larvae**
- **In addition the response of EROD activity in *M.malcolmsonii* were analyzed against oil derived hydrocarbons.**

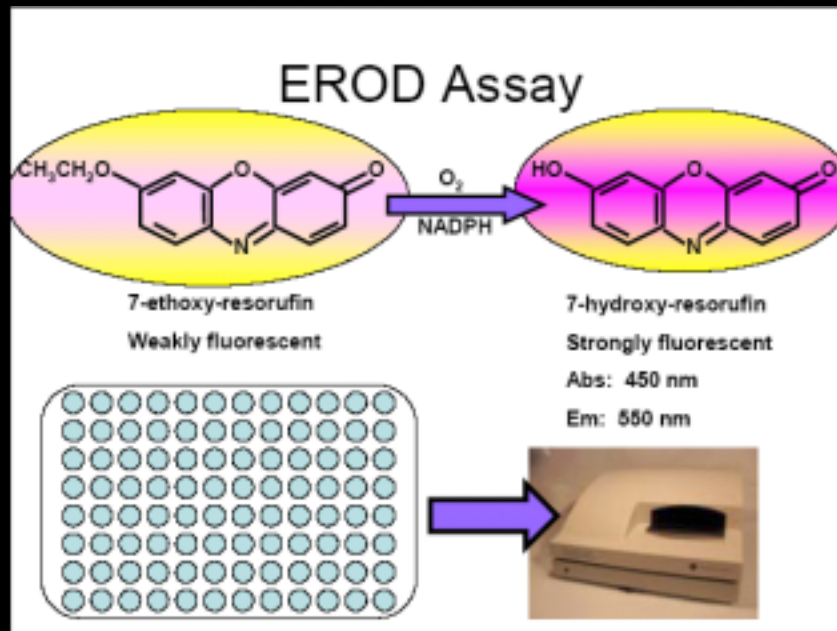
Materials methods

- **In this study, crustacean larvae, subadult and adult (*M.malcolmsonii*) were used as test species and EROD activities were measured**
- **The adult prawns were exposed to oil effluent (25% of LC50 ie., 2.3ppt) and increased response of EROD activities was measured**
- **The content of total hydrocarbon was measured with a florescence spectrophotometer (Ex 310nm; Em.360nm) using chrysene as a standard**

Subcellular fractionation (Livingstone and Farrar., 1984)



CYP1A (EROD) enzyme activity



EROD activity was measured by the method of Burke and Mayer 1974.

The formation of the product resorufin was monitored.

**Figure 1: EROD activity in larvae(1),subadult(2) and adult(3)
of *M. malcolmsonii***

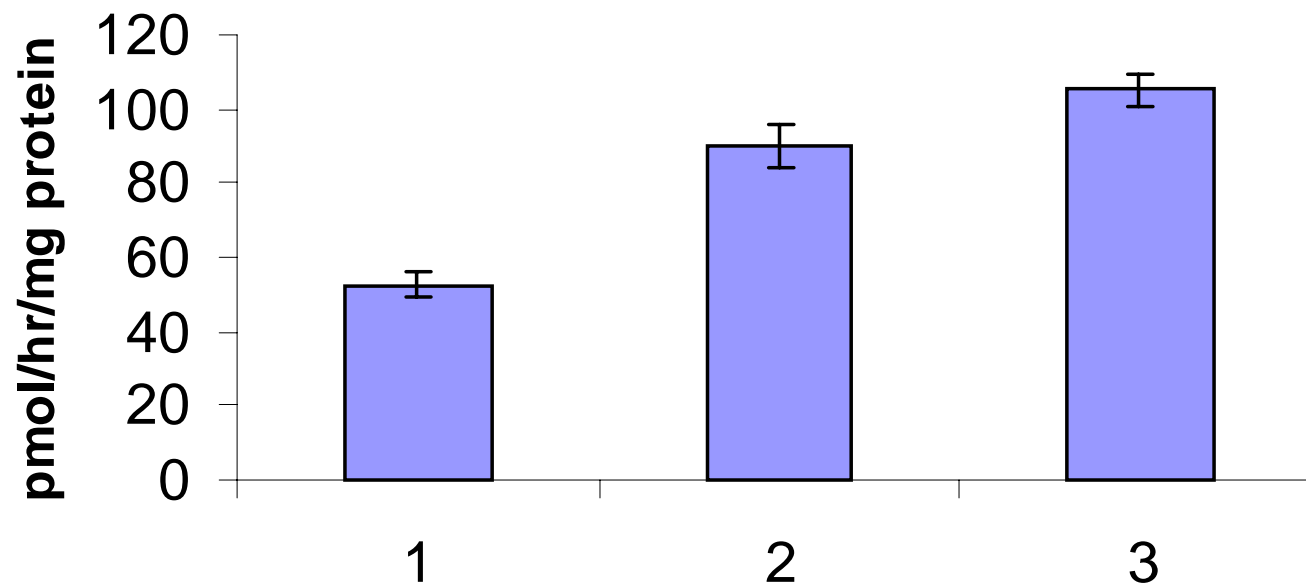
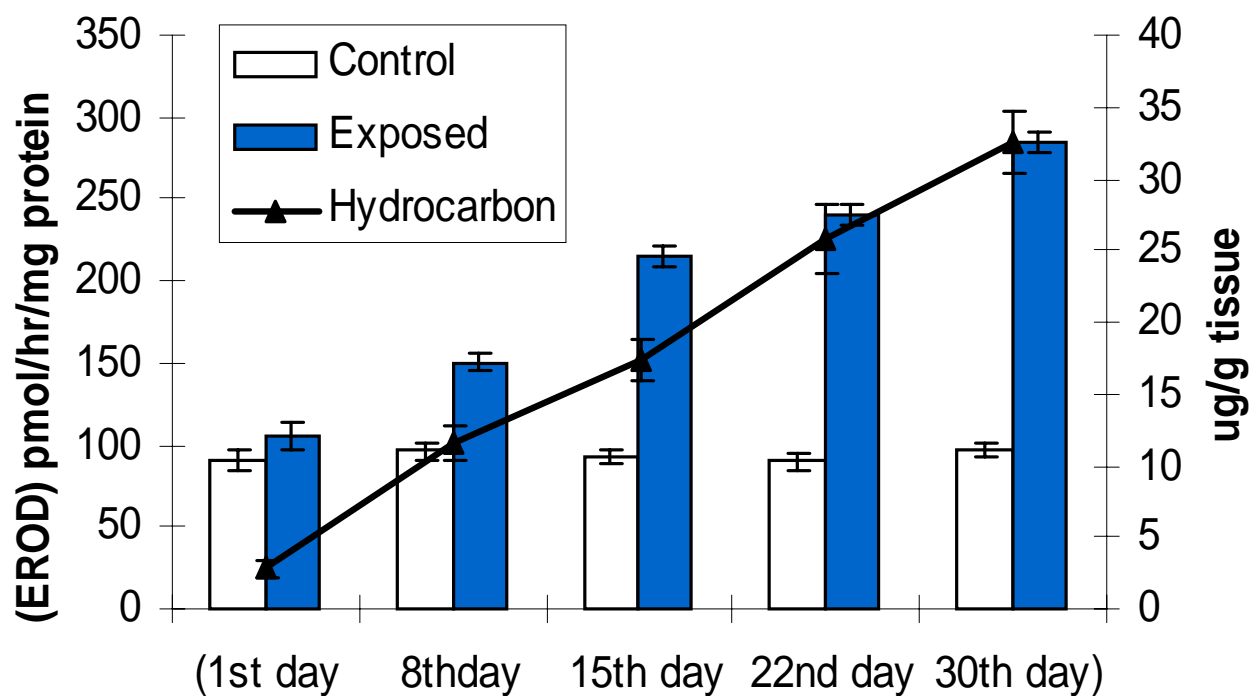


Figure 2: Level of accumulated hydrocarbons and EROD responses in *M. malcolmsonii*

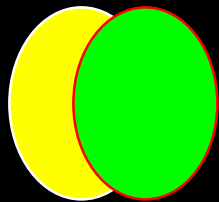


Does CYP1A isoforms exist in invertebrates??

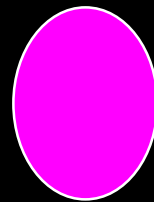


Toxic compound

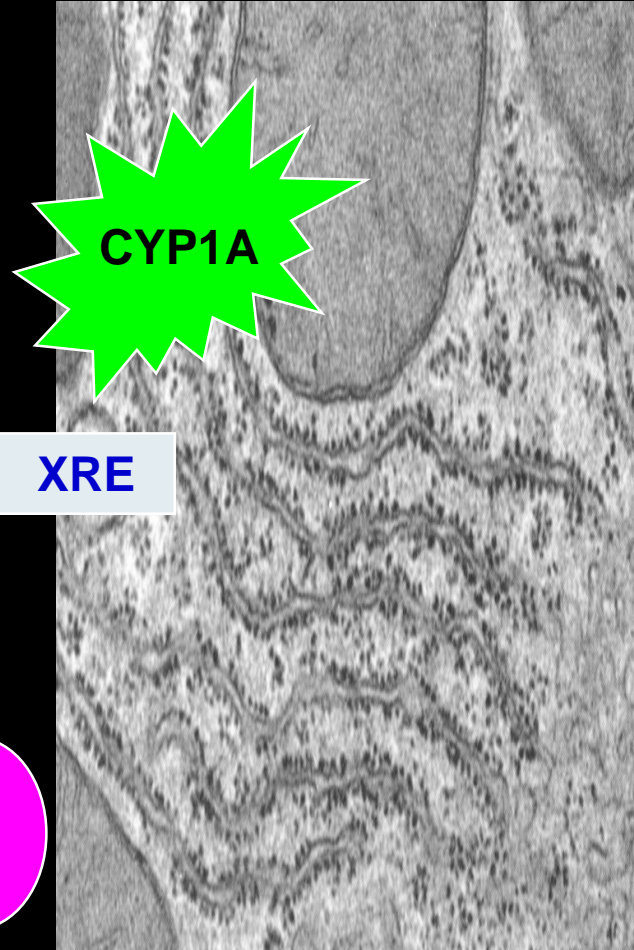
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Ah Receptor & HSP90



Steroid receptor





Acknowledgement

- **DST- INDIA for financial support**