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1.

524088 2.

524088

14

3.

110034

25 50 100 200 400  $\mu\text{g/L}$ 

3-

3-MC

7

3-MC

14

3-MC

3-MC

2008-09-15(2008)04-0091-04

## Preliminary Studies on Histopathological Changes in Zebrafish Exposure to 3-Methylcholanthrene

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**Abstract:** A range of zebrafish (*Danio rerio*) were exposed to 3-methylcholanthrene (3-MC) by water pollution at the doses of 25  $\mu\text{g/L}$ , 50  $\mu\text{g/L}$ , 100  $\mu\text{g/L}$ , 200  $\mu\text{g/L}$  and 400  $\mu\text{g/L}$ , respectively. On the 7<sup>th</sup> day and 14<sup>th</sup> day of exposure to 3-MC, the liver, gill, heart, intestine and kidney of the fish were collected to observe histopathological changes. It was found that the hepatocytes were denaturalized with fat drops in the cellular plasma and even showed necroses or disaggregation and obscure cellular borderlines, that there were atrophies and necroses in cardiac cells, that the villuses of the enteric epithelia were out of order and even fallen off, that the secondary lamella of the gill became coarse and some of the epithelia were lost, and that the epithelia of the renal tubules were swollen and the cellular borderlines were not clear, with even red dye in some tubules. It was also found that there were, to some extent, dose-effect and time-effect relationships between the histopathological changes and 3-MC.

**Key words:** 3-methylcholanthrene, toxicity, histopathology, zebrafish (*Danio rerio*)

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3-methylcholanthrene 3-MC

 $\text{C}_{12}\text{H}_{16}$ 

(dioxin-like compounds DLCs)

1981—  
1967—

国家自然科学基金项目“几种 DLCs 对斑马鱼 CYP1A 的生化毒理学机理研究”(05011789); 广东省国际合作项目“斑马鱼生志 CYP1A 在 DLCs 环境污染监测中的应用研究”(2007B050200023)

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P4501A  
[1]  
(Actinopterygii)  
(*Danio*)

CYP1A  
(*Danio rerio*)  
(Cyprinidae)

4 cm 5 cm<sup>[2]</sup> pH 3 25 14 3 1 2  
31 °C

[3,4] 3-MC

3-MC

1 材料与方法  
1.1 试剂  
3-methylcholanthrene 3-MC  
SUPELCO DMSO

(*Danio rerio*)

2.8 3.5 cm 0.3 0.4 g

2 方法  
2.1 斑马鱼分组 25 28 °C

1.2 染毒  
1.2.1 斑马鱼分组 6 16  
1 2 6

1.2.2 染毒  
0.1% DMSO 3-MC  
25 50 100 200 400 µg/L 2  
3 4 5 6

1.2.3 组织切片的制备

7 14  
Bouin

5 µm - HE

1.2.4 E200  
Nikon ECLIPSE

2 结果  
2.1 肝脏组织学

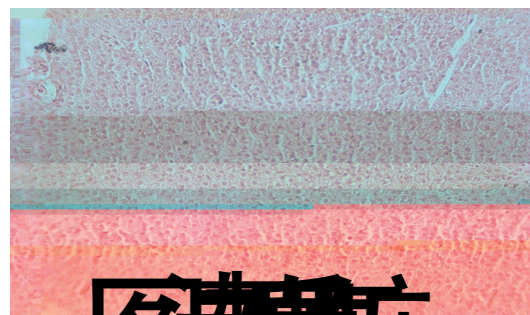


Fig.1 The liver exposed to 3-MC for 7 days

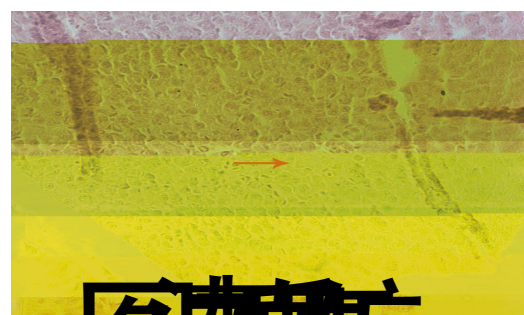


Fig.2 The liver exposed to 3-MC for 7 days

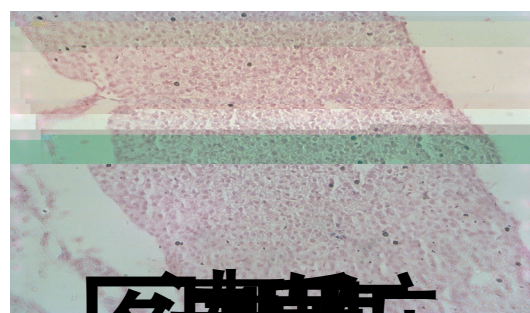


Fig.3 The liver exposed to 3-MC for 14 days

2.2

14

4

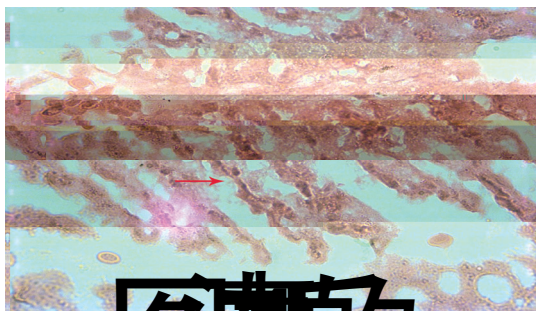


Figure 2.3 The liver exposed to 3-MC for 14 days (HE)

2.3

7

14

5

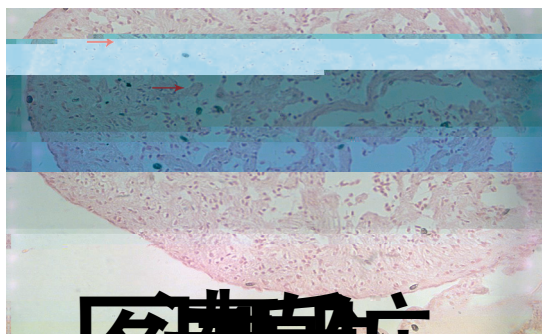


Figure 2.4 The liver exposed to 3-MC for 14 days (HE)

2.4

7

14

Figure 2.5 The liver exposed to 3-MC for 14 days (HE)

2.5

7

14

7

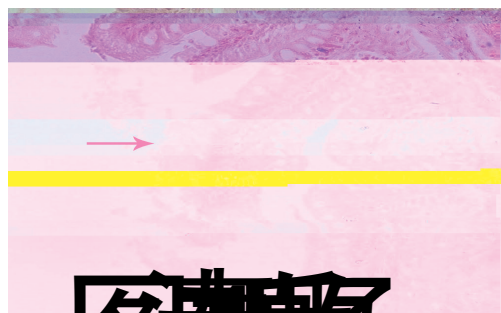


Figure 6 The intestine exposed to 3-MC for 14 days (HE)

Fig.6 The intestine exposed to 3-MC for 14 days

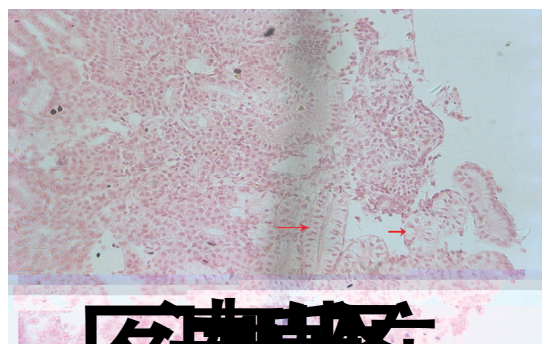


Figure 7 The kidney exposed to 3-MC for 14 days (HE)

Fig.6 The kidney exposed to 3-MC for 14 days

### 3 讨论

3-MC

3-MC  
(aryl hydrocarbon receptor AhR)  
P450  
1A(cytochrome P4501A CYP1A)  
[5-9]  
Norrgrnt Engwall PCBs

[10,11] Zodrow 2,3,7,8-  
70 ng/g 1 5 d  
[12]

3-MC  
3-MC

3-MC

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3-MC

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