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Title: Diclofenac affects kidney histopathology in the three-spined stickleback (*Gasterosteus aculeatus*) at low  $\mu\text{g/L}$  concentrations

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**Diclofenac affects kidney histopathology in the three-spined stickleback  
(*Gasterosteus aculeatus*) at low µg/L concentrations**

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#### Highlights

- Diclofenac causes renal hematopoietic hyperplasia in sticklebacks at 4.6 µg/L
- Histological changes followed a clear concentration response
- The increase in hepatic *c7* mRNA followed a clear concentration' response
- Observed changes suggests possible effects on immune function
- Effects at low µg/L levels cause concern for fish exposed to sewage effluents

#### Abstract

Diclofenac, a commonly used non-steroidal anti-inflammatory drug, is considered for

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