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Behavioural responses of fish larvae modulated by analgesic drugs after a stress exposure

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Highlights

- Exposure to 10% soda water reduced locomotor activity in larval zebrafish
- Administration of analgesics ameliorated the noxious effects of carbon dioxide
- These results suggest the activation of nociceptive pathways upon exposure to CO₂

Abstract

Fish are known to respond to a wide range of irritant chemicals, displaying clear behavioural changes after exposure to potentially noxious stimuli. Recent evidence shows that these agents can have an impact on larval forms of fish. However, very little information is available on the effects of carbon dioxide (CO₂) on these stages. Therefore, five days post-fertilisation zebrafish were exposed to a preparation containing CO₂ (10% soda water, 7.53 mmol/l CO₂) for 10 minutes and the behavioural response of the fish (percentage time spent active) recorded. In addition, exposure to the analgesic compounds aspirin, lidocaine, morphine and flunixin via immersion was investigated. Larvae exhibited a significant reduction in activity from the pre- to the post-stimulation period when exposed to the soda water (reduced by 18.9%), whereas lidocaine 5 mg/l and morphine 48 mg/l ameliorated

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