

Pain perception in crayfish (*Astacus astacus*): empirical observations and ethical consequences

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Abstract

In Belgium a public debate on pain perception in crustaceans was sparked upon a popular television program showing the life dismembering and grilling of lobsters by a top-chef. In crayfish little is known about pain perception, the transmission of nociceptive information to the brain that is associated with a more complex emotional component. We assessed the effect of electrical shocks on the noble crayfish (*Astacus astacus*), the reaction of crayfish to a newly introduced object and the differences in response towards familiar and unfamiliar objects. There were significant differences in activity among shocked and non-shocked crayfish. Noble crayfish that did not receive a shock did not approach the unfamiliar object during the first fifteen minutes after the introduction. The shocked animals approached the objects significantly more and with a lower latency time than the non-shocked crayfish, indicating a lower neophobia after experiencing a noxious stimulation. Crayfish outside their shelter after receiving a shock appeared disorientated as they were seen to bump their head against the novel object or were unable to enter their shelter. Nociception may capture the animal's attention or prevent it to respond to its innate distrust for the novel object. However, it was not confirmed that due to the neophobia the non-shocked crayfish would react differently towards a novel versus familiar object. The results are clear indications of nociception in crayfish and there is evidence of an altered state of attention. These preliminary results are relevant in the animal welfare debate and merit further investigation. If they can be confirmed, there is a strong incentive to reevaluate a significant part of legislation and the animal welfare and ethics literature.

Keywords

nociception, animal welfare, stunning