Anaesthesia of Lumpfish (Cyclopterus lumpus) fries.

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ABSTRACT

Large numbers of lumpfish are produced for the Norwegian salmon industry and are used to combat sea lice infestations. The present work tested the efficacy of three anaesthetic chemicals on lumpfish fries (average weight of 0.97 g).

EXTERNAL LINK

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PROTOCOL STATUS

Working

Prepare anaesthetic bath for immersion anaesthesia.

1 The following chemicals and concentrations were used in our study:Liquid Benzoak was stirred into seawater (12.5, 25, 37.5, 50, 100 mg/L), metacaine powder and the corresponding weight of sodium bicarbonate (Na2CO3) were dissolved in seawater at concentrations of 25, 38, 44, 60, 75, 100, and 150 mg/L. Isoeugenol (540 mg/ml) was diluted in ~5 mL heated (30oC) water prior to being added to the seawater to yield 6, 12.5, 18, 25, and 50 mg/L.

Immersion anaesthesia.

2 Transfer individual lumpfish fries from the holding tank into an aerated transparent box (5L) containing pre-mixed chemicals.

3 The time to induce stage 3b was measured for 10 lumpfish. The fish were considered to be surgically anaesthetized (known as stage 3b) at the last behavioural stage (immobile and weak respiration). Observations were terminated if the anaesthesia was not reached within 10 min (600 sec), while the chemical concentrations inducing stage 3b within ~3 to 5 min were regarded as the Selected Best (SB) concentrations.

Recovery - therapeutic window.

4 To investigate the safety margin of the anaesthetics (therapeutic window) batches of 10 lumpfish were exposed to the SB anaesthetic concentration for 5, 10, and 20 min.

5 Thereafter, the fries were transferred to individual containers (~1 L) holding only seawater.

6 The time to full recovery (the point at which they managed to swim normally) was measured. Observations were terminated (T) if the fish had not recovered within 15 min (900 sec).