

USE OF CLOVE OIL IN SEDATING FEMALE WILD GUPPY (*POECILIA RETICULATA*) FOR AN EXTENDED PERIOD OF TIME

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Sedation of fish reduces stress, injury and accidents during handling and transportation. Clove oil is one of the substances that has been used for sedating fish with impressive effects. It is comparatively cheap, readily available, and effective and leaves no residual effects in fish. The present study was conducted to determine the safe and effective range of concentrations that can be used to sedate female wild guppies for a period of 12 hours.

Clove oil (BDH UK; 1.041 to 1.054 g/ml) was mixed with fresh water at rates of 18 µl/l, 19 µl/l, 20 µl/l, 21 µl/l, 22 µl/l and 23µl/l to make anaesthetic baths. Age matched, female wild guppies (175 individuals) were anaesthetized with 25 fish in each concentration including a group (control) without clove oil. Numbers of individuals in different stages ("mild sedation", "deep sedation" and "anaesthesia") of anesthesia were counted every hour for 12 hrs and recovery times were taken after transferring them in to fresh water.

Small proportions of fish (8 % and 32 %) in clove oil concentrations of 18µl/l and 19 µl/l respectively showed behavioral changes (mild sedation) at the end of the first hour. All the fish were in mild sedation after one hour of exposure in the clove oil concentration of 20 µl /l. Clove oil concentration of 22 µl/l and 23 µl/l contained a mixture of mildly sedated, deeply sedated and anaesthetized fish after one hour of exposure.

Many fish (84% and 48%) in clove oil concentrations of 18 µl/l and 19µl/ respectively did not show any behavioral changes during the experimental period of 12 hours Twelve-hour exposure with clove oil concentrations of 22 µl/l and 23 µl/l was lethal to a major proportion of fish (44% and 64 % respectively). Majority of fish (88 %) were in mild sedation while the rest (12 %) were in deep sedation in the clove oil concentration of 20 µl/l. Clove oil concentration of 21 µl/l could anesthetize a small proportion of fish (8 %) while the rest were in either mild (44 %) or deep sedation (48 %). All the fish in clove oil concentrations of 20 µl/l and 21 µl/l for 12 hours, recovered within 10 minutes after introducing in to fresh water. None of the individuals in the control groups exhibited any signs of loosing equilibrium during the experimental period of 12 hours.

Clove oil appears to be an effective sedative for female wild guppies. The test concentrations that gave best sedative effects were 20 µl/l and 21µl/l. For procedures requiring mild sedation for an extended period of time, clove oil concentration of 20 µl/l can be recommended while 21µl/l can be recommended for procedures requiring deep sedative effect for wild guppies.