ANIMAL HEALTH & WELFARE (/ADVOCATE/CATEGORY/ANIMAL-HEALTH-WELFARE)

Study finds alternative anesthetic safe for tilapia fingerlings, breeders

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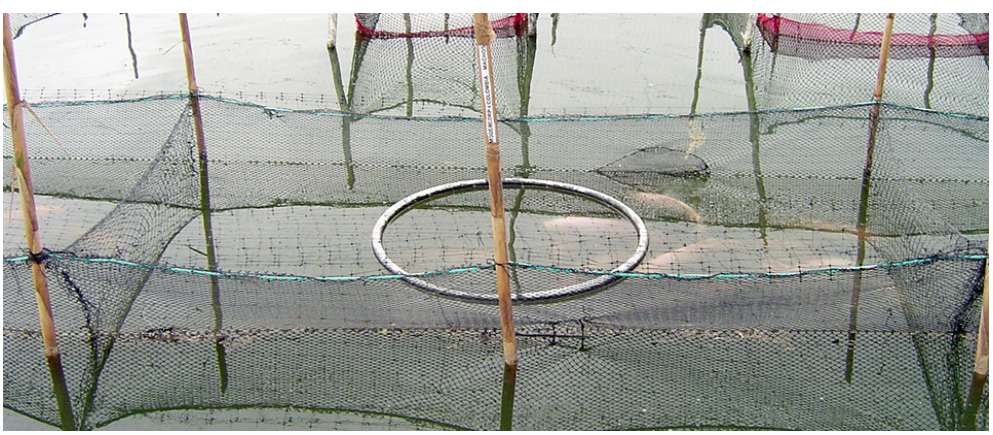
By César Molina, M.S. and Luis Vásconez

Authors evaluate Eugenol in trials



After anesthetic exposure, the tilapia were placed in ponds for observation and recovery.

Several chemicals have been used to anesthetize fish, but conventional anesthetics such as tricaine methane sulphonate, 2 methilquinoline and 2-phenoxyethanol are toxic to some species and can be expensive. Studies have proposed the use of anesthetics from natural sources as alternatives to conventional chemicals.

Sold as Eugenol, 4-alyl-2-metoxy-fenol has been proposed as an anesthetic/sedative by several authors. The authors recently evaluated its efficacy as an alternative anesthetic for red tilapia fingerlings and breeders.

Tilapia study

Five sex-reversed fingerlings with an average weight of 12.5 grams and three breeders with average weight of 1.07 kg were maintained in 10- and 40-L tanks, respectively. During the experiment, dissolved-oxygen concentration was 3.7 mg/L, pH was 6.5 and water temperature averaged 25.7 degrees-C.

To determine anesthetic efficacy and optimal dosage, the fingerlings and breeders were exposed to concentrations of 5, 30, 45 and 60 µL/L and 30, 50, 70 and 90 µL/L Eugenol, respectively. Each dose was evaluated in triplicate.

The fish were maintained in a container of anesthetic until they showed a loss of reflex reactivity. Sedated tilapia were placed in pond cages to establish recovery time and percentage of survival after 72 hours.

Results

Based on the study work, suitable dosing will depend on how long the desired activity takes to be performed with the anesthetized animals. If short induction and recovery times are required at least cost, suitable concentrations for tilapia fingerlings and breeders would be 30 µL/L (Table 1) and 50 µL/L (Table 2), respectively. These doses were used many times at commercial scale with good results.

The tilapia breeders required longer induction and recovery times than the juveniles due to their higher body weight. After 72 hours, there were no dead juveniles or breeders in any treatment evaluated. When released from the pond cages, the tested tilapia exhibited normal activity.

The tilapia responses to Eugenol in all cases were the same. At the beginning of exposure, there was an acceleration of opercular movement, followed by a state of calm, decreased opercular rate, loss of equilibrium, little movement of caudal fin and, finally, total loss of reactivity.

During recovery, the first activity noted was an increased opercular rate, followed by a movement of caudal and ventral fins. The fish were finally able to swim and react normally.

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Authors

CÉSAR MOLINA, M.S.
Industrial Procesadora Santay S.A
Km 4.5 vía Duran-Tambo, Ecuador
Tambo, Ecuador
cmolinapoveda@gmail.com (mailto:cmolinapoveda@gmail.com)

LUIS VÁSCONEZ
Procesadora Nacional de Alimentos C.A.
Centro Comercial El Terminal
Guayaquil, Ecuador