# COMPARATIVE EFFECTIVENESS OF 2-PHENOXYETHANOL AND PROPISCIN AS ANESTHETICS FOR LARVAL SEA BASS *DICENTRARCHUS LABRAX* L.

Ivona Mladineo

Institute of Oceanography and Fisheries, Split, Croatia - mladineo@izor.hr

**Abstract**

The comparative effectiveness of 2-phenoxyethanol and Propiscin as anesthetic was studied for larval sea bass (*Dicentrarchus labrax* L.). Both anesthetics showed good hypnotic characteristics. However Propiscin induced slower anesthesia than of 2-phenoxyethanol at the same concentrations. The most suitable concentration for anesthesia was 0.56 ml/l for Propiscin and 0.32 ml/l for 2-phenoxyethanol. Based on the results of the experiments it can be concluded that the 2-phenoxyethanol is more suitable for larval sea bass anesthesia.

*Keywords: Larval sea bass, 2-phenoxyethanol, Propiscin, anesthesia*

## Introduction

2-Phenoxyethanol or Ethylene Glycol Monophenyl Ether (EGPE) is used for anesthesia in freshwater fisheries for routine work, because of its fast effect, good and quick recovery time provided that the exposition to the drug is not very long (1, 2).

The other widely used and effective anesthetic in freshwater fish culture is Propiscin (IRS, Polland), containing 0.2% stabilized solution of etomidate, which is a non-barbiturate hypnotic. It is adequate, especially for freshwater fishes, because of its high solubility in water, effectiveness and safety (3, 4, 5).

The purpose of the study was to examine the effectiveness of mentioned anesthetics, which are widely and successfully used in freshwater culture, for possible applications in sea bass' rearing.

## Materials and methods

Three hundred larval sea bass (*Dicentrarchus labrax* L.), weighting 0.39 ± 0.1 g, were collected from a nearby hatchery and left for an acclimatization period of 14 days in 500-l polyvinyl pots with a circulating system.

The onset of different phases of anesthetic and recovery was measured in seconds and minutes according to (6). Phase I is characterized by physiological position, increased activity, restlessness and irregular respiratory motion; phase IIa with decreased activity, tilting on the flank, slower and deeper respiratory motion; phase IIb with flank position, loss of motility and deep retarding respiration and phase III with flank position and blocked respiratory motions.

## Results and discussion

Duration of specific anesthesia and recovery phases for different concentrations of 2-phenoxyethanol and Propiscin are shown in Tables 1 and 2. Both anesthetics showed good hypnotic characteristics. Propiscin did not show the same capacity to induce faster anesthesia with slower recovery period than 2-phenoxyethanol, as suggested in earlier experiments with freshwater fishes (6). Propiscin concentration most suitable for anesthesia was 0.56 ml/l. In the case of 2-phenoxyethanol, the concentration of 0.32 mg/l slowest induced the IIb phase of anesthesia, but the excitation stage was not sharp and fast. The recovery period at same concentration was the longest, but most safe and unstressful for the fish in means that awaking was smooth without erratic movements, thus pointing this concentration to be the safest for the larvae.

It can be concluded that the 2-phenoxyethanol is more suitable than Propiscin for larval sea bass anesthesia and appropriate anesthesia phases are achieved much faster than with Propiscin.

**Table 1. Duration of anasthesia and recovery phases of 2-phenoxyethanol at different concentrations.**

| anasthesia | 0.32 mg/l | 0.56 mg/l | 1 mg/l |
|---|---|---|---|
| I | 10" | 6" | 3" |
| IIa | 1'38" | 47" | 38" |
| IIb | 9'40" | 4'15" | 2'50' |
| recovery | | | |
| IIb | 1'09" | 56" | 1' |
| IIa | 2'01" | 1'30" | 1'47" |
| I | 2'33" | 1'51" | 2'51" |

**Table 2. Duration of anasthesia and recovery phases of Propiscin at different concentrations.** The asterix (*) is for concentrations that had to long IIb phase of anaesthesia.

| anasthesia | 0.1mg/l | 0.18 mg/l | 0,32 mg/l | 0.56 mg/l | 1 mg/l |
|---|---|---|---|---|---|
| I | 2'40" | 30" | 18" | 13" | 8" |
| IIa | 4'26" | 3'58" | 2'30" | 1'22" | 1'10" |
| IIb | 40'10" | >60' | 26'03" | 1'10" | 6'40" |
| recovery | | | | | |
| IIb | * | * | 1'48" | 29" | 1'35" |
| IIa | * | * | 5'40" | 1'18" | 2'44" |
| I | * | * | 7'51" | 5'12" | 8'51" |

## References

1 - Idler D.R., McBride J.R., Jonas R.E.E., and Tomlinson N., 1961. Olfactory perception in migrating salmon. *Cannadian J. Biochem. Physiol.*, 39: 1575-1584.

2 - Sehdev H.S., McBride J.R., and Fagerland U.H.M., 1963. 2-Phenoxyethanol as a general anaesthetic for sockeye salmon. *J. Fish. Res. Bd. Canada.*, 20(6): 1435-1440.

3 - Amend D.F., Goven B., and Elliot D.G., 1982. Etomidate: effective dosages for a new fish anaesthetic. Trans. *Am. Fish. Soc.*, 111: 337-341.

4 - Plumb J.A., Schwedler T.E., and Limsuwan C., 1983. Experimental anaesthesia of three species of freshwater fish with etomidae. *Prog. Fish-Cult.*, 45(1): 30-33.

5 - Kouřil J., Stupka Z., Hamáčková J., and Lepičková A., 2001. The Preliminary Results of Effect of Three Anaestetics on Various Fish Species (in Czech). Pp. 131-136. *In*: Kolářova J. *et al.* (ed.): Ochrana zdravi ryb. VÚRH JU Vodňany..

6 - Hamáčková J., Sedova M.A., Pjanova S.V., and Lepičová, A., 2001. The effect of 2-phenoxyethanol, clove oil and Propiscin anaesthetics on perch (*Perca fluviatilis*) in relation to water temperature. *Czech. J. Anim. Sci.*, 46: 469-473.