

SEDATION AND ANESTHESIA IN FISH EVALUATION OF MS-222 AND BENZOCAINE USE IN *AMPHIPRION OCELLARIS*

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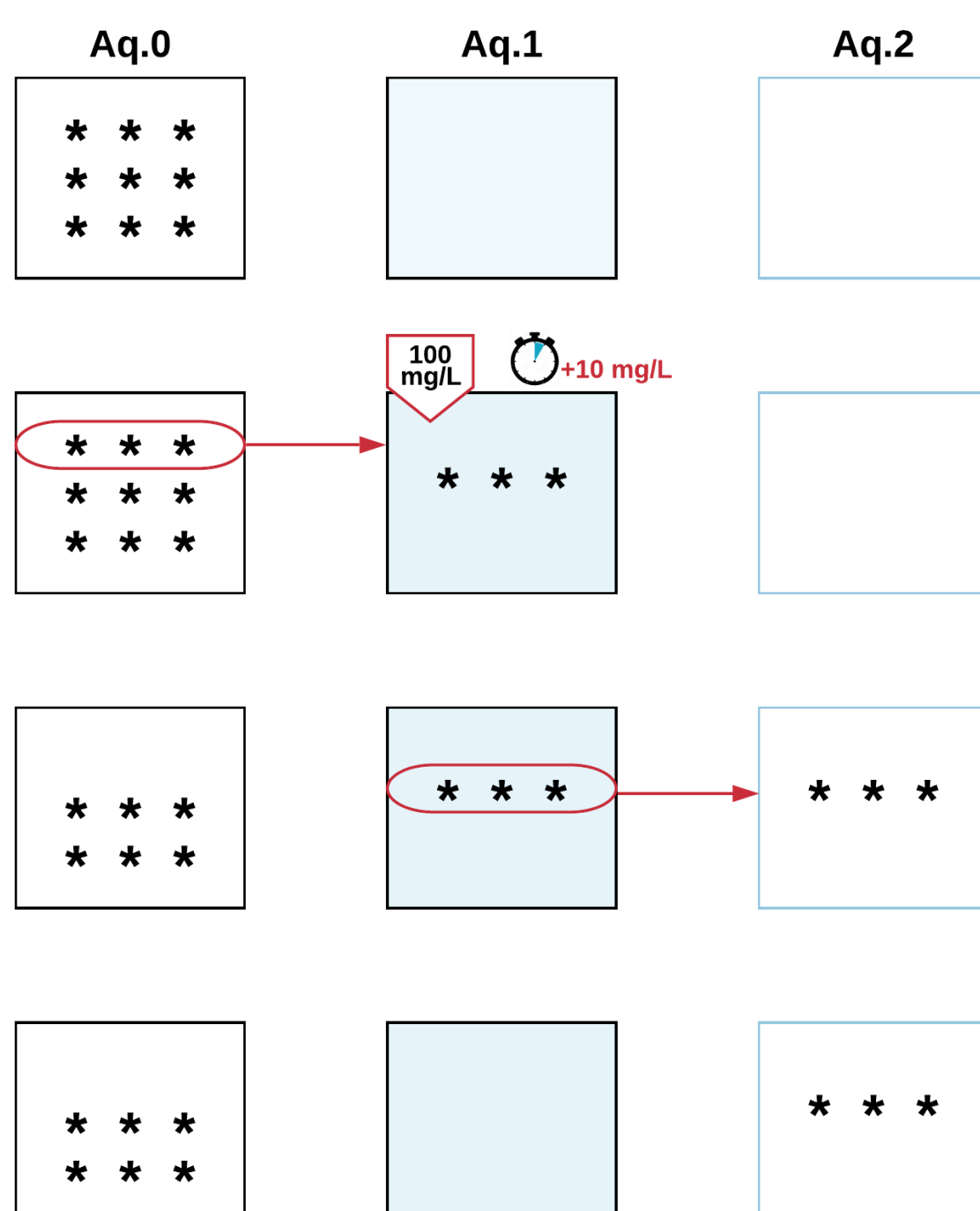
AIM OF THE STUDY

This project has been designed to conduct a comparative study of the effectiveness of two anesthetics, as MS-222 and benzocaine*, to decide which of them may be more appropriate to develop sedation or anesthesia in the *Amphiprion ocellaris* species. Improving knowledge about the use of both anesthetics and acquire new knowledge on anesthetic methods in the *A. ocellaris* management, as it is a common ornamental fish of which lacks information in this field.

*Due to COVID-19 situation the whole study couldn't be performed, especially the benzocaine study. A bibliographic comparison was made instead.

ANESTHESIC PROCEDURE WITH MS-222

9 fish of the *A. ocellaris* species, also called Clownfish, have been used in batches of 3.



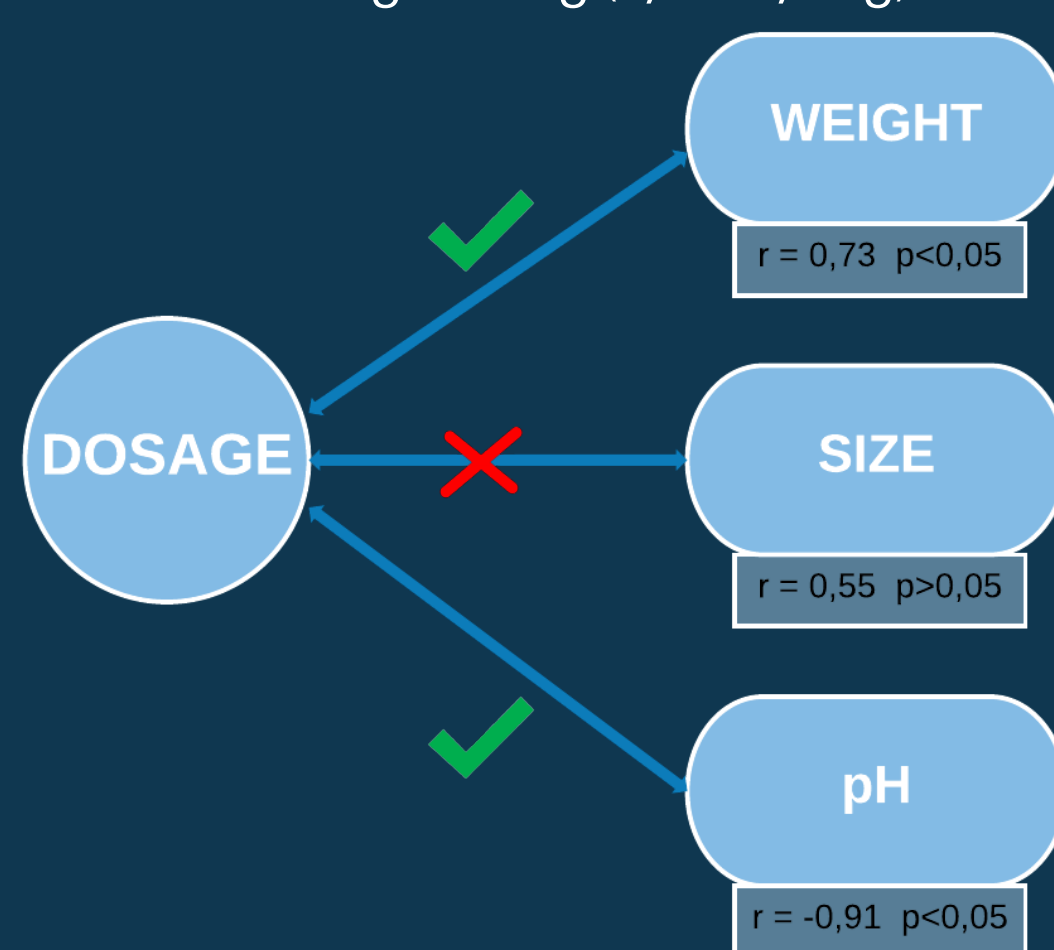
- **Maintenance aquarium (Aq.0):** where the fish stock is maintained.
- **Anesthesia aquarium (Aq.1):** 3 fish are introduced in, also the MS-222 diluted with an initial dose of 100 mg/L, continuing with increases of 10 mg/L and intervals of 5 minutes between them until obtaining a deep anesthetic level. A sample of water is taken at each interval to determine its pH.
- **Recovery aquarium (Aq.2):** once reached the desired anesthetic plane, fish are weighed, measured and introduced in. Fish are observed and monitored until normal activity is fully recovered.

RESULTS OF MS-222 ESTIMATION DOSAGE

Dosage values: 190-250 mg/L ($214,44 \pm 17,44$ mg/L)

Fish size: 5,3-3,2 cm ($4,29 \pm 0,69$ cm)

Fish weight: 1-4 g ($2,26 \pm 0,98$ g)



↑ 1 g weight = ↑ 12,925 mg/L anesthetic dosage
↑ 1 mg/L anesthetic dosage = ↓ 0,007 pH

BIBLIOGRAPHIC COMPARISON

The results obtained with MS-222 are similar to the doses of deep anesthesia described in research in *A. ocellaris* and other pomacentrid species (Ross et al. 2008, Olivier et al. 2016), which might indicate that for members of this family the ranges of anesthesia may be similar.

Compared to MS-222, the dose ranges with benzocaine are smaller and show less variability within the order of perciforms, 50-100 mg/L compared to 70-200 mg/L in MS-222.

Based on bibliographic data (Ross et al. 2008, Sempaio et al. 2019) the expected anesthetic benzocaine dosage for *A. ocellaris* would be 80 mg/L.

CONCLUSIONS

- Same anesthetic doses cannot be directly assigned to different species. Factors such as drug sensitivity or weight and size, among others, can play an important role against it.
- The dosage of drugs varies according to the weight of the animal making larger animals may require higher doses.
- Proper pH control is a relevant factor, as it can be the cause of damage to the fish as well as variations in the absorption of drugs that can make the anesthetic not effective enough.
- More research is needed in this field because there are many species of fish and many factors to consider.