

EFFICACY OF ICTHIOVAC® VR AGAINST *Listonella anguillarum* SEROVAR O2α IN EUROPEAN SEA BASS FRY AND JUVENILES

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INTRODUCTION

European Sea Bass (*Dicentrarchus labrax*) is a marine fish species with a high commercial value, especially in the Mediterranean countries and Europe. Vibriosis caused by *Listonella* (*Vibrio*) *anguillarum* is a common disease in Sea Bass that has led to significant economic losses to date. Therefore, development and use of preventive strategies can evade these associated mortalities [1].

ICTHIOVAC® VR is an inactivated vaccine against Vibriosis which contains three inactivated antigens classified as serotype O1, O2α and O2β respectively. ICTHIOVAC® VR was initially developed for turbot and to be administered by dip/bath immersion. This study is intended to demonstrate the efficacy of ICTHIOVAC® VR, in preventing mortality caused by *Vibrio* (*Listonella*) *anguillarum*, serotype O2α, in Sea bass.

MATERIALS AND METHODS

The study design included four groups of Sea bass. Two groups (A-groups) were vaccinated with ICTHIOVAC-VR according to the established regimen of vaccination, dip immersion (two doses in 0.5-1 g fry) and intracelomic injection (single dose in ≈15 g juveniles), respectively, and two groups (B-groups) were treated the same way but the test product administered was phosphate buffer solution (PBS) acting as a control. Challenge was carried out 63 days (fishes treated by dip immersion) and 28 days (fishes treated by intracelomic injection) after the completion of the regimen of vaccination. Thereafter all groups were observed daily up to at least 60% mortality were reported. The Relative Percentage of Survival (%RPS) was calculated according to the following formula:

$$\%RPS = \left(1 - \frac{\% \text{ Mortality vaccinated group}}{\% \text{ Mortality control group}}\right) \times 100$$

RESULTS

The results on cumulative mortality and %RPS are shown in Tables I and II and Figures 1 and 2.

Table I. Cumulative mortality after challenge and %RPS obtained in groups A1/B1 (Dip immersion).

GROUP	No. DEATHS/No. FISHES	% MORTALITY	% RPS
A1 Vaccinated. Dip immersion	13/60	21.67 %	63.89 %
B1 Control	36/60	60.00 %	

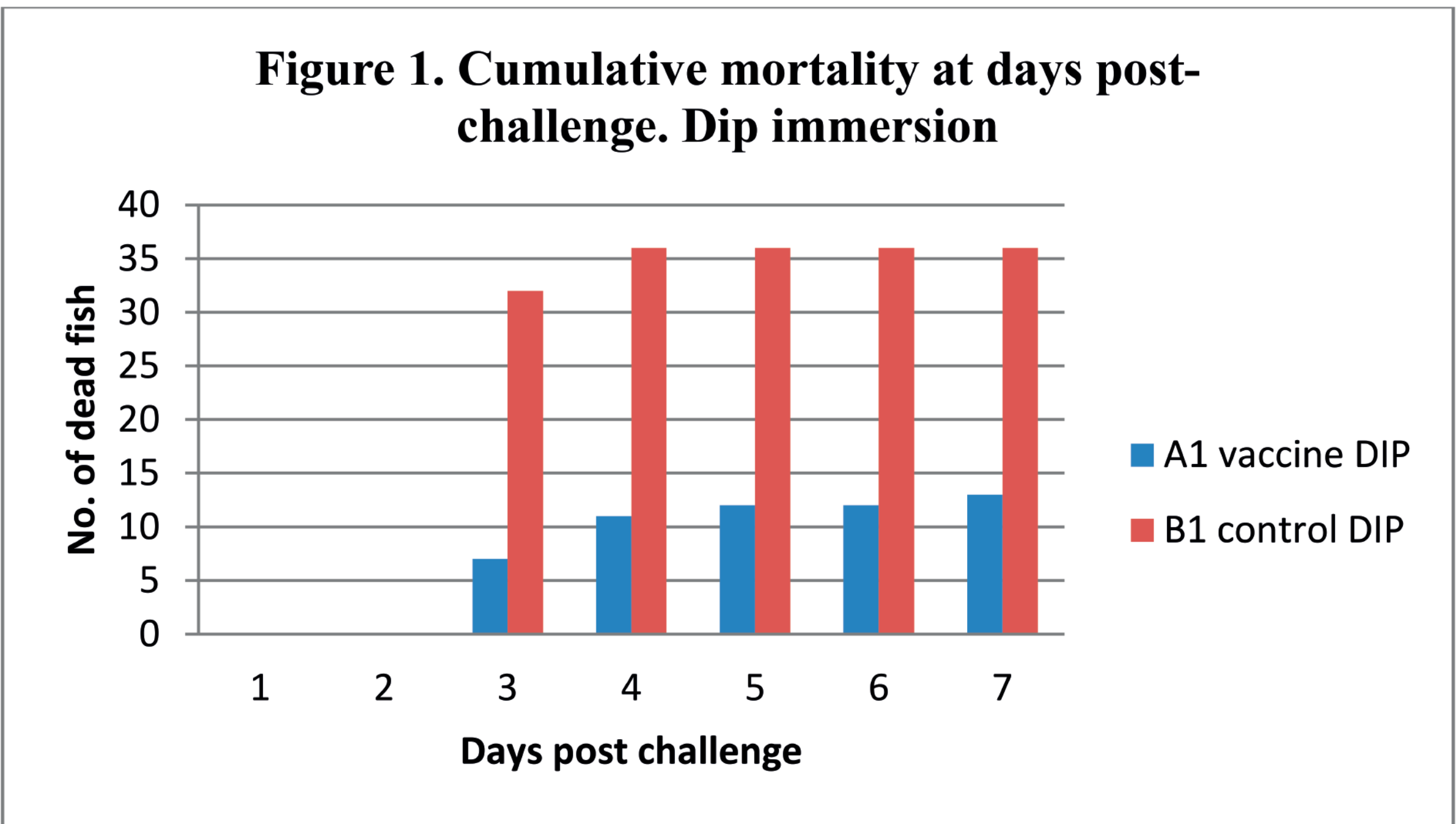
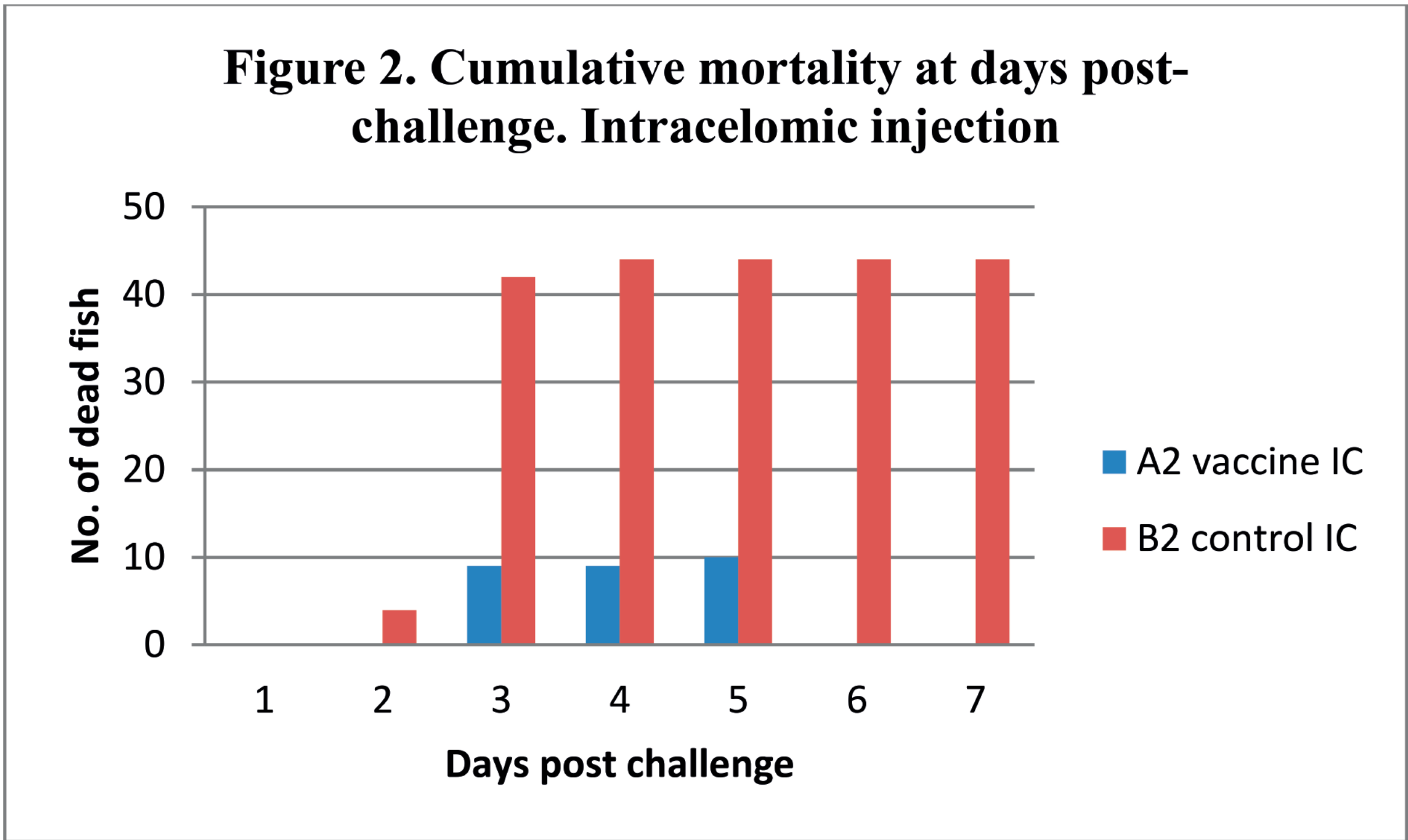


Table II. Cumulative mortality after challenge and %RPS obtained in groups A2/B2 (intracelomic injection).

GROUP	No. DEATHS/No. FISHES	% MORTALITY	% RPS
A2 Vaccinated. Intracelomic injection	10/45	22.22 %	77.27 %
B2 Control	44/45	97.78 %	



DISCUSSION AND CONCLUSIONS

Clear differences in the mortality rates between vaccinated and control groups were observed. The mortality rates reported in vaccinated groups ranged between 21.67 and 22.22 % whereas the mortality rates in control groups were of 60-97.78 %. Deaths were observed between 24 and 72 hours after challenge. Fish vaccines prove to be effective when %RPS values higher than 60 % for vaccines administered by dip/bath immersion and higher than 75 % for vaccines of parenteral administration are reached. In this case, the %RPS values obtained were of 63.89% in 0.5-2 g in fry groups treated by dip immersion and of 77.27% in 15-g juveniles vaccinated by intracelomic injection. The efficacy requirements established by the legislation in force are therefore met [2].

The results obtained demonstrate that ICTHIOVAC® VR is effective in conferring immunity to Sea bass from 0.5 g to 15 g against virulent *Vibrio* (*Listonella*). *anguillarum* O2α strain by two different size-dependent routes, by dip immersion and by intracelomic injection.

REFERENCES

[1] Frans I., Michiels C. W., Bossier P., Willems K.A., Lievens B. and Rediers H. (2011) *Vibrio anguillarum* as a Fish pathogen: virulence factors, diagnosis and prevention. Journal of Fish Diseases 34, 643-661.
[2] European Pharmacopoeia, current edition. Monograph no. 04/2013:1581 "Vibriosis vaccine (inactivated) for salmonids".



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