

Concentrated dip vaccine for sea bass

ALPHA DIP™ Vib



Product characteristics:

Composition: Inactivated *Vibrio anguillarum* serotype O1, RPS ≥ 75

Species: Seabass (*Dicentrarchus labrax*)

Onset of immunity: 600 degree-days

Vaccination regime dosage: Apply two doses on sea bass fingerlings at average size 1 g and 5 g

Withdrawal period: 0 degree days

Package sizes: 500 ml and 1 000 ml

Highly concentrated:

Short dip (60 sec)

High dilution (1:20)

Double biomass vaccinated per litre compared to other dip vaccines which gives less waste and require smaller storage

Vaccination as a key tool for vibriosis control

European sea bass (*Dicentrarchus labrax*), commonly known as sea bass, is one of the most important farmed fish species in the Mediterranean. The seabass industry has grown strongly in the last decade with a yearly production of approximately 200 000 tons (2016) (FAO).

Diseases are still one of the most important challenges. Healthy fish is a prerequisite for sustainable and profitable growth in aquaculture, and a clear shift from medical treatment to prevention of diseases is needed. Healthy fish is not only the most environmental sustainable solution, but also the most profitable for the aquaculture industry. This can be achieved by implementing a number of different health management practices in production routines, where vaccination is one of them. Vaccination reduces the risk of infection, spread of disease from cage to cage, to other farms, and also to wild fish.

In sea bass production today, vibriosis, caused by *Vibrio anguillarum* serotype O1 is a limiting factor for further growth of the industry (Haenen et al., 2014). Vibriosis outbreaks occur both in hatchery and on-growing stages of production at temperatures between 13–24°C. Outbreaks are usually related to stressful situations and rapid temperature fluctuations and the disease is characterized by the presence of hemorrhages in skin and the base of fin in larger fish (see picture 1) and necrosis of the trunk of the tale in juveniles. The pathogen causes a haemorrhagic septicaemia (see picture 2). Mortality varies from 1 % (large fish) to 30 % (medium size fish) without treatment.

Today preventive measures include reduction of stress, hygiene and vaccination. Oral antibiotics are used as treatment.



Picture 1 and 2: Clinical signs of vibriosis. In Picture 1 red spots on skin, in base of fins, operculum and mouth are seen. In Picture 2 we see fluid in intestine and petechial bleeding in internal organs.



ALPHA DIP Vib – concentrated dip vaccine for sea bass

ALPHA DIP Vib is a monovalent water based immersion vaccine for sea bass fingerlings containing *Vibrio anguillarum* serotype O1 that has a Marketing Authorization in Spain, Portugal, Croatia, Greece and Italy. The vaccine replaces ALPHA DIP Vibrio from PHARMAQ. The new vaccine gives the same high protection but is more concentrated. This gives less volume to be transported, stored and diluted at vaccination. A consequence of this is

increased vaccination biomass per unit, reduced vaccine and plastic waste, reduced transport and storage cost and reduced environmental impact.

For a life long protection against vibriosis in sea bass we recommend vaccination with ALPHA DIP Vib at 1 and 5 grams and ALPHA JECT 2000 from 15 grams.

With documented effect – safety and efficacy

To verify that the vaccine does not induce any abnormal or toxic reactions

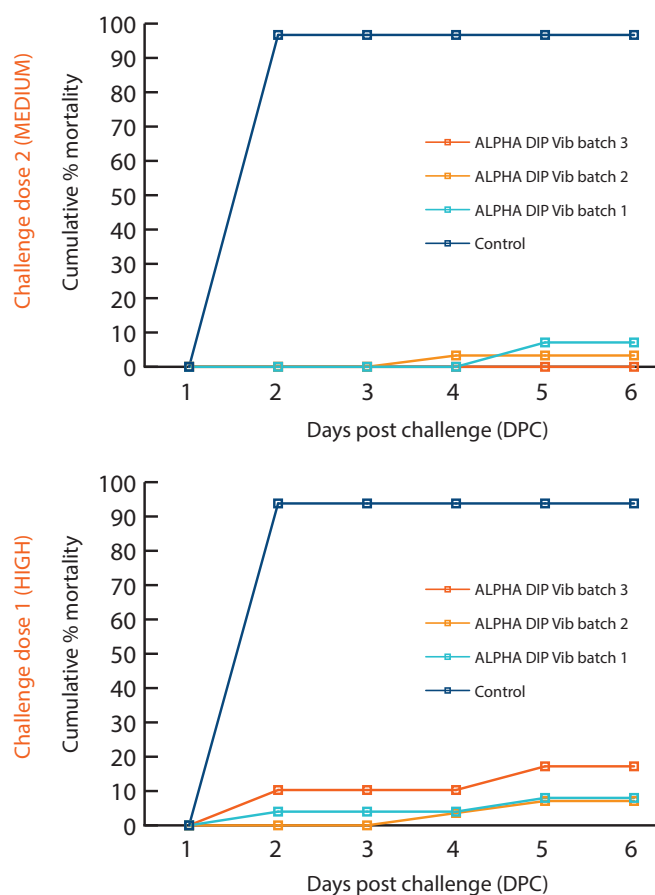
in the target species fish were dip vaccinated with twice the recommended vaccine concentration for twice the recommended vaccination time at the minimum average size (1 gram). No abnormal behavior or mortality was recorded 21 days post vaccination. These results confirm that administration of ALPHA DIP Vib is safe for sea bass.

To evaluate the efficacy against *Vibrio anguillarum* O1 post vaccination with ALPHA DIP Vib in sea bass we dip vaccinated fish with three different batches of ALPHA DIP Vib. All the groups were challenged at 4 weeks after vaccination using two challenge doses.

Mortality was then recorded and cause of mortality was verified (see graph 1 and 2 and table 1 for results). Mortality was confirmed to be caused by *Vibrio anguillarum* O1.

Vaccine	Challenge dose	Mortality (%)	RPS	
			RPS ₆₀	RPSend
ALPHA DIP Vib batch 1	1		89	78.6
ALPHA DIP Vib batch 2	1		95.7	91.7
ALPHA DIP Vib batch 3	1		100	92.6
Mortality Control	1	96.9	-	-
ALPHA DIP Vib batch 1	2		100	100
ALPHA DIP Vib batch 2	2		100	92.9
ALPHA DIP Vib batch 3	2		100	96.7
Mortality Control	2	100	-	-

Table 1: Mortality and RPS₆₀ (Relative Percentage Survival at 60 % mortality in control group) of fish vaccinated with three different batches of ALPHA DIP Vib and challenged with *Vibrio anguillarum* O1 4 weeks post vaccination.



Graph 1 and 2: Accumulated mortality of sea bass dip vaccinated with three different batches of ALPHA DIP Vib and challenged with *Vibrio anguillarum* O1 4 weeks post vaccination.

PHARMAQ finds solutions together with our customers

We want our markets to be confident that PHARMAQ is able to put sufficient competencies, financial and operating capacities and efforts into delivering new products, solutions and services. This can be seen in our long term commitment in our markets, including the Mediterranean sea bass market. The key to PHARMAQs success is a constant focus on high quality to ensure that we deliver safe, efficient and predictable fish health products

to our customers. Good disease monitoring and fish health management combined with development of efficacious and safe vaccines are essential for sustainable fish farming.

ALPHA DIP Vib is proven highly efficacious against vibriosis and safe for sea bass.

References:

O.L.M. Haenen, B. Fouz, C. Amaro, M.M. Isern, H. Mikkelsen, S. Zrncic, M.A. Travers, T. Renault, R. Wardle, A. Hellestrøm and I. Dalsgaard. Vibriosis in aquaculture. 16th EAAP Conference, Tampere, Finland, 4th September 2013. 138, Bull. Eur. Ass. Fish Pathol., 34(4) 2014.

