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Editorial

Emerging Bacterial Pathologies in Mediterranean Mariculture

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Aquaculture is emerging as the fastest growing food-producing industry in the world because of the increasing demand for food fish consumption. The intensive culture of fish has led to outbreaks of various bacterial diseases, causing economic losses to the aquaculture industry worldwide [1,2]. In the last years in the Mediterranean basin is registering a growing attention to some emerging bacterial fish pathogens. In the last years in the Mediterranean basin is registering a growing attention to some emerging bacterial fish pathogens. In particular *Vibrio harvey*, normally pathogen for crustaceans, molluscs and elasmobranchs, recently caused damage to the nervous system and septicemia in varying degrees of various fish species farmed. Also other *Vibrio* species such as *V. splendidus*, *V. mediterranei*, *V. ordalii*, *V. aginolyticus*, *V. vulnificus*, *V. parahaemolyticus* are becoming dangerous for the farmed fish species [3]. Among Gram negative bacterial there are also: *Tenacibaculum maritimum* that causes the flexibacteriosis. The fish disease marine flexibacteriosis is characterised by necrotic lesions on the body, head, fins, and occasionally gills, with erosive lesions on the external surface as the prominent clinical sign [4,5] and the halophilic *Photobacterium damsela subsp. piscicida* responsible of the photobacteriosis in a great variety of fish species [6]. The disease exist in two forms the acute bacterial septicemia with a striking lack of gross clinical signs in most susceptible hosts and the chronic form with typical whitish pseudotubercles being present in the spleen [6-11]. While among the emerging bacterial diseases caused by Gram - positive there are the streptococcal infections (caused by *Lactococcus garvieae*, *Lactococcus piscium*, *Streptococcus iniae*, *Streptococcus agalactiae*, *Streptococcus parauberis* and *Vagococcus salmoninarum* that affect a variety of wild and cultured fish around the world [12,13]. And therefore, streptococcosis of fish should be regarded as a complex of similar diseases caused by different genera and species capable of inducing central nervous system damage characterized by suppurative exophthalmia ("pop-eye") [14] and meningoencephalitis.

Finally among acid-fast emerging bacteria: *Nocardia asteroides* causative agent of nocardiosis reported for the first time in *Argyrosomus regius* [15]. *Mycobacterium marinum* causes the mycobacteriosis or fish tuberculosis that represented a significant threat for farmed sea bass in the Mediterranean sea [16] and in European turbot culture [17]. To combat these diseases it is necessary to develop new specific vaccines. Regarding Vibriosis a great number of commercial vaccines have been developed mainly for *Listonella (Vibrio) anguillarum* [18]. Several commercial vaccines against *Ph. damsela subsp. piscicida* are available on the market but their efficacy is dependent on fish species, fish size, vaccine formulation and use of immunostimulants [19,20]. To date no vaccines were available to prevent the flexibacteriosis. Several attempts have been made to develop appropriate vaccination programs for fish streptococcosis however to date only the vaccines against *L. garvieae* and *S. parauberis bacterins* displayed high levels of long-term protection in fish [20,21]. At present no vaccines are available to prevent the mycobacteriosis in fish. The disease control must be based on both the development of new vaccines and on the study of the immune system of the fish species particularly on the innovative fish species that lacks of knowledge of the immune response [2,22].

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