

## Vibriosis in Gilthead Sea Bream (*Sparus aurata* L.) in Farms in the Aegean Sea Coast of Turkey

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### Abstract

This study determined the factors affecting the breakout of vibriosis, a bacterial infection in sea bream reared in farms in the Aegean Sea coast of Turkey, particularly the Bodrum peninsula and in Çanakkale. Bacteriological diagnostic methods were applied to 60 juveniles and older fish obtained from 15 farms. Six isolates were identified as three *Vibrio* sp. according to the cell morphology, Gram-stain reaction, colony morphology, metabolic reactions and cell motility. Thus, the bacterial epizootic was diagnosed as. Factors such as transport stress, water temperature changes (rise or fall), handling, and low oxygen induced vibriosis among sea bream in farms along the Aegean Sea.

*Key Words:* gilt-head sea bream, *Sparus aurata*, fish diseases, vibriosis, Aegean Sea.

### Introduction

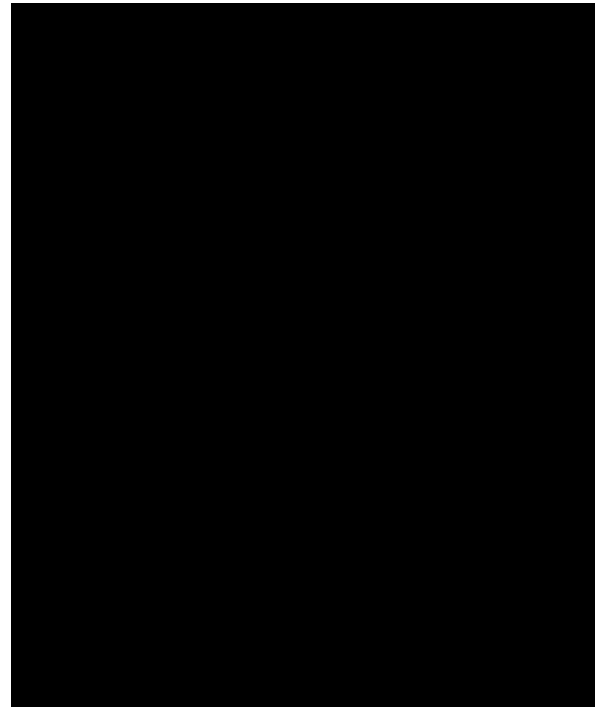
Given its ecological and climatic conditions, Turkey is the most appropriate country for sea bream farming. Since 1980 many sea bream farms have been established especially along the Aegean Sea coast and the number is increasing rapidly (Alpbaz, 1996; Çelikkale *et al.*, 1999).

All farmed marine fish species in the world may suffer from vibriosis, and probably also fish species in the wild (Amblacher, 1981; Horne, 1982; Post, 1987; Inglis, 1993; Austin and Austin, 1993; Bauman and Furniss, 1994). Paperne *et al.* (1971) first reported about vibriosis in sea bream in Israel. Later, vibriosis affected fish in Greece, Italy, and Spain (Barahona-Fernandes, 1977) and in Turkey (Candan, 1991; Çağırğan, 1993). Timur *et al.* (2000) found that *Oodinium ocellatum* and *Vibrio* sp. together induced high mortalities in farmed sea bream. The present study sought to document vibriosis among sea bream in farms along Turkey's Aegean Sea coast and and determine some factors that induce vibriosis outbreak.

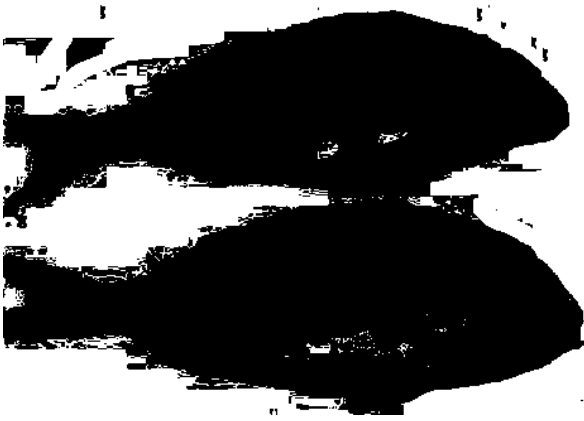
### Materials and Methods

Infected fish samples were obtained from the sea bream farms at the Aegean Sea coast in Bodrum peninsula and in Çanakkale. Bacteriological diagnosis was done on 60 infected fish samples from 15 fish farms between February 1999 and October 2000. The samples included juveniles (1-2 g) and older fish (150 g) (Figure 1 and 2). Bacteria from the infected fish liver, kidney, spleen, and blood, and from the body surface lesions were inoculated into TSA and TCBS agar medium with 1% NaCl. Clinical history of the

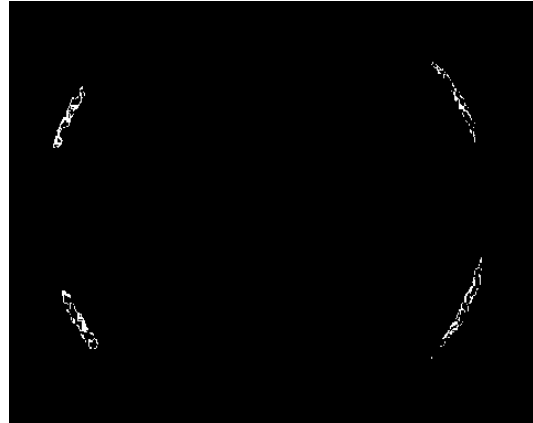
fish and information on disease outbreak were provided by the farm owners. Water temperatures in the cage farms were measured and stocking densities noted.



**Figure 1.** Necrotic caudal and pectoral fins, darkening and necrotic eyes in the young affected fish.



**Figure 2.** Ulcerative and haemorrhagic skin lesions in the dark coloured affected older fish.



**Figure 3.** Circular, raised, white coloured *Vibrio* sp. colonies.

## Results

Six isolates were identified as three *Vibrio* spp. according to the cell morphology, Gram-stain reaction, colony morphology (Figure 3), metabolic reactions and cell motility. Thus, the bacterial epizootic was diagnosed as vibriosis.

Some of the *Vibrio*-infected samples were juveniles that had earlier been transported from another fish farm in Yumurtalık Adana, about 730 km far away. Transport stress may have made these juveniles susceptible to infection. The older fish in the sample had also been transported from farm to farm in Bodrum peninsula, or had been overcrowded in the farm unit, had been through sudden temperature changes (rise or fall), or have had parasites. These factors presumably induced vibriosis among these sea bream.

## Discussion

Vibriosis has a worldwide distribution and the temperatures during outbreaks vary with the fish and the *Vibrio* species or strain. However, vibriosis usually appears from spring to autumn, particularly when the temperature is rising or falling. Handling, transport stress, overcrowding, and low dissolved oxygen make the farmed fish sensitive to the ubiquitous *Vibrio* spp. (Austin and Austin, 1993; Inglis, 1993; Bruno *et al.*, 1997). High stocking densities, salinities, organic loads may also precipitate vibriosis. Outbreaks are common in salt or brackish water, especially in shallow waters in late summer when temperatures are high (Bauman and Furniss 1994; Austin and Austin, 1993; Bruno *et al.*, 1997). But outbreaks have also been reported in fresh water, and the disease was first described in eels.

Young fish with vibriosis exhibit anorexia, skin darkening, and sudden death. Some infected fish show periorbital dropsy and necrotic eyes. Acutely affected older fish show bloody lesions around the anus and the bases of the fins, and some fish develop ulcerated skin lesions. Chronically infected older fish develop large necrotic lesions deep in the muscle, and the gills turn pale from severe anemia. Internal lesions affect all viscera and result in congestion, hemorrhage, and edema. Enlargement and necrosis of the spleen is common and the intestines are generally filled with red-coloured transparent liquid (Inglis, 1993; Bruno *et al.*, 1997).

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