

# THE OCCURRENCE OF *SPHINGOMONAS PAUCIMOBILIS* AND *S. THALPOPHILUM* IN VARIOUS MARINE REGIONS OF TURKEY

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## Abstract

In this study occurrence and distribution of *Sphingomonas paucimobilis* and *S. thalpopphilum* were investigated in the various marine areas of Turkey. The samples were collected from Turkish Strait System (TSS: The Sea of Marmara, Istanbul Strait/Bosphorus, Çanakkale Strait/Dardanelles), around Gökçeada Island and the Güllük Bay, Aegean Sea-Turkey at different time periods between 2002 and 2013. The isolates were analyzed by using the automated micro identification system VITEK 2 Compact 30 (Biomereux, France). The isolates were evaluated regarding isolated areas, pathogenicity and industrial potential.

**Keywords:** *Bacteria, Biodiversity, Marmara Sea, Aegean Sea*

*Sphingomonadaceae* are a family belonging to the *Alphaproteobacteria* class. They are Gram negative and commonly found in marine habitats, freshwater, soils and plants. They can produce exopolysaccharides such as sphingans which are useful for food and pharmaceutical sector and other industrial applications. Some species are able to degrade xenobiotic and aromatic compounds of various origins. Certain species of *Sphingomonas* were reported to be an interesting source of environmental bioremediation applications ([1], [2]).

In this study the sea water samples were collected from the Sea of Marmara, Istanbul Strait and Canakkale Strait (2002-2011), Güllük Bay (2011-2013) and Gökçeada Island (2013) (Figure 1). Samples were transported in cold chain to the Istanbul University Aquatic Microbial Ecology Laboratory between different time periods 2002 and 2013 ([3], [4], [5], [6]).

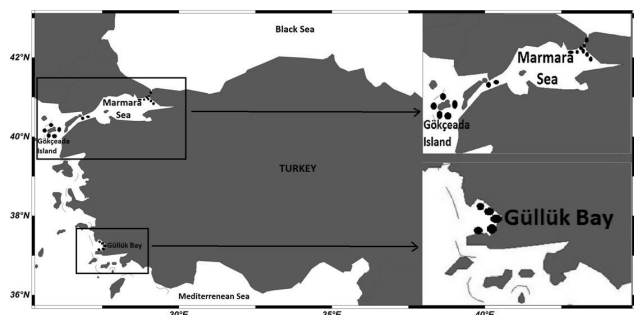


Fig. 1. Sampling sites in different marine regions of Turkey.

Regarding to Gram staining results isolates were identified using GN (Gram-negative fermenting and non-fermenting bacilli) cards in the automated micro identification system VITEK 2 Compact 30 (Biomereux, France) [7].

Two species were identified as *Sphingomonas paucimobilis* and *S. thalpopphilum* belonged to *Sphingomonadaceae* family. *S. paucimobilis* was isolated in the sea water samples taken from Istanbul Strait, the Sea of Marmara, Güllük Bay and Gökçeada Island (sea water and sponges). *S. paucimobilis* was also reported in the ballast water samples taken from the ships coming from various marine areas of the world to the Sea of Marmara [8]. *S. thalpopphilum* was isolated in sea water samples taken from the Güllük Bay and around Gökçeada Island (Table 1).

Tab. 1. The Distribution of *S. paucimobilis* and *S. thalpopphilum* in various marine areas of Turkey.

	Around Gökçeada Island (Sea water)	Around Gökçeada Island (Sponge)	The Sea of Marmara	Istanbul Strait	Güllük Bay, Aegean Sea
<i>S. paucimobilis</i>	+	+	+	+	+
<i>S. thalpopphilum</i>	-	+	-	-	+
References	[5]	[4], [5]	[3]	[3]	[6]

*Sphingomonadaceae* family contain rare human pathogens but also have industrial potentials. However, *S. thalpopphilum* was not reported neither pathogen, nor suitable for industrial applications. In this study, *S. thalpopphilum* was isolated in the sea water samples taken from Güllük Bay and sponge samples collected from Yelkenkaya, Gökçeada, Aegean Sea, Turkey. *S. paucimobilis* was reported as a rare human pathogen. But also it was documented that *S. paucimobilis* is a useful strain for industrial applications ([1], [2]). In this study, both *S. thalpopphilum* and *S. paucimobilis* were isolated to be sponge-associated bacteria. *S. paucimobilis* was recorded to be more common than *S. thalpopphilum* in all marine areas of Turkey. *S. paucimobilis* was recorded in the Sea of Marmara, Istanbul Strait and Aegean Sea. The percentage of the frequency *Sphingomonadaceae* members among epibiotic bacteria was over than %50. These strains were stocked for further analyses.

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