



Team

The partners belong to two research centers in Spain: the Spanish Institute of Oceanography of the Spanish National Research Council (IEO-CSIC) and the Institute of Research and Agrifood Technology (IRTA) with the participation of the European Union Reference Laboratory for Marine Biotoxins.



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CIGUAADAPT is a research project...

which focuses on the study of the food risk associated with the expansion of ciguatera and how to adapt to its presence, improving the tools for its management in the Balearic Islands. CIGUAADAPT is a continuation and innovative project with respect to the previous projects such as ECSafeSEAFOOD, EuroCigua, Ciguarisk, Ciguasensing, and Eurocigua2.

What is ciguatera?

Ciguatera is a food poisoning produced by the consumption of marine fish that contain ciguatoxins (CTXs).

What are ciguatoxins and what is their origin?

They are powerful neurotoxins that can cause general, digestive, cardiac and neurological symptoms. CTXs are produced by various species of microalgae of the genera *Gambierdiscus* and *Fukuyoa*, and can be accumulated through food webs. Although these harmful microalgae are typical of tropical regions, it has been observed that in recent years their geographic distribution is wider, also being found in temperate regions.

Ciguatoxin-producing microalgae in Europe

The first autochthonous outbreak of ciguatera on European coasts was reported in 2004 in the Canary Islands. In the Mediterranean, no cases of ciguatera have been published, but the presence of *Fukuyoa* in 2011, and *Gambierdiscus* in 2016, has been established as ciguatoxin-producing species in the Balearic Islands, as well as in Cyprus and Crete since 2008.

Objectives of the project

Understanding that ciguatera is a current and long-term problem, within this project, CIGUAADAPT, we want to propose adaptation measures to minimize its impact. We propose to describe the distribution and abundance of *Gambierdiscus* and *Fukuyoa* on eight islands near the Iberian Peninsula, as well as to continue with the temporal and spatial assessment in the Balearic Islands started in the previous CIGUARISK project. This information will allow us to know the distribution and abundance of *Gambierdiscus* and *Fukuyoa* in the study areas and to evaluate whether or not they produce CTXs. If CTXs are detected, the types of compounds they produce and whether they are transformed through food webs will be determined. To do this, we ask the following questions:

- On which islands near the Iberian Peninsula are these harmful microalgae found?
- In what habitats and times of the year are these harmful microalgae found in the Balearic Islands? And what is its abundance?
- What environmental parameters contribute most to the appearance of these microalgae?
- What interaction/relationship do *Gambierdiscus* and *Fukuyoa* show on other benthic dinoflagellates?
- Can we detect CTXs in some study species? If there are any positive cases, what analogues of CTXs are present and how do they change through food webs?
- What management measures should be adapted to our society to avoid ciguatera poisoning?

Currently, in the Canary Islands there is already an official control laboratory for this group of toxins, while in the Balearic Islands no CTXs have been detected in fish and in the Mediterranean no records of ciguatera have been published. Thanks to the results of CIGUAADAPT, management tools will be proposed to adapt our society to the establishment of ciguatera. This will make it possible to advise the fishing production sector and protect the consumer.

Project duration

September 2023 – August 2026

Project structure

