Ciguatera fish poisoning is one of the most relevant seafood-borne illnesses worldwide. It is caused by the ingestion of fish contaminated by ciguatoxins (CTXs). Primary producers of CTXs are dinoflagellates of the genera *Gambierdiscus* and *Fukuyoa*.

**Why is it important to detect microalgae of the genera *Gambierdiscus* and *Fukuyoa***?

**Strategy**

One primer set for the genera (A) *Gambierdiscus* and *Fukuyoa* and two species-specific primers set for *Gambierdiscus* species (B) *G. australis* and (C) *G. excentricus* were designed within the D1-D3 and/or D8-D10 of the of the 28 S LSU ribosomal DNA. Primers were modified with tails, resulting in amplicons of dsDNA flanked by ssDNA tails. Recombinase Polymerase Amplification was performed at 37 °C for 30 minutes (Twist™ Kit). Samples were purified before the Sandwich Hybridization Assay.

**Results**

![Graph](image)

Obtained results demonstrate the ability of the system to discriminate not only the genus *Gambierdiscus* and *Fukuyoa* from other microalgae (white), but also *G. australis* (grey) and *G. excentricus* (black) species from their congeners.

**Conclusions**

These results demonstrate the potential of the system to discriminate *Gambierdiscus* and *Fukuyoa* genera and two *Gambierdiscus* species from other microalgae, and its limit of detection is as low as a single cell. This approach is more rapid, specific and user-friendly than traditional microscopy techniques, and paves the way towards the deployment of portable devices for in situ detection of microalgae.

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