

Fast method for the on-site authentication of Atlantic Bluefin tuna

CSIC and the International Iberian Nanotechnology Laboratory (INL) have developed a method for fast and unambiguous identification of Atlantic Bluefin tuna (*Thunnus thynnus*). This is a fast and portable method that does not require laboratory facilities and may be performed on-site/point-of-need (PoN) by non-specialized personnel. Thus, allowing fast and reliable control of seafood fraud in any place by any person.

Biotechnological companies manufacturing analytical solutions for testing laboratories and other stakeholders along the seafood value chain are being sought to collaborate through a patent licence agreement.

An offer for Patent Licensing

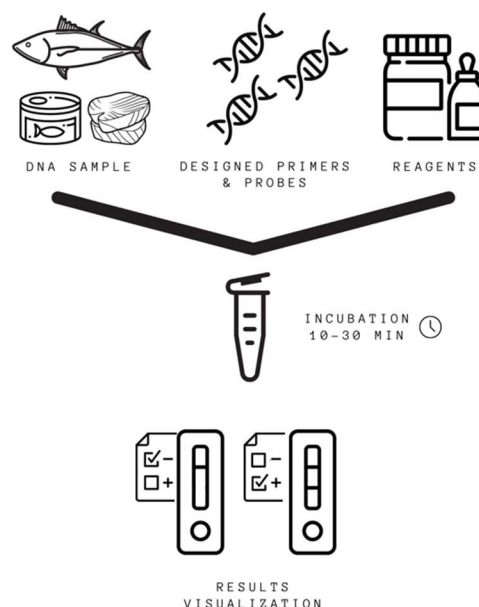
Detect food fraud in 30 mins. without a lab facility

The methodology is based on the design of specific DNA primers and probes for the unambiguous identification of Atlantic Bluefin tuna, specifically, an isothermal amplification by recombinase polymerase (RPA) and the subsequent rapid detection on a dipstick by lateral flow detection (LFD).

Specific sequences of primers and probes are defined in the methodology, depending on the detection method selected. (Either fluorescence signal generation with exonuclease III (exo), formamidopyrimidine glycosylase (fpg) or lateral flow sandwich assay with endonuclease IV (nfo))

Once the DNA is extracted from fresh, frozen or canned tuna samples and has been mixed with the primers and RPA reagents, the incubation will last between 10 and 30 minutes depending on the temperature before the visual results are available. Additionally, species-specific primers and probes can also be applied in other molecular techniques such as PCR or real-time PCR given their versatility and high specificity.

This methodology will allow the implementation of rapid food fraud tests for a valuable and vulnerable species of tuna which is commonly counterfeited. This methodology has applications on labelling fraud control along the blue fin tuna value chain, with use cases for governmental law enforcement in fighting against illegal fisheries of an endangered species.



Summary of the methodology for Atlantic Bluefin tuna rapid test.

Main innovations and advantages

- Unambiguous detection of Atlantic Bluefin tuna in fresh, frozen and processed products (including canned).
- Portable and fast method to detect seafood fraud anywhere, from boats to factories or restaurants in less than 30 minutes
- Methodology independent of sophisticated equipment or specific training
- User-friendly methodology which allows an easy interpretation of the results by naked-eye

Patent Status

Priority patent application filed suitable for international extension

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