

Risk characterization of ciguatera food poisoning in Europe: First steps from the screening to the confirmation

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INTRODUCTION

There are many knowledge gaps regarding the global impact of Ciguatera Fish Poisoning (CFP), mainly due to the lack of a valid methodology to quantify CTX. The EuroCigua project, co-funded by the European Food Safety Authority (EFSA), implemented to characterize the risk of CFP in Europe, will develop harmonized and validated methodologies for the screening and quantification of ciguatoxins (CTXs).

SA3-SA4

The project is divided into 4 Specific Agreements (SA). The Institute of the Animal Health and Food Safety (IUSA-ULPGC) is involved in the SA3 for the evaluation of CTXs in seafood and the environment. Thus, the ULPGC closely collaborates both with the Institute for Research and Technology in Food and Agriculture (IRTA), leader of this SA3, and the University of Vigo, leader of the SA4, responsible for the characterization of CTXs.

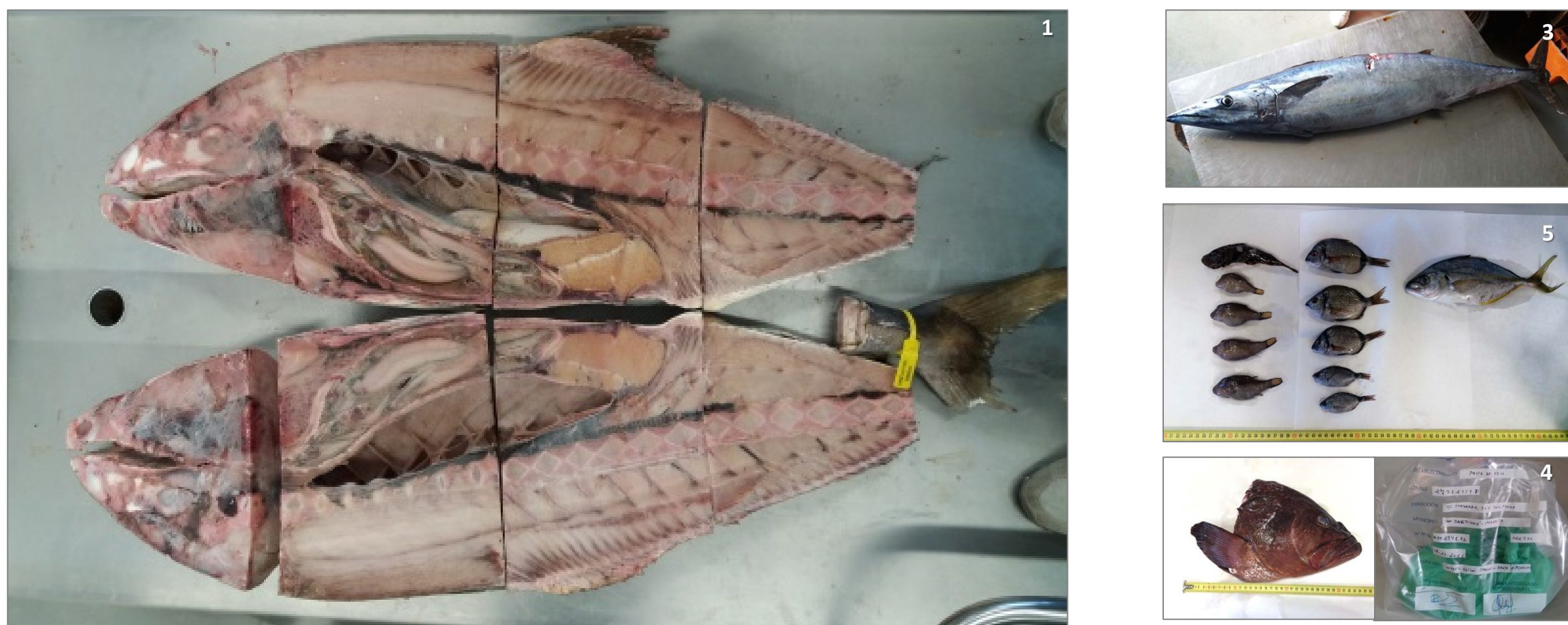
SA3

FISH SAMPLING

Fish sampling for CTX detection

SOURCES

1. Official control of CFP (DG Fisheries of the Canary Islands).
2. Sport fishing
3. Professional fishermen associations
4. Human outbreaks
5. Algal bloom monitoring



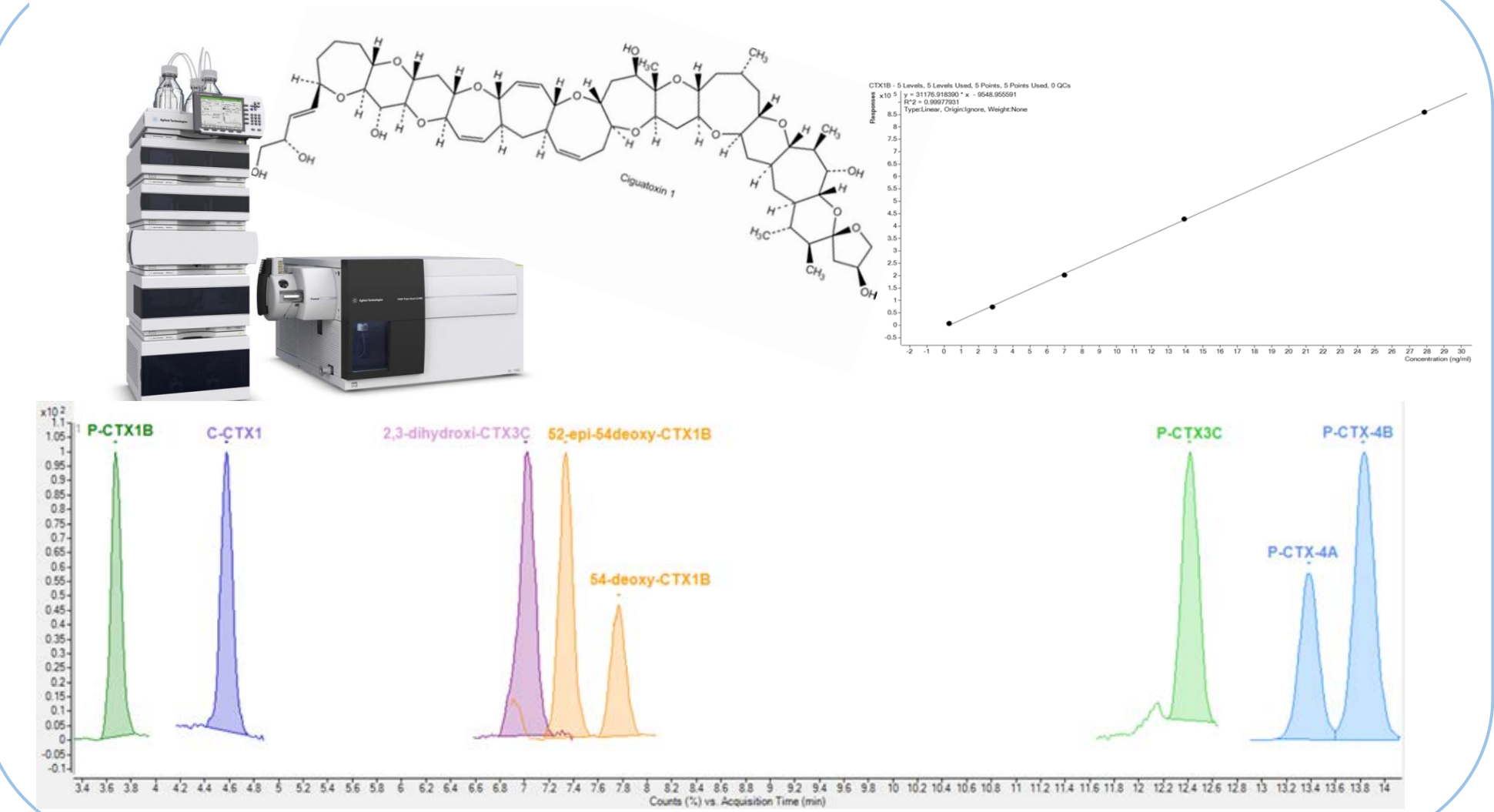
LC-MS/MS SOP OPTIMIZATION

Implementation of a LC-MS/MS method for a sensitive determination of CTXs

SAMPLE PRETREATMENT



LC-MS/MS ANALYSIS



SA4

SCREENING

All samples are first analyzed for CTX-like toxicity with a Neuro-2a cell based assay (CBA) procedure in the IUSA-ULPGC laboratory.

Reception of samples

Extraction of CTX

Neuro-2a cytotoxicity assay

Response evaluation

CONFIRMATION OF POSITIVE SAMPLES BY LC-MS/MS

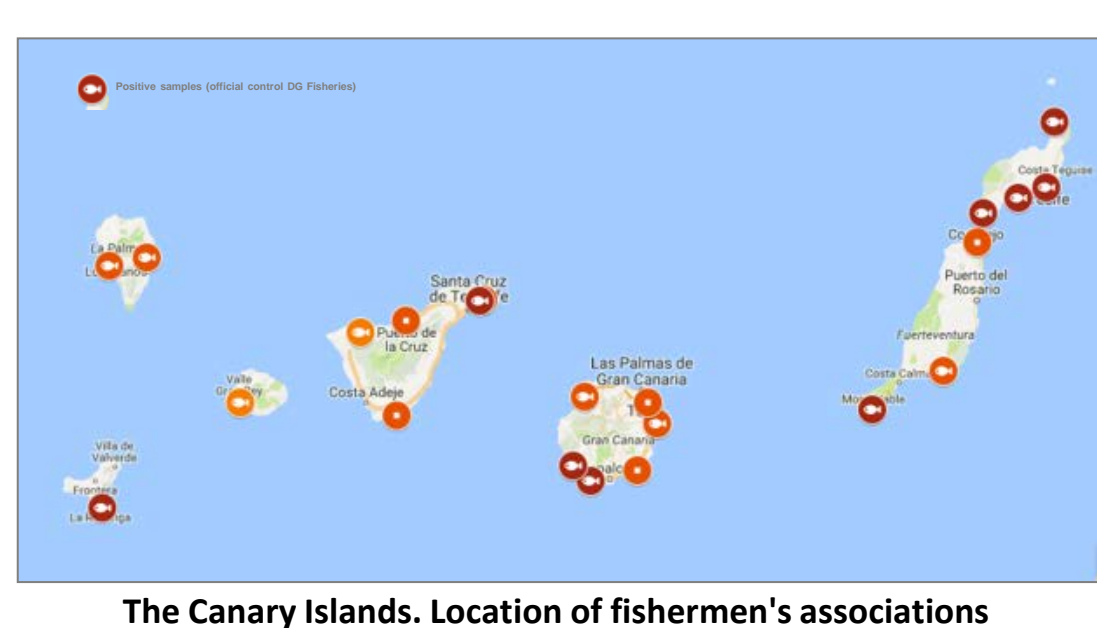
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Ifremer

LC-HRMS confirmation

Further confirmation by Ifremer and other collaborators

- Positive samples kept for preparation RM and ST
- Selection of interesting samples



To date, more than 120 samples have been sent to the IRTA laboratory in order to harmonize cytotoxicity protocols for CTX evaluation and to the University of Vigo to identify and quantify CTXs with LC-MS/MS. Twenty-nine fish were selected by the SA4 to obtain reference material and/or standard.



PREPARATION OF CTXs STANDARDS AND REFERENCE MATERIAL



INTERLABORATORY TEST



6th International Symposium Marine and Freshwater Toxins Analysis

Sunday, 22 nd October	Monday, 23 rd October	Tuesday, 24 th October	Wednesday, 25 th October
	9:00-10:00 Registration	<i>Chair: T. Kaloudis</i>	<i>Chair: P. Hess</i>
	10:00-10:15 Opening Prof. E. Fernández (Campus do mar)	9:30-10:00 Keynote Speaker O. Ploux	9:30-9:50 M. Pelin
	<i>Chair: A. Gago Martinez</i>	10:00-10:20 S. Zervou	9:50-10:10 B. Suárez
	10:15-10:45 Keynote Speaker M.A. Quilliam	10:20-10:40 M. Gugger	10:10-10:30 L.A. Samdal
		10:40-11:00 A. Hiskia	10:30-10:50 M. Van Asten
	10:45-11:30 Poster session & Coffee Break	11:00-11:30 Poster session & Coffee Break	10:50-11:50 Poster session & Coffee Break
	<i>Chair: J. Lawrence</i>	<i>Chair: A. Hiskia</i>	
	11:30-11:50 V. Vasconcelos	11:30-11:50 V. Costantino	<i>Chair: A. Gerssen</i>
	11:50-12:10 P. Hess	11:50-12:10 Ch. Christophoridis	11:50-12:10 T. Harwood
	12:10-12:30 N. Oshiro	12:10-12:30 E. Faassen	12:10-12:30 Z. Peteva
	12:30-12:50 J. Diógene	12:30-13:00 T. Kaloudis	12:30-12:50 P. McCarron
	12:50-13:10 T. Tsumuraya		12:50-13:10 T. Harwood
	13:10-13:30 K. Kumiyoshi		
	13:30-14:30 Lunch	13:00-14:30 Lunch	13:10-14:10 Lunch
	14:30-15:30 Poster Session		
	<i>Chairs: A. Tubaro & A. Gago Martinez</i>		
	15:30-15:50 A. Canals		14:10-16:00 Roundtable
	15:50-16:10 P. Estévez		
	16:10-16:30 Coffee Break		16:00-16:30 Coffee Break
	16:30-16:50 A. Gerssen	14:30 Excursion to Monção, Portugal	16:30-17:00 Closing and Remarks Dr. P. Caricato (EU Commission)
	16:50-17:10 A. Lozano and J.M. Leão		
	17:10-17:30 L. Tartaglione		
	17:30-18:00 Session conclusions		
18:00-19:00 Registration			
19:00-21:00 Welcome Reception		21:00 Conference Dinner	