METHOD FOR THE DETERMINATION OF POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SHELLFISH AND FISH FROM GALICIA AS A QUALITY CONTROL AFTER THE PRESTIGE OIL SPILL.

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Introduction

In order to avoid the commercialisation and introduction into the food chain of potentially contaminated organisms, the set up of fast analysis techniques for PAHs has become a need. As indicated by the AFSSA, the 6 PAHs with the higher molecular weight are those which have a longer prevalence (persistence) and toxicity in any organism. For this reason these six compounds were selected to develop this study. Thus a method which allows the outcome of results within 24h from the collection of the samples, has been developed this enables the method to be introduced as a routine analysis for seafood products.

Samples

The samples (fish and shellfish) were collected at dawn, analysed and obtained the results at the end of the day. For this purpose the sample should be processed fresh. 101 samples were processed in all 41 fish and 60 shellfish samples. The samples were collected from the fresh fish markets from Vigo, Marín and Meira in the Rías Baixas.

The figures 1 and 2 show the fishing and extraction areas where the samples were collected or extracted.

Matherial and Methods:

Homogenisation: 15 g sample + 100 ml Dichloromethane. Extraction using ultrasound.

Sample concentration using a 5 μL filter.

Purification byGPC:3columns “Enviropak GPC Clean-Up” 19x50 y 19x300 mm Waters.

Total sample evaporation under N2 stream.

Re-suspension in 1 ml of acetone/ether, filter using a 45 μm filter.

In HPLC analysis.

Results:

- Graph shows the results obtained for analysed samples. The table below shows sample’s data.
- Fish samples: None of the samples shown significant PAHs levels, considering a detection limit of 0.5 ppb.
- Shellfish samples: PAH levels were detected in 27 of the 60 samples tested. In any case none of them showed values higher than those recommended by the AFSSA, for products for human consumption.
- Fresh shellfish samples: The established limit was 40 ppb. The higher value detected was 15.8 ppb.
- A difference was observed among the results of shellfish collected by boat or by ship. 67% of the samples with measurable values were collected on the beach (intermediate), while on the samples collected from floating devices only 33% showed measurable values.