



## Seafood traceability issues in Chinese food business activities in the light of the European provisions



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### ABSTRACT

Over the years, the European Union has developed a comprehensive legal framework to ensure seafood traceability. In fact, in this sector, where the complexity of the marketing patterns has reduced the efficiency of controls, frauds are becoming widespread. Moreover, the rapid growth of Chinese communities has led to an increase of importations from Asia, which sometimes do not fully respect rules on traceability. In this study, we performed a survey on seafood products collected from the market of the Chinese community of Prato (Italy), to assess the frequencies and types of non-compliance in the light of the requirements established by the European traceability legislation on fisheries and aquaculture. Examination of labels and contents of Chinese seafood products imported to Italy found that 83% did not meet EU requirements for traceability.

Overall, this survey put into light the difficulties of the ethnic communities to conform to the European rules, the need to adapt the control system to the fast developing trade reality at all levels of the chain and the advisability to create standards that could be adopted worldwide.

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### 1. Introduction

The demographics changes and the trade globalization process have facilitated the circulation of foodstuffs between different countries. In particular, the rapid growth in Western Countries of Chinese communities settlements, which are strongly bound to their own culinary tradition, has led to an increase of Asian food importation (Choi, Yee, Lee, & Kwon, 2011; Niodea, Bruhna, & Simonne, 2011).

In Italy, where in the last twenty years the Chinese residents increased from 20 to 210 thousand units (National Institute of Statistics ISTAT, 2011), many kinds of food business activities, such as restaurants, rotisseries and retail markets, have been established inside their settlements. In Prato, a town hosting one of the largest Chinese community in Europe, the number of such activities has doubled from 2005 to 2010 (Pollini, 2010; Vallone et al. 2009).

Among the retails shops, the ethnic supermarkets represent a well-organized commercial system, which offers a large array of choice. Food products are available as fresh, cooked and frozen,

mainly packaged (bagged, under vacuum, canned) and are usually prepared by companies in the Peoples Republic of China (PRC) and then exported to the European markets, where are mostly distributed within the communities. These shops, once only addressed to Chinese people, who usually look for typical food at prices lower than those offered by the European food distribution chains (Pollini, 2010; Vallone et al. 2009), are nowadays also frequented from non-Chinese citizens. In this time of crisis and recession, the availability in local markets of this “low cost” ethnic food represents an attraction for a wide range of consumers.

Chinese products have been often involved in food scandals, such as, among the most recent, the milk powder tainted with melamine, and pork or fishery products containing unapproved animal drugs or additives (Ortega, Wang, Wu, & Olynka, 2011; Qiao, Guo, & Klein, 2012).

For these reasons, Chinese food items have been rejected in some countries, such as Japan and the United States (Calvin, Gale, Hu, & Lohmar, 2006; Gale & Buzby, 2009). The European Union (EU), through the enactment of specific regulations (Commission Decision 2002/994/EC, 2002; Commission Decision 2005/692/EC, 2005; Commission Regulation (EC) No 1135/2009) has also banned the importations of some food of animal origin, with the exception of aquaculture and wild fishery products.

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Despite publicized worldwide, the incidents of food contamination and adulteration have not stopped the rapid growth of Chinese food export, which, over five years (2005–2010), almost doubled its value. In particular, China has become the global leader in seafood export and, for many countries, represents the main supplier (Gale & Buzby, 2009; Stockhausen & Martinsohn, 2009).

In Europe, where the insufficient domestic seafood production had made the EU markets increasingly dependent on foreign imports (Miller & Mariani, 2012; Watsona & Pauly, 2013), China has become the second trading partner, after Norway (Blomeyer, Goulding, Pauly, Sanz, & Stobberup, 2012; FAO, 2007).

Currently, the complexity of the marketing logistic makes less effective the efforts to regulate, monitor and control the fish trade (Stockhausen & Martinsohn, 2009; Watsona & Pauly, 2013) due to the fact that many actors and passages are involved in the production and commercial flow (International Institute for Sustainable Development, 2011). Moreover, traceability is threatened by Illegal, Unreported and Unregulated (IUU) fishing. In this context, making a precise estimation of what species and quantities are imported, processed and then re-exported by China is not straightforward. Finally, considering that goods may legally change hands several times, and that information could be lost or intentionally modified, reaching the retailers completely changed, the chance to track a product along the whole chain becomes very difficult. As a consequence, seafood mislabeling reaches high levels in many countries (Armani, Castigliero, & Guidi, 2012). From a survey of the Food and Drug Administration (FDA) of the USA on the importation of Chinese food into the country in the years 2007–2008, it emerged that mislabeling is one of the most common infringements, representing 22% of total violations (Gale & Buzby, 2009). On the contrary, even though seafood from China are the goods with the highest percentage of rejection procedure by the EU Border Inspection Posts (BIPs), in Europe, data from the RASFF do not confirm the magnitude of the problem: the notifications made against Chinese food products for mislabeling are very few (11 notifications in the last 2 years) and vegetables are the most involved products (Rapid Alert System for Food and Feed, RASFF Portal).

Considering that, during previous investigations in Chinese supermarkets, together with problems related to poor hygiene in fresh food handling, language barriers and poor preparation of operators (Armani, Castigliero, Gianfaldoni, & Guidi, 2011) other important non-compliances, mainly referable to the absence or inaccuracy of labeling, were also found (Armani, D'Amico, Castigliero, Sheng, et al., 2012; Guidi et al., 2010), we decided to focus in deep on the analysis of the labels to bring to light the main issues related to traceability of fishery products. In this study, we performed a survey on fish products collected from the shelves of Chinese supermarkets located within the community of Prato (Italy) from 2010 to 2012, to assess the frequency and types of non-compliance in the light of the requirements established by the European traceability legislation on fisheries and aquaculture. In particular, we focused on the scientific and the trade names and we tried to understand if the parameters and requirements used in the Western Countries are also applied or applicable in China.

## 2. Materials and methods

### 2.1. Sample collection and visual inspection

One hundred fishery products (fish and mollusks), whole or prepared in various forms (filleted, pieces, threads), or processed (salted, dried, canned, roasted and smoked), variously packaged (in bag, canned, under vacuum) were purchased in retail food markets of medium and small size, within the Chinese communities of

Prato. 58% of them were collected in the years 2010 and 2011 and the remaining 42% during the 2012.

Each product was brought into our laboratory, identified by an internal code and then filed. To assess the nature of the food (vegetable or animal) and the correspondence with the trade name, we performed a visual inspection of the samples by a simple morphological analysis.

### 2.2. Labels' inspection

Information on traceability was examined according to Council Regulation (EC) No 104/2000, which is applicable to fresh, chilled, frozen, dried, salted, in brine and smoked products (Circular of the Italian Minister of Agriculture, Food and Forestry (MIPAAF) n. 21329 of 27th May 2002) and not to those cooked or otherwise prepared or preserved. For canned or roasted products the correctness of label information was only assessed.

#### 2.2.1. Italian label

We verified that all the products on sale had a “*customary name*”, which, as established by the law, must be accepted as the name of the food by consumers and can include the dietary treatment to which the product has been subjected (Regulation (EU) No 1169/2011).

The information related to the traceability of seafood was assessed in the light of Commission Regulation (EC) No 2065/2001 and Commission Implementing Regulation (EU) No 404/2011. In particular, we checked both the presence that the correctness of the mandatory information, such as the Commercial (trade) name, the scientific name, the production method (aquaculture or fishery product) and the catch area. To evaluate the correspondence between the scientific and the trade name, we relied on the Italian governmental list of fish species trade names “*Assignment of the Italian trade name to fish species of commercial interest, in accordance with Regulation (EC) 104/2000, and Title I of Regulation (EC) 2065/2001*” (Ministerial Decree of the Italian Minister of Agriculture, Food and Forestry (MIPAAF) of 27th March 2002) and its subsequent amendments (Ministerial Decree of the Italian Minister of Agriculture, Food and Forestry (MIPAAF) of 14th January 2005; 25th July 2005; 31st January 2008; 5th March 2010; 23rd December 2010; 12th August 2011). Moreover, we also investigated the seafood official lists of some other European and American countries (Bundesanstalt für Landwirtschaft und Ernährung (BLE), 2013; Canadian Food Inspection Agency, 2012; Food Standard Agency of United Kingdom; Ministère de l'Économie, des Finances et de l'Industrie, 2012; Resolución de 22 de marzo de 2011, de la Secretaría General del Mar; U.S. Food and Drug Administration, 2012).

Finally, thanks to the data provided by Fishbase (Fish Base) and World Register of Marine Species (WoRMS), we assessed the geographical distribution of fish and mollusk species reported on the label.

The assessment of traceability information (trade name, catch area and method of production) was performed only on the samples labeled as “seafood”, therefore the percentages shown in the results and in Table 1 do not take into account the products labeled as “vegetable”.

#### 2.2.2. Chinese label

Thanks to the translation performed by a Chinese native speaker, we compared the information reported on the Chinese labels with the Italian ones. Moreover, we assessed the correspondence of the information with the provisions requested by the Chinese Food Law 2009 (Food Safety Law of the People's Republic of China, 2009) and the European traceability legislations.

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