Pol. J. Appl. Sci., **2016**, *2*, 54-58

# CHINESE FOOD PRODUCTS REGISTERED AS PROTECTED IN THE EUROPEAN UNION

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**Abstract:** Chinese food products registered in the EU as protected have been described in the article: asparagus, peaches, garlic, citrus fruit (pomelo), apples, yams, crayfish, vinegar, green tea and dry starch product (pasta). The published application was used to characterize every product. The origin (natural environment) of production of each product was considered: kind of soil, climate, characterization of water and kind of fertilization. Conditions of natural environment significantly influence the quality features of all the registered products and decide on their traceability.

**Key words:** Protected Designation of Origin, Protected Geographical Indication, Chinese products, registered,EU

## Introduction

Regulation No 1151/2012 of the European Parliament and of the Council of 21 November 2012 on the quality systems of agricultural products and foodstuffs [1], according to the entry in point 59 enables *„registration as a designation of origin, geographical indications and the traditional specialities guaranteed of names connected with products originating in third countries, which fulfill the conditions stated in this regulation"*. This possibility has been used until now only by a couple of countries from outside the EU, which registered their raw materials or products as Protected Geographical Indications (PGI) or Protected Designation of Origin (PDO). Until now, the greatest number of products has been registered by the People's Republic of China (PRC) – ten out of the total number of nineteen products registered from outside the EU (i.e. almost a half of the registered products). Among the foodstuffs registered by China, six belong to the class referred to in the Implementing Regulation No 668/2014 [2] with the number 1.6 *Fruit, vegetables and cereals, fresh or processed* (Fig. 1), one to the class 1.7. *Fresh fish, molluscs and crustaceans and products derived from them*, two to the class 1.8. *Other products listed in Annex I to the Treaty (spices etc.) and one to the class* 2.5. *Pasta*.

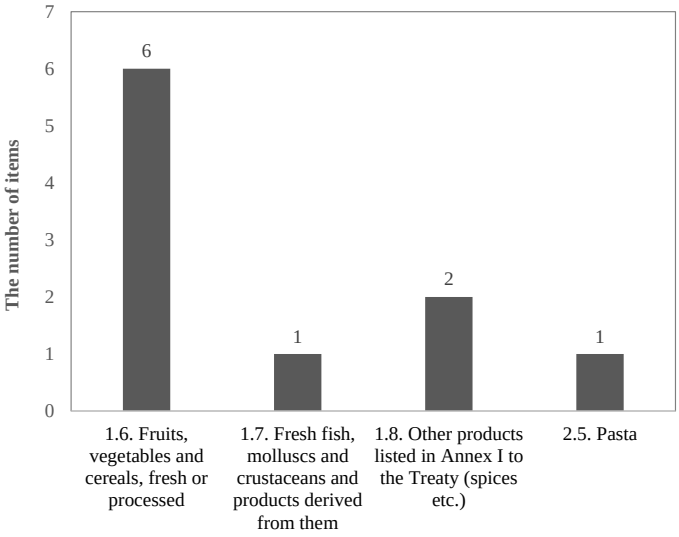


Fig. 1: Classes of food products registered by China in the European Union as protected.

## Fruit, vegetables and cereals, fresh and processed (class 1.6) registered by PRC in the EU as protected products

Among six products registered by China in this class there are: ‚Dongshan Bai Lu Sun' – preserved asparagus, ‚Pinggu Da Tao' – peaches, ‚Jinxiang Da Suan' – garlic, ‚Guanxi Mi You' – shaddocks, ‚Shaanxi ping guo' – apples and ‚Lixian Ma Shan Yao' – tubers of yams.

## Chinese asparagus

Dongsan Bai Lu Sun – are asparagus that are boiled, peeled, preserved in brine mixed with a little citric acid. They originated in Dongshan County in Zhangzhou City in Funjian province. This area does not possess many industrial plants, there is no heavy industry, which provides clean air. The traditional character of registered asparagus is connected with the method of farming resulting from specific geographical characteristics of the region: tropical sea climate with warm winters and cool summers, sandy, soft

and well-ventilated soil (sea sand and sea mud constitute the organic fertilizers) as well as underground water resources. Average yearly temperature of the region is 20.8°C and the lowest average temperature is 12.8°C. These conditions of cultivation foster plant vegetation and cause that asparagus are thick, have delicate flesh and pleasant flavor and their color after solidification is snow-white.

The processed asparagus are packed in metal tins or jars and their solidification takes 12 hours from harvesting. The species for production are Gi jnlim i Thielim. These asparagus were registered as PGI [3].

### Peaches

Pinggu Da Tao are the ten various species of peaches originated in Pinggu County belonging to the city of Peking. This area covers sixteen cities and villages located in a valley, surrounded by hills. Peaches grow on low, sunny hills and Yan Shan mountain slopes with sandy and loamy soil. This kind of soils are well-ventilated and rich in potassium. Good ventilation and watering provide a proper supply of oxygen to roots. The crops are watered with their own water system. The area under consideration has a continental monsoon climate, which is characterized by a considerable daily temperature fluctuations and intensive sunshine. This kind of conditions foster proper fruit coloring and carbohydrates production.

Peaches growing in this region have big fruits (20% larger than in case of other peaches), bright color, are juicy, have rich taste and scent and moderate sweetness – are properly balanced in terms of sweetness and acidity.

Peaches are packed in thin corrugated cardboards that protect fruits against humidity, mould, worms, pollutants and (strange) smells. It is advisable to store and transport fruits in compliance with cold chain requirements in the temperature between 0-4°C (temperature depends on the stage of transportation and storage) and with humidity of 85-90%, alternatively in a controlled atmosphere of 1% $O_2$ i 5% $CO_2$. Peaches were registered as Protected Designation of Origin (PDO) [4].

### Chinese garlic

Jinxiang Da Suan is a fresh white garlic with slightly spicy taste, possessing from eight to eleven cloves in a 5-7 centimeters bulb. Each bulb weighs 40-80 grams. The garlic comes from Jinxiang County, which covers thirteen towns possessing specific soil conditions. The region is full of rivers and therefore the soil is light or medium loamy, well drained, good at retaining water and has a high content of organic materials. The climate in this region is temperate continental monsoon with dry and freezing winters and hot and rainy summers. Soils are fertilized organically.

The garlic for export is packed in degradable corrugated cardboards. Often, it is previously placed in nets.

Garlic is registered as Protected Geographical Indications [5].

### Shaddocks (synonymous to Pomelo)

Guanxi Mi You is a shaddock known as pomelo (each fruit weighs from 1000 to 1750 grams), which contains large amount of juice, has fresh and mild flesh and sour and sweet wine taste. 100 ml of juice contains minimum 8.5 g of sugar, maximum 1.1 g of acids and minimum 10% of soluble solids. Fruits are of an inverted oval shape with a flattened upper part and characteristic round sign around the top. They have smooth, thin ($\leqslant$ 1,5 cm) and light orange skin.

The soil on which the fruits grow is fertilized organically (40-50% of yearly fertilization) and with minerals. Organic fertilizers are: compost, manure, mushroom fertilizer and others. Water used for watering trees comes from unpolluted mountain streams and springs.

Ripe fruits are packed separately in polythene bags and then in corrugated cardboards or nylon nets. Shaddocks are to be stored in temperature from 10 to 24°C with relative humidity from 80 to 85% – when there is a need to store them in ‚normal' conditions and in a temperature from 3 to 5°C with the same humidity, with the content of $CO_2$ not higher than 4% – when they are supposed to be stored in low temperature.

Shaddocks are registered as PDO and they belong to Pinghe County with south-Asian subtropical monsoon climate. The area is located in the mountainous terrain, inland, close to the coast. The average yearly temperature in the area is from 18.5 to 21.3°C (the lowest 2.9, the highest 39.2°C). Shaddocks grow on the lower parts of this area and plains situated on river shores. There are no industrial plants in the area, therefore there is clean air and water [6].

### Chinese apples

Shaanxi ping guo consists of five species of light red and yellowish-green apples, which have crisp flesh, sweet taste of wine and thick cuticle, rich in valuable nutrients. The apples contain a lot of pectin and waxy substances. They are durable in transport and storage, thus they are suitable to be traded internationally.

The apples grow in North-East China, in Shaanxi province, in fifteen counties and regions. The area is situated in considerable heights (800 to 1200 m above sea level) with loess soils and subtropical climate which is warm and sunny with considerable temperature fluctuations, semi-humid to semi-arid. Daily temperature fluctuations foster accommodation of nutrients and sugar in fruits. Loess soils contain

minerals and are characterized by good air circulation, humidity and fertility. Apples were registered as PDO [7].

### Yam

Lixian Ma Shan Yao are the only eatable tuberous roots belonging to the Dioscoreaceae family, also known as yams. They were registered as PGI.

The registered products cover fresh and dried yams, including the ones which are dried in the form of stripes and chips. Fresh bulbs are selected, peeled, cut in stripes (manually or mechanically), dried in the open air or in driers.

The bulbs come from three various species: Bangyao, Ziyao and Xiaobaizui that are of different sizes, colors and tastes after cooking. Bangyao after cooking is sweet, mild, but tingling; Ziyao and Xiaobaizui are sweet after cooking.

The bulbs come from Li County in Hebei province situated in North China. They grow in continental monsoon climate with proper sunshine, warmth and good access to water, on soil deposits from the Quaternary period. They are mostly sandy, loose, well draining soils that foster bulbs' cultivation [8].

## Fresh fish, molluscs and crustaceans and products derived from them (class 1.7) registered as Chinese protected products in the EU

In this class, China registered Yancheng Long Xia, i.e. wild living crayfish categorized under the family Astacura, existing in the Dulong river, on the area where salty and sweet waters mix. The Dafeng District in Yancheng City was provided as s a precise region of origin – it is a place situated between two nature reserves. Crayfish live in clean, well-oxygenated water, which fosters the development of various species of water and plant animals that constitute their natural habitat and the source of nutritional substances. Crayfish contain $\geqslant$ 18% of protein, $\leqslant$ 3% of fat and $\geqslant$ 2% of vitamin A. Their meat is elastic, they have thin shells, their flavor and taste are typical for shrimps and freshwater crabs as well as for sea products.

Crayfish after capture are sorted, washed, soaked, boiled, cooled, selected, placed on trace, poured with sauce, vacuum sealed in plastic bags and froze. The main ingredients of sauce are salt and fennel. Ready crustaceans are stored and transported in the temperature $-$ 18°C. The trays are placed in collective cardboards. Crayfish can be consumed directly after natural or microwave defrosting [9].

## Other products listed in Annex I to the Treaty (spices etc.), class 1.8.

China registered two products in this class: vinegar and green tea.

### Vinegar

Registered Zhenjiang Xiang Cu vinegar is produced from fermented glutinous rice, wheat bran that provide ideal conditions for acetic bacteria, rice husk – from which an ideal gas environment for acetic bacteria is produced, ‚daqu' – the growth carrier of acetic bacteria composed of wheat, barley and green pea, fried rice – providing special scent and color to vinegar, water – coming from the surrounding areas; contains minerals and has a slightly sweet taste.

Vinegar is characterized by a strong scent of fried rice and products of fermentation as well as delicate, fresh, sour and slightly sweet taste. Apart from acetic acid, it contains lactic, apple, amber, citric and gluconic acids. It has intensive red and brown color. Vinegar is available as ‚fragrant vinegar', which is stored for more than 180 days and ‚mature vinegar', which is stored for more than 365 days.

Vinegar is packed in glass bottles and then in collective cardboards.

This vinegar is produced in South-East China in Zhenjiang region with humid climate fostering the growth of acetous fermentation bacteria [10].

### Green tea

The second product registered by the PRC in the EU in 1.8 class as PDO is Longjing cha – which means green tea. This tea comes from certain type of bushes; the species of bushes were not specified. It was stated, however, that fresh tea leaves are ?processed in one of the kind manner'. The production stages are: withering, roasting in a hot wok, cooling and moisturizing and finally roasting in a mild wok. Withering softens tea leaves, brings out the flavor of green tea, enhances the aroma, reduces tingling taste and extends amino acids content. Roasting is composed of five stages: roasting – cooling – roasting – cooling – roasting and rolling. While roasting, various types of operations are being carried out: shaking, pushing, flinging, pressing, rubbing, knocking, scratching and grinding.

Tea prepared in this way has special sensory properties. Its color after brewing is from yellowish-green to light green, bright and clear, aroma from mild to persistent, taste from relatively pure to intensive and sweet.

Tea is grown in Zhejiang province, in three areas: Xihu, Qiantang i Yuezhou. The soils on which it is cultivated are composed of red loamy sand, quaternary red clay, red clay, paddy soil as well as mother materials. The climate in the

region is mild sub-tropical monsoon – warm and humid. There are numerous mountains, hills, lakes and rivers. The area is covered with evergreen and deciduous mixed forests, containing resin pines and bamboos. This kind of environment causes that tea accumulates special flavors, including polyphenols [11].

### Dry starch product (Pasta) (class 2.5)

Currently, the last registered Chinese product in the EU is Longkou Fen Si – dry pasta in the form of strands, produced from bean or pea, containing > 75% of starch. The product was registered as PGI in the class 2.5. Pasta. In the application [12], the class was provided as 2.7; currently in the Implementing Regulation No 668/2014 [2], pasta belongs to 2.5 class.

Starch intended for pasta production is extracted from peas or beans in a couple of stages. Beans or peas are soaked, ground and the skin residues removed; from the received pasta, the starch is isolated and its condensation takes place due to lactic fermentation of simple sugars – under the effect of Streptococcus lactis bacteria; then starch is extracted by drying.

Beans and peas intended for starch production can come from various regions, also from import, but they must be obtained in a proper manner. They cannot come from the cultivation where fertilizers of chemicals were used. Moreover, the seeds should not be stored for more than a year; they must be robust and uncracked with the minimal amount of pollutants and seeds of various colors.

The basis for starch production from beans and peas is the proper surrounding water composition, which provides suitable environment for the growth of lactic fermentation bacteria. It is the water that enables the specific manner of starch extraction and obtaining high output of starch from seed weight. The water comes from the surrounding mountains and hills, is free from pollution, has low content of chlorine and sulfate ions, which provide suitable conditions for the effect of *Streptococcus lactis*. Microbes best reproduce in spring and autumn. It is when the best quality pasta is obtained. In winter, the temperature is too low for the *S. lactis* growth and in summer – too high; moreover, in summer other microbes can pollute the fermentation process. Special area, where production is conducted, is situated in the north part of Shandong Peninsula. The climate in this region is warm continental monsoon.

Pasta obtained from such starch is translucent, soft, flexible and has distinctive taste. It endures boiling temperatures, even during long cooking, without gelatinization, which results in strands neither gluing nor tearing [12]. Mechanical features are the main characteristics of this pasta.

### Summary

All the products registered from outside the European Union as protected undergo the same rules of control as the products from the EU. It is therefore compulsory to certify them, which guarantees that their features must be in accordance with the ones declared in the applications. Registration, according to the 1151/2012 Regulation [1], provides consumers with the access to reliable information on the products offered, which helps to make conscious selection while shopping. In case of the PGI and PDO products' types, the obligation of the applicant is to prove the connection between the natural environment the product comes from and the distinct features of the products as it guarantees their authenticity. In this way, the consumer is provided with a detailed information on the product, which he or she consumes, and it increases the level of consciousness of the things the consumer pays for.

Moreover, in the application form, the types and origin of resources must be specified (if the product is to be registered) and the producer must indicate their deliverer (and prove their origin) and receiver [2]. Therefore, the history of every product can be recreated by monitoring the food chain as it increases consumer's safety.

### Literature

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Received: 2016
Accepted: 2016