Some Considerations on Foodstuffs Falsification

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Abstract: This paper aims to present the main theoretical aspects of the phenomenon of foodstuffs falsification, approached from both the perspective of the factors underlying illicit activities on alimentary goods, and the possibilities to limit foodstuffs tampering.

Changes to the composition of the foods in cases of adulteration and substitution may represent risk factors in relation to the need to ensure food security and safety, and such practices should be carefully kept under control by the competent authorities on the foundation of a consistent and efficient legislation.

Key-Words: food commodities, food safety, food adulteration, food falsification, food counterfeiting, food substitution.

1 Introduction

As the current period brings challenges in all areas, food industry and food businesses are mostly dynamic and controversial field of activities. Consumer demands are becoming higher and more complex, while manufacturers and distributors sometimes adopt illegal business and production practices, determined by the desire to produce and provide goods at an affordable retail price and simultaneously make higher profits. Thus, traditional or natural food goods are sometimes replaced with processed, artificial or fake products.

Goods counterfeiting, substitutions, falsification and other similar practices fall into the category of fraudulent activities, whose magnitude continuously increased along with the development of human society. In some cases, goods manufacturers are working together with goods counterfeiters and effects become serious when toxic or harmful substances are used.

The category of illegal activities taking place in relation to foodstuff also includes the sale of adulterated goods, and also types of food with low nutritional value (e.g. cheaper types of fish presented as more expensive, or farm-raised fish labelled as wild-caught) and/or potentially dangerous for consumption.

In summary, the causes of global proliferation of these illegal activities lie in: (i) distorted applying of the principle of free adjustment of demand in a market economy; (ii) the expansion and intensification of trade within the domestic and international markets; (iii) increasing the number of traders involved in logistics processes.

Although there is no universally accepted definition for specific types of fraudulent activities in the field of food stuffs, these can be divided into four categories, sometimes overlapping or interlocking: (1) fraud by deception, (2) deceit in the presentation of goods, (3) infringement, (4) adulteration.

Comprising of a difference between what is thought to be purchased and what is in fact the purchased good, deception can take different forms in practice, the most common being:
- deception on food commodity nature or identity;
- deception on food stuffs quality, through the difference between the quality prescribed/defined in the contract and delivered quality;
- deception on the composition and content of the food in useful components;
- deception about the source, species of origin of food goods;
- deception on the quantity, if the quantity sold or delivered is deficient in terms of mass, volume, dimensions.

To the above-mentioned circumstances, several more could be added:
- fraudulent use of weighing instruments;
- falsifying examinations and laboratory tests, manipulating the results;
- inappropriate use of laboratory equipment that alters the results.

The deceit in the presentation of goods is mainly achieved by excessive publicity carried out by the media which suggest data and elements that determine consumers to acquire goods of dubious quality. Due to insufficient consumer education,
consumers act frequently driven by the food stuffs appearance to the detriment of concrete scientific data and evidence highlighting results of laboratory experiments.

Counterfeiting as a phenomenon has become more and more significant, especially since the literature shows that a high percentage (about 80%) of major international companies are affected by the problem, making special financial efforts to stop it.

Within the European Union, the types of intellectual property rights falling under Regulation (EC) no. 1383/2003 are [2]: the brand of product or service, the designation of origin or geographical indication, designs, patents, supplementary protection certificates, plant varieties, copyright and related rights.

In Romania, in connection with the notion of “food counterfeiting”, the Emergency Ordinance No. 97 of 21 June 2001 regulating the production, circulation and marketing of food, republished in 2008, defines counterfeit foods as “foods whose quality, as mentioned in the declaration of conformity, standard or technical specification of the product and the label, was changed, intentionally or unintentionally, in a way that could constitute a health risk to consumers, which could or would harm their interests or misinforme them” [6].

Food adulteration or falsification occurs when the origin and the specific processing of food product do not meet the requirements for use, initially established (e.g. the sale of a substandard food commodity instead of another of high quality).

Targeting mainly on food products (meat and meat products, fish, seafood, milk and dairy products, wine, cheese, olive oil etc.), but also on industrial goods, counterfeiting is the operation of imitation, substitution, reconstruction, restoration, adulteration, distortion, alteration of the quality characteristics of a product in order to obtain similar products to the original aiming to achieve illegal incomes.

In this context, the fraudulent activity of food falsification includes both the intention, tools, practical efforts and the results, as follows:

- the method, means, opportunities, schemes, processes, procedures, systems used to carry out an activity or perform works that result in the realization of a foodstuff falsification;
- the way to achieve a specific purpose related to food products falsification;
- the manual labour needed to carry out a work that results in the production of a falsified product.

In contrast to fraud by deceit, which occurs at the time of sale to the consumer, falsification occurs, as a rule, at the stage of production.

Falsification of food often involves changes in composition, particularly by enriching product in the least valuable component and its depletion of the most important component. Thus, we can distinguish two main ways of achieving food stuffs falsification:

- extraction or substitution, when a component of a certain value is extracted in whole or in part from a standard quality product, or is replaced with another component of substandard quality, the product being sold as a normal product;
- addition, when a certain amount of a low quality component or non-specific product ingredients are added to a product rated as having a high quality.

At present there is a clear ascending trend of falsification and counterfeiting phenomenon and associated risks, in the context of a complex set of factors notably focused on reducing prices in order to conquer new markets, on the existence of masking practices of food falsification and on the counterfeiters’ intent to take advantage of buyer’s ignorance.

2 Factors favoring fraudulent activity of food stuffs falsification

In the current economic conditions, goods falsification, counterfeiting and faking are further developing because of several predisposing factors common to all commodities groups and subgroups, which are interrelated with a significant number of specific factors to each group of goods. In a systematic and synthetic approach, fraudulent activity of food stuffs falsification is fostered by the following factors:

Geographical factors refer to the area and region where a country is located and to its neighborhood, as they may create favourable geographical conditions for the proliferation of counterfeiting and falsification. For example, Romania’s geographical positioning places this country close to countries that are involved in production and transit of counterfeit goods (i.e. Bulgaria, Ukraine, Moldova). Also, the penetration of counterfeit, substandard and dangerous goods (e.g. sugar, wheat, cans etc.) are amplified because of the customs activities and the vicinity of the Black Sea [5].

In Romania, according to Law 84/1998 (republished in 2012, updated), geographical indications serve – within the goods trade - to
distinguish the goods and services created by a legal person or economic operator from those of others [7].

Of particular importance in respect of food stuffs is the designation of origin (pointing to the place of origin of the product / service), materialized using specific geographical indication. This naming helps to identify a product originating in a country, region or place of a state where the quality, reputation or other characteristic may be primarily attributable to its geographical origin.

The registration of a designation of origin must meet certain protective provisions. Marks misleading the public about the geographical origin, quality or nature of the product/service are excluded from protection and cannot be registered in Romania under the Law 84/1998. Also, trademarks containing a geographical indication identifying a product/products not originating in the place indicated or containing an indication for products not originating in the territory indicated, if use of such information is likely to mislead the public about the true place of origin cannot be registered under the same regulation.

The Romanian regulation on unfair competition (Law no. 11/1991, republished in 2012) states that “false claims on origin of goods mean any indications likely to make believe that the goods were produced in a certain locality, a certain territory or in a particular state” [8].

By misleading marking, packaging and labelling, many commodities suggest false geographic indications, deceiving consumers about the origin of food.

Technical factors are of particular importance because scientific and technical progress in all areas of activity favors the development of new raw materials, synthetic materials, substitutes that successfully imitate natural products.

In addition, the current development of science and technology has allowed the extensive development of assortment of groups and subgroups of goods on the world market, while providing technical methods for counterfeiting and imitation of renowned companies’ products, including the packaging and brands.

Sometimes, due to the high professional level of counterfeiters and outstanding performance in production stage, falsified and counterfeit goods look similar to the original goods and can hardly be identified by organoleptic methods, not only by consumers but also by specialists [5]. In this case, the most conclusive methods are the physicochemical methods, using specific chemical reactions, but this requires modern laboratory equipment, skilled professionals and time-costly analysis.

At the same time, the intensification of trade and increasing imports determine the presence of a wide range of products and brands on the markets, whereas the consumer is not enough informed regarding their quality. Frequently, the consumer is misled by deceptive advertising on product quality.

Economic factors are an essential category as it is related to financial aspects, referring to the possibility for counterfeiters of obtaining quick profits with minimum efforts.

The orientation of some economic operators towards maximizing profits by all means led to an upward trend of the falsified and counterfeit products market for many types of food commodities, including imitation or using marks and packaging of renowned brands for substandard and dangerous items.

The trend of forced costs lowering intended to get goods readily sellable has detrimental effects on the quality of food stuffs, which come to be produced under improper conditions, of raw materials poor quality, without meeting specific hygiene requirements.

Such practices are in fact part of unfair competition environment, according to Romanian law, which stipulates that the following acts of unfair competition are considered crimes: “producing in any way, import, export, storage, offering for sale or sale of goods / services bearing false claims on patents, trademarks, geographical indications, origins and characteristics of the goods and the name of the manufacturer or dealer in order to deceive others traders and consumers” [8].

Low incomes of population in some underdeveloped countries or in developed countries for certain social categories (unemployed, immigrants, elderly etc.) lead to selling and buying on the market of such goods, thereby favoring fraudulent activities.

The globalization of the world economy, expressed by the expansion of transnational companies on world markets creates optimal conditions for fraudulent activities, especially on underdeveloped markets, where consumer information is insufficient.

Demographic factors refer to the continued growth of the world population and hence of the demand for food, leading, consequently, to the expansion of fraudulent activities of falsification.

Social factors entail the increasingly short amount of time allotted by the consumer for making purchases, so that the buying decision speed, combined with lack of education and lack of
knowledge of normal quality characteristics of the product promotes the sale of imitations or non-conforming products.

**Political factors** refer to the level of involvement and the efficiency of the legal and institutional framework in limiting fraudulent practices on food commodities. Increasing proliferation of these illegal actions lead to lower confidence of economic partners and consumers, particularly in the context of emerging risks in recent years in the field of food safety associated with counterfeiting, imitation or substitution. Therefore, the main objectives of the responsible factors impacting the consumer are as follows [5]:

- physical and economic consumer protection against the risks that may affect food safety, health or life;
- ensuring consumer access to accurate information on the quality of food stuffs sold on the market;
- promotion of international cooperation in the field of consumers protection regarding falsified/counterfeit goods;
- intensification of market surveillance actions for compliance with current legislation relating to the production and marketing;
- creation of a system to educate and inform consumers on falsified / counterfeit commodities [4].

At national, European and international level there was growing involvement in recent years, by competent authorities, bodies, institutions and associations in charge of consumer protection regarding food stuffs. In Romania, among the bodies involved in controlling and stopping of counterfeiting / falsification are included: The National Authority for Consumer Protection, the National Sanitary Veterinary and Food Safety Authority, The National Customs Authority, the General Inspectorate of Romanian Police, the General Inspectorate of Police Border, the Financial Guard, Chamber of Commerce and Industry etc.

### 3.1. Conceptual clarifications

In Romania, the Order of the Minister of Health no. 611 of 3 April 1995 (approving the rules of products’ hygiene) indicates that “it is considered falsification the addition of any natural or synthetic substances to products to cover up food defects, as well as to modify or confer properties that products do not justify by their natural composition or production standards”. The same order stipulates that “changing the composition without changing the specifications on the label would be considered as adulteration.”

A broader definition covering a wide range of illegal actions on food goods assimilates food adulteration or substitution to any deceit or attempted deceit on the nature, quality characteristics, composition, content of useful substances in the product, substitution of normal ingredients with other substances that endanger health and use of names, descriptions or other misrepresentation of the origin, quantity and identity of the goods or services that contribute to establishing the product’s value.

Law no. 12/1990 on the protection of the population against illicit commercial activities [9] stipulates in Art. No. 1 that “adulteration or substitution of Commodities or other products, and displaying for sale or selling such products, knowing that they are counterfeit or substituted” are considered illicit commercial activities and consequently are being punished, as appropriate, as contraventions (established and sanctioned by National Authority for Consumer Protection inspectors) or as criminal acts (punished by 6 months to 3 years imprisonment, if the criminal law does not provide a heavier penalty).

In a narrow sense, **food adulteration** means changing the ratio between the components of a food product without making an additivation with other substances. In this case, the adulteration may not affect the hygienic value of food, but it diminishes its nutritional value deceiving the consumer in the same time.

More concretely, **food substitution** implies changing the composition of a food product, partly replacing one substance/ingredient or more, with others of lower quality and value.

Substitution of raw materials, semi-products and finished products can fit into the hygiene regulations provided that they are they are applied to the extent in which they are not considered tampering.

Substitution techniques apply mainly to raw materials, consisting of single or repeated replacements (e.g. for fats, beverages, meat, fish - by using lower quality varieties).

### 3 The main types of illegal practices within food - national landmarks:

**Romania**

Food commodities may be subject to a significant number of fraudulent schemes and illicit practices generically associated to the concepts of “falsification” or “substitution”.

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The right meaning of the concept of food adulteration/substitution may be better defined by identifying main directions of food adulteration/substitution, which can be summarized as follows:

- removal of one or more natural components of the product;
- modification of the normal proportion of specific chemical components;
- introduction of abnormal, non-specific substances into product;
- substitution of natural ingredients with synthetic or artificial ingredients, unauthorized in terms of hygiene rules;
- sale of a substitute product as a natural product;
- complete adulteration, the product being obtained by the combination of chemical compounds similar to the natural product is obtained (fake food, imitation);
- restoring a damaged or defective product in order to cover up flaws that would reveal inadequate properties of the product.

3.2. Food adulteration and food safety

In the area of food production and marketing a number of activities that endanger food safety by violating the provisions in this field can be identified. These include:

- using food ingredients which are prohibited by legislation on food hygiene: food additives, genetically modified ingredients etc.;
- added allowed substances to foods (e.g. food additives) in quantities exceeding limits permitted by hygiene regulations;
- the sale of polluted or contaminated food stuffs containing metals (especially heavy metals), radionuclides, organic substances, pesticides, pathogens, industrial pollutants etc, with varying degrees of toxicity. Contaminated foods are forbidden in the food commodities commercial circuit.
- frauds that leads to the transformation of food stuffs into harmful products; this occurs when the adulteration/counterfeiting/substitution is detrimental to health.

In this respect, a major role lies with increased food safety regulation at all levels, considering that a sound legislative basis could provide, involving certain necessary costs, the appropriate framework for ensuring food safety throughout the food chain, with benefits for all parties, especially final consumers.

Among specific causes that determine the ascending trend of food adulteration we also mention food spoilage, as raw materials and ingredients can be infected or contaminated during preparation, transport and storage due to the action of internal and external factors [10].

Some fraudulent schemes are achieved by adulteration of altered, impaired or degraded food goods, in order to hide their real status.

From a regulatory perspective, food tampering is an illicit activity prohibited by law. In Romania, according to the Criminal Code that will enter into force on 1 February 2014 [1], the “production, offering or exposing for sale of food, beverages or other adulterated or substituted items, if these are deleterious to health, shall be punished with imprisonment from 3 months to 3 years or a fine and prohibition from exercising certain rights.”

3.3. The methodology of detecting adulterated food goods

In view of the above-presented facts, the prevention, detection and measurement of fraudulent procedures rely on typological analysis of possible directions of food products tampering [3] as well as continuous development of methods and techniques for identifying and estimating of these practices.

Identification and analysis of food falsifications involve a thorough knowledge of normal product, of the direction and magnitude of deviations from specific properties of natural products. In this context, of particular importance are the methods used for:

- normal product identification;
- assessing the maximum variations of the natural or declared components of food goods;
- highlighting possible non-specific constituents of food as a result of fraudulent manoeuvres.

The methodology used to prevent and identify fraudulent practices performed on foodstuffs includes both general methods and techniques and a wide range of specific methods and techniques, resulting from a rich practice in the field of food research and expertise [3].

In practice, the methodology implies operating, on the one hand, with characteristics that are usually used for the expression of quality, and, on the other hand, with the investigation of specific characteristics, which expresses the extent to which they were adulterated. These special characteristics are established differentially by product depending on specific processes of falsification (altering the original chemical composition, some physical or
organoleptic characteristics by treatment with certain substances etc.).

4 Conclusion
Although it is ancient considering its beginnings, food-related crime currently acquired new dimensions, urging to understand the nature of food adulteration schemes, to improve detection of these illegal practices and to raise public awareness of the issue.

Selling counterfeit or tampered food products may cause serious risks to consumers, especially if the goods do not comply with specified standards and legal regulations, thus becoming threats on food safety.

Food adulteration may be innocuous (even if still illegal) or may endanger consumers’ health once food safety is impaired. Such illicit activities punishable by law as such, refer mostly to: altering the original recipe of the product (due to lack of ingredients or aiming to in speculatively reduce the costs); illegal substitution of valuable, natural ingredients; distortion of the content of the original product; addition of ingredients to imitate the original/normal product.

To prevent and limit the marketing of falsified food products, fair traders must dispose of essential information on both the production, composition, quality, provenance, value of food, and ways of detection of counterfeits.

Currently, consumers are often experiencing the presence on the market of misleadingly packaged and labelled commodities, as a result of unfair trade practices which diversify continuously, which strongly requires to strengthen national and international legislation in the field and to promote initiatives that prevent such practices.

In general, the relevant legislation was strengthened in this respect by regulating mandatory requirements for labelling, packaging, marking, which require manufacturers to provide consumers with relevant and accurate information on the goods labels in order to assist them to take appropriate decisions at the time of purchase.

Factors contributing to the increase of food adulteration practices pertain primarily to low consumer purchasing power and the insufficient level of information on the appreciation of food stuffs quality. Despite the protective measures applied nationally and worldwide, falsified and counterfeit products remain present in a significant proportion within the international trade, implying multiple economic, social and legal consequences.

We consider that keeping the phenomenon of food adulteration control food urgently requires active and steady involvement of national and international stakeholders, so as to constantly ensure sufficient consumer protection regarding food commodities, especially in terms of food safety.

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