DEFINITION OF TRACEABILITY CONCEPT: ELEMENTS OF TRACEABILITY

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Summary

Traceability, as relative new concept in animal health, feed and food safety, is defined by Regulation of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (EC) No 178/2002, as 'traceability' means the ability to trace and follow a food, feed, food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution.

Despite the fact that references to the concept of traceability in animal health, feed and food safety are very limited, this paper has as aim to formulate the system of traceability defining the framework of traceability, the elements of traceability, the instruments of traceability and the means of traceability. This paper is particularly designated to propose the identification and definition of traceability elements in animal health, feed and food safety.

At the same time, our proposal also refers to the establishment of criteria used to define the elements of traceability.

Key words*:* traceability; channel; line; chain and segement of traceability

Despite the concept of traceability in the field of animal health, food and feed safety is recently defined, after huge crises which have took place at the end of the former millennium and the first years after 2000 in the field of feed and food safety and animal health, elements and instruments of traceability have been recognised almost from antiquity.

Defined by different international veterinary organizations or having incidence in veterinary fields, in quite closed formulas, traceability, as a new concept in veterinary medicine, was completely defined by Community legislation, initially by Regulation (EC) the European Parliament and of the Council No 178/2002 of laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety and after this by the five Regulations package on food and feed hygiene and controls.

Definition of traceability concept and its putting in place, is one of the results involved by the major crises which took place at the end of the former century and the first years after 2000. In this respect, we are able to mention

spongiform encephalopathies crisis in animals, occurred after 1986, simultaneous with the first description of BSE, followed by the crisis of spongiform encephalopathies in humans, especially occurring the new variant Creutzfield – Jacobs and the correlation of these human diseases with BSE, the hormones crisis induced by the use of some hormones in animal husbandry, between European Union and Unite States, the crisis of dioxins from the period 1999 – 2000, foot and mouth disease crisis in the period 2000 – 2003 or avian influenza crisis after 2002.

Despite the references to the concept of traceability are enough limited, it is necessary to have a more detailed definition of this concept, in order to facilitate its concrete application in the fields of feed and feedstuffs, animal heath, food industry, food and foodstuffs. With that end of view, this paper has as aim to propose the definition of some elements of traceability, in order to facilitate the application of the concept in the veterinary and food safety competences.

Materials and Methods

In order to elaborate this paperwork, the most existing references to the concept of traceability identified in the legal documents drown-up by the international veterinary organisations and those having incidence in veterinary and food safety sectors, as well as the provisions of Community transposed legislation have been consulted and taken into account. This approach was necessary in order to be able to establish the criteria proposed to be used for identification the traceability elements and for their complete definition. In order to solve in the practical manner this problem, several documents used in Member States for following production, identification, transport and the use of feed and feedstuffs, identification and registration of live animals to monitor their movements, the existing systems for identification and marking of food and foodstuffs as primary production, as well as the systems for their identification and labelling in the chain of distribution and trade en-gross and en-detail, have been consulted and taken over. Concretely, the instruments of traceability have been used in order to define the elements of traceability.

Results

As a result of processing the technical aspects, provided by legislation referring to the concept of traceability, used by Member States of the European Union, as well as of some specifications from reference literature, we succeeded to define the criteria used for identification the traceability elements and to complete their definition.

The criteria used for definition of traceability elements are:

- content of traceability channel
- level of traceability
- sense of traceability

- structures of traceability
- directions of traceability

Taking into account the content of traceability channel it could be defined **administrative traceability** and **informational traceability**. Taking into consideration the level of traceability it could be defined **global traceability** and **individual traceability**, **apportioned traceability**, **total traceability** and **partial traceability**. Having in view the sense of traceability it could be defined **ascendant traceability** and **descendent traceability**. As structures of traceability they could be defined **step of traceability**, **chain of traceability**, **segment of traceability**, **line of traceability**, **channel of traceability**, **cross traceability** and **knot of traceability**. Base on criterion regarding directions of traceability it could be defined **convergent traceability** and **divergent traceability**.

In order to take an example and to define the proposed elements of traceability, we took as example the bovine meet channel traceability, because this channel of traceability is the oldest and the most detailed channel of traceability. Since the bovine meet is exposed, under different preparations, in the trade chain, several steps have to be proceeded, the first step consisting in use of feed and feedingstuffs or veterinary medical products for feeding and healthcare of live animals form which derived bovine meet. Feed and feedingstuffs are obtained in the framework of some activities as cultivation, growing, harvesting, and processing of vegetable row materials and processing some feedingstuffs of animal origin. The ensemble of this step constitutes the **feed and feedingstuffs chain**, and for veterinary medical products – it constitutes **medical products chain**. The subsequent step for obtaining born meet is breeding and rearing of animals in commercial and non-commercial holdings, this step being considered as **animal chain**. Further late, the animals are slaughtered in authorised slaughterhouses and meet, product and by-product obtained thereof are designated both for processing, and distribution and placing on the market under different preparations. This step is defined as **food chain**. Subsequently meet, products, and by-product obtained thereof, processed or not, are preceded through the distribution network and then placed on the market towards public organisation or institutions or private consumers. This step constitutes **chain of distribution and trade**. In the framework of food chain, for example, they take place more operations as: animal slaughter, evisceration, obtaining of carcases or semi-carcases, drying of carcases, cutting of carcases, splitting of carcases, sharpin of carcases, de-boning, sometimes mincing or mechanically recover meet, marking, wrapping, packing and storage. All these operations which take place inside of a chain of traceability are defined as **step of traceability**. The succession of the chains of traceability from the beginning (feed and feedstuffs chain) to the final consumers constitutes **channel of traceability**, in this case bovine products channel of traceability. This channel of traceability consists in feed and feedingstuffs chain, medical products chain, human chain, located at the same level, then animal chain, food chain, distribution and trade chain. Besides the material aspects involved in this channel

of traceability, represented by feed and feedingstuffs, drugs, live animals, products and by-products of animal origin, the system of distribution and trade, all these are accompanied by official documents and information constituting instruments of traceability which are specific for each chain of traceability. Feeding stuffs are marketed accompanied by certificates and labeling, animals are identified and registered, meet is marked and labeled and the products obtained in the chain of distribution and trade are accompanied by certificates, are marked and labeled. Where we are refereeing to the material part of the chain of traceability so we defined **administrative traceability** and where we are referring to instruments of traceability or documents accompanying the commodity concerned, with define **informational traceability**.

If the traceability is performed for all products and by-products derived, for example, from a certain bovine, it means that it is defined **global traceability** (traceability for meet and all products and by-product obtained from a bovine animal). If the traceability is performed only for a single product derived for a certain bovine, for example, it means that it is defined **individual traceability** (for example, traceability for bovine meet, bovine skin, fat traceability, blood traceability or organs traceability). If the traceability is performed for a group of products, for example, meet and bones or skin and fats, it means that we defined **apportioned traceability** (for example, traceability for meet and organs or fats derived for a certain bovine). Where the traceability is performed from the origin of a product or products to the final consumers, it means we realize **total traceability** (see bovine products channel traceability). If an animal origin product or more products are submitted to the traceability for a limited number of chains of traceability from a certain channel of traceability of that product or products, for example, only animal chain and food chain, it means that it is performed **partial traceability**, the chains of traceability included constituting the **segment of traceability** that consists in two or more chain of traceability inside a certain channel of traceability. The pursuance of a single product derived from an animal, for example only bovine meat, throughout the channel of traceability for all bovine products and by-products, means the **line of traceability** for bovine meat. Among several chains of traceability there are operations which have no concrete liaison with the chains of traceability concerned, but they link two chains of traceability. These operations are called **knots of traceability** and are represented, mainly by transport activities. If the traceability of a product or more products is performed from certain chain of traceability to the origin of these products, it means that we defined **ascendant traceability** or **amonte traceability** or **qualitative traceability**. A good example is the traceability of bovine meat in case of BSE. If the traceability of a product or more products is performed from certain chain of traceability to the consumers or to the subsequent chain of traceability, it means that we define **descendent traceability** or **aval** or **quantitative traceability**. A good example, in this respect, is the traceability for dioxins crisis.

From a certain animal, inside a food chain, there are more products and by-products derived from this animal: meat, skin, bones, fats, organs, glands, blood, hoofs and horns, hair. From this level, these products and by-products have different destination: some of them are designated for human consumption, but the others are designated for industrial processing. These segments are managed by different institutions belonging to the central administration. The chain of traceability where a disjunction of the products destinations take place is defined as **cross traceability**.

For animal rearing, besides feed and feedstuffs or medical veterinary products are used additives, feedingstuffs of animal origin and other ingredients. Each of these products is obtained inside a certain chain of traceability (for example, food and feedstuffs chain, medical products chain, feed additives chain). The chains of traceability which contribute to obtain certain product, for instance, a bovine animal, are defined as convergent chains of traceability and the traceability of products obtained in these convergent chains is define as **convergent traceability**. The pursuance of the products obtained from an animal throughout the different channels of traceability is defined as **divergent traceability**. For example, bovine meat channel traceability that is designated for human consumption that proceeds the food chain against the traceability of bovine skin obtained from the same animal designated for industrial processing and follows the other channel of traceability.

Conclusions

1. Through this paper we make some proposal for establishing the pertinent criteria defining the elements of traceability used in sanitary veterinary food safety sectors.

2. This paper identifies and defined the elements of traceability for the fields mentioned at 1.

3. The identification and definition of traceability elements, as they are defined by present paperwork are necessary elements to a complete definition of the traceability concept, especially for its putting in place.

4. The identification and definition of traceability elements consists a real support to clarify the instruments of traceability which have to be used for every chain of traceability.

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