

ORGANIZATIONAL, LEGISLATIVE AND PROFESSIONAL ASPECTS OF TRAINING VETERINARIANS IN FOOD QUALITY AND SAFETY IN SOME MEMBER STATES

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Abstract

In the EU legislation regarding the veterinary activities great attention is paid to the issues related to food safety and quality.

The integrated European market requires unification and standardization of methods for veterinary and sanitary control and examination of food. The requirements for these control and expert activities are directly related to the theoretical and practical training of veterinary students, and also with the postgraduate qualification of veterinarians and their life-long learning.

Having in mind these basic principles and rules, we set up the task to make a comparative analysis of the experience of some EU states, including Bulgaria, on their practical application in the process of training and continuing professional qualification.

For the realization of this aim an analysis of the curricula of some higher veterinary schools in Europe, including Bulgaria, was made. Several criteria were studied – development of the food safety concept “from farm to fork” in the courses; training of specialists in food safety among veterinarians; implementation in the training process of international standards for quality and safety of foods of animal origin.

Key words: Food quality, food safety, curriculum, continuing education.

1. Introduction

In order to ensure the integrated and balanced functioning of the internal European market in animals and animal products it is essential that the Member states may have confidence in each other and rely completely on the integrity of certification during trade. One of the fundamental prerequisites for

ensuring the effective and transparent trade control of animals and animal products appears to be the qualification of the veterinarians in charge.

The future official veterinarians must have both fundamental medico-biological knowledge and specific skills and competences in epidemiology, diagnostic methods, procedures of control, prevention and eradication of communicable diseases and zoonoses, animal products inspection technique, main principles of processing foodstuffs, methods of food microbiological control, European veterinary legislation, etc. These qualifications that the Official veterinarians (OVS) should have are specified by the Terrestrial Animal Health Code of OIE and Annex I of Regulation (EC) No 854/2004, laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption (Wall [2], Regulation (EC) No 854/2004 [3] and Terrestrial Animal Health Code [6]).

In the recent years several veterinary universities in Europe have adjusted their veterinary curricula which were prompted by the Vet2020 project financed by the European Union. Within the project experts in the veterinary medicine field explored and tried to determine the crucial changes by 2020 that would influence the work of the veterinarians. As highest priorities in the future veterinary education all the experts pointed out “food quality and food safety” and “public health” (Lipman and van Knapen [1]). They also predicted an increase in employment for veterinarians in these fields of about 50% to 60%.

In this work we set ourselves the aim to make a comparative analysis of some key indicators characterizing the training in “Food safety” of veterinary students in some Member states, including Bulgaria and to establish whether it is in compliance

with the criteria for training qualified specialists and with the international requirements for development of the concept "from farm to fork".

2. Materials and Methods

In order to complete the tasks we did a comparative review of the curricula of seven higher veterinary schools in Europe (Vienna - Austria, Ghent - Belgium, Brno - Czech Republic, Helsinki - Finland, Dublin - Ireland, Edinburgh - United Kingdom, Stara Zagora - Bulgaria). The survey of the current curricula in veterinary medicine of those universities enables us to analyze the process of food safety training by the following indicators:

- year and form of teaching the discipline - compulsory or optional;
- status of the course in food safety and quality - single or integrated;
- training in food safety in Bachelor's degree;
- training in food safety in Master's degree - options for specialization.

Data used in the survey were collected from the official websites of those higher schools and from personal contacts (interviews) with lecturers from some of the universities (Brno - Czech Republic; Stara Zagora - Bulgaria) (Dolezelova [4] and Stoyanchev [5]).

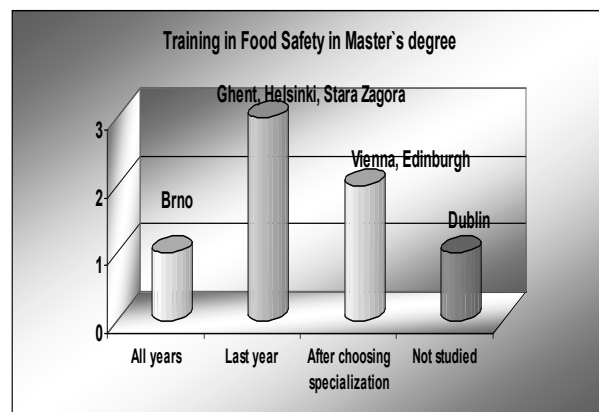
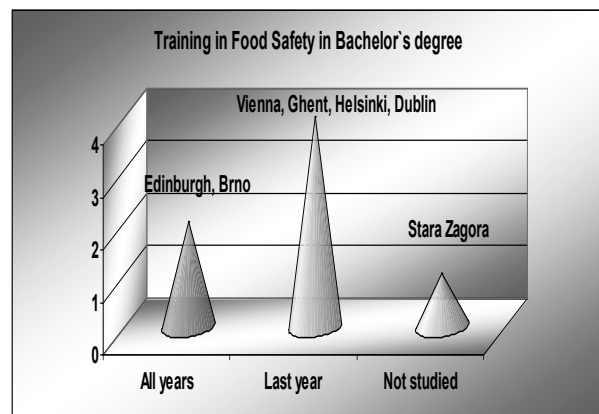
3. Results and Discussion

The determined in the study characteristics of food safety and quality training in the investigated veterinary universities are grouped by similar features and visualized on figures.

The data analysis shows that in all veterinary curricula safety of food and products of animal origin is a compulsory discipline:

- Vienna, Austria - year 3, 4; year 6 in Master's degree (choosing specialized module);
- Ghent, Belgium - year 2, 3; year 6 in Master's degree;
- Brno, Czech Republic - a single, thorough course of study: year 1, 2, 3 in Bachelor's degree; year 1 to 6 in Master's degree;
- Helsinki, Finland - year 2, 3 in Bachelor's degree; year 5, 6 in Master's degree;
- Dublin, Ireland - year 4 in Master's degree;
- Edinburgh, United Kingdom - years 1 to 4 in Bachelor's degree; specialized module when choosing Master's degree;

- Stara Zagora, Bulgaria - year 5 in Master's degree; specialized module when choosing second Master's degree.



Figures 1 (left) and 2 (right). Food Safety training of Bachelors and Masters of Veterinary Medicine

As shown on Fig. 1 at six of the investigated universities students are taught topics, related to food safety during the Bachelor's degree. In two of the higher veterinary schools these topics are included in the curricula for all the years of the cycle (Edinburgh, Brno), while in the other four (Vienna, Ghent, Helsinki, and Dublin) such disciplines are studied during the last years of the degree. Only at the University of Stara Zagora food safety is not taught during the initial years of studying veterinary medicine because there is no differentiated Bachelor's degree and at this stage students gain knowledge in fundamental medico-biological and pre-clinical subjects.

Within the Master's degree in Veterinary Medicine (Fig. 2) food safety topics are studied from the first to the sixth year only in Brno and during the last years - in Ghent, Helsinki and Stara Zagora. At the other two universities - Vienna and Edinburgh - disciplines focused on the control of products of animal origin are studied by the students in case they have chosen certain field of specialization among several options. Only in Dublin food safety issues are not included in master programmes because at the University college only bachelors of veterinary medicine are trained.

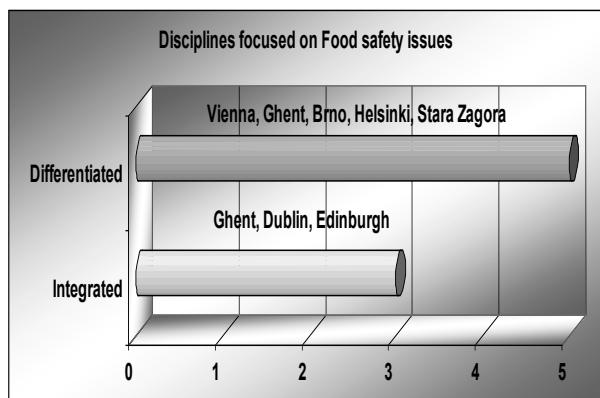


Figure 3. Status of the Food safety course in the curriculum – differentiated or integrated subjects

Regarding the status of the course in safety and quality of food of animal origin, data show that at five of the investigated universities (Vienna, Ghent, Brno, Helsinki, and Stara Zagora) in the curriculum there are differentiated separate subjects on the topic. In the other cases (Ghent, Dublin, Edinburgh) integrated or related disciplines exist - this means disciplines in which food safety issues are taught but the term "food safety" is not mentioned directly in the title (e.g. public health, etc). As it is shown on Fig. 3 at the University of Ghent in the veterinary curriculum both separate and integrated subjects focused on the concept "from farm to fork" are present.

In Table 1 the duration of training in veterinary medicine at the investigated universities is noted down, and the subjects related to food safety and security are listed as well.

Table 1. Summary of the disciplines on Food safety

Educational institution	Disciplines on Food Safety
University of Veterinary Medicine, Vienna, Austria - 6 year course	Year 3 - Block. Food Sciences and Public Health (Fundamentals of Food Hygiene; Meat hygiene and technology; Milk hygiene and technology; Quality assurance and risk assessment of food) Excursion in animal husbandry, animal welfare and milk hygiene Year 4 Exercises in meat inspection Year 5/6 (10 and 11 semesters) Module Food science, public health and health care
Faculty of Veterinary Medicine, University of Ghent, Belgium - 6 year course	Year 2 Food and Environmental Chemistry Year 3 Introduction to Veterinary Public Health Year 6 Veterinary Public Health: Inspection and Control

Faculty of Veterinary Hygiene and Ecology, University of Veterinary and Pharmaceutical Sciences, Brno, Czech Republic - 6 year course	Compulsory and elective disciplines in thorough course for training bachelors and masters in Veterinary Hygiene and Ecology
Faculty of Veterinary Medicine, University of Helsinki, Finland - 6 year course	Year 2 Meat inspection technique Year 3 Meat inspection; Meat inspection practice Year 5 Veterinary health services and municipal administration Year 6 Food hygiene and food inspection; Veterinary health services and municipal administration
University College Dublin, Ireland - 5 year course	Year 4 Veterinary Public Health
Royal (Dick) School of Veterinary Science, University of Edinburgh, United Kingdom - 5 year course	Year 1, 2, 3 и 4 Animal health, welfare and food safety Master in One Health – "Zoonoses and Emerging Diseases" module ("Farm to Fork" Approach; Food Chain Information and traceability)
Faculty of Veterinary Medicine, Trakia University, Bulgaria - 5,5 year course	Year 5 Hygiene and technology of meat and meat products Hygiene and technology of milk and milk products Veterinary – sanitary expertise of foodstuffs of animal origin Second Master's degree – "Organization and legal regulation of control and safety of foodstuffs of animal origin" module

At the University of Veterinary Medicine in Vienna, Austria the topics on food of animal origin and public health are compulsory for the third-year students, who are taught a block of disciplines "Food Sciences and Public Health" (Studienplan Diplomstudium Veterinärmedizin [7]). The sixth, last year of study is left for concentration on certain module for specialization, chosen among several options, one of which is "Food science, public health and health care". At the University of Ghent, Belgium the Food safety is a compulsory part of the core curriculum. During the second and third year of their Bachelor's degree (Programme for Bachelor's degree in Veterinary Medicine - Ghent, Belgium [8], Description of the discipline Food and Environmental Chemistry, Bachelor's degree - Ghent, Belgium [9] and Description of the discipline Food and Environmental Chemistry, Bachelor's degree - Ghent, Belgium [10]) the undergraduates are taught the main

health risks concerning food of animal origin and the fundamentals of veterinary public health. At the end of their veterinary training within the master programme students' attention is focused on the inspection and control of foodstuffs (milk and meat products) during production and processing (Programme for Master's degree in Veterinary Medicine – Ghent, Belgium [11] and Description of the discipline Veterinary Public Health: Inspection and Control, Master's degree – Ghent, Belgium [12]).

At the present moment the Czech Republic has two separate programmes for higher veterinary education offered by the University of Veterinary and Pharmaceutical Sciences in Brno, which are orientated towards clinical veterinary medicine or towards food safety, hygiene and ecology. Both programmes provide extensive and thorough training so that all the graduates are able to practice in every field of veterinary medicine. However, their specific focus offers profound and broader emphasis on certain sphere – in all six years students either in Bachelor's and Master's degrees study subjects focused mainly on hygiene and safety of foodstuffs (Dolezelova [4]).

At the University of Helsinki, Finland issues on food safety are studied both in the bachelor and licentiate programmes (Programme for Bachelor's and Master's degrees in Veterinary Medicine – Helsinki, Finland [13]). During the first cycle (second and third years) students learn basic techniques of inspection of meat and meat products. During the next cycle of licentiate of veterinary medicine they attend the course in Veterinary health services and municipal administration and complete their training in Food hygiene and food inspection.

The University College of Dublin, Ireland trains bachelors of veterinary medicine and it is the only centre for veterinary education in the country. In the fourth year of study the undergraduates' attention is concentrated on two modules in Veterinary public health, within which they gain knowledge and competences in developing and implementing risk management systems at every stage of the food chain (Programme for Bachelor's degree in Veterinary Medicine – Dublin, Ireland [14]). Emphasis is made on hygiene and inspection of meat, including ante-mortem and postmortem inspection and animal welfare during slaughter.

In the curriculum for bachelors of veterinary medicine and surgery (BVM&S) at the University of Edinburgh, United Kingdom during the four years of study the issues on quality and safety of foodstuffs of animal origin are covered in the module "Animal health, welfare and food safety" (Programme for Bachelor's degree in Veterinary Medicine – Edinburgh, United Kingdom [15]). Postgraduate students with BVM&S

degree have the opportunity to choose between five master programmes, one of which is "One Health" (Programme for Master's degree in One Health – Edinburgh, United Kingdom [16]). Those who take this way of specialization study a module focused on zoonoses and emerging diseases (Description of module "Zoonoses and Emerging Diseases" of the Master programme in One Health – Edinburgh, United Kingdom [17]), within which the approach "from farm to fork" is included together with Food chain information and traceability.

The course in veterinary medicine at Trakia University of Stara Zagora trains Master veterinarians. In order to acquire specific competences in food safety issues the undergraduates study during the fifth year topics on hygiene and technology of meat and milk products, as well as expertise of foodstuffs of animal origin (Stoyanchev [5]). There is an option after graduation for completing second Master's degree in Veterinary administration, developed for veterinarians in charge of state veterinary services management (Programme for Master's degree in Veterinary Administration – Stara Zagora, Bulgaria [18]). One of the modules in this programme is "Organization and legal regulation of control and safety of foodstuffs of animal origin".

4. Conclusions

The results from the survey led to the following conclusions:

1. The veterinary curricula of the investigated universities include compulsory, differentiated or integrated disciplines on Food safety. The topics covered concern various aspects of the approach "from farm to fork".
2. The knowledge and skills gained in the Food safety course comply with the legally established by Regulation 854/2004 of the EU and Terrestrial code of OIE competencies of official veterinarians for food chain control.
3. The training in Food safety and security at six of the universities is provided in Bachelor's degree and at three of these higher schools after graduation master programmes for specialization in food hygiene and control is offered. Issues on safety of foodstuffs are compulsory in the standard curriculum for Masters of Veterinary Medicine at three other universities.

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