Course Unit Descriptor

Study Programme: Veterinary Medicine

Course Unit Title: Milk Hygiene

Course Unit Code: 3IVM10O52

Name of Lecturer(s): Assistant Professor Marija Pajić

Type and Level of Studies: Undergraduate Academic Studies

Course Status (compulsory/elective): Compulsory

Semester (winter/summer): Summer

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 5

Prerequisites: None

Course Aims:

The subject enables students to acquire: knowledge in the field of veterinary inspection of the production of milk in order to obtain safety of dairy products; skills to apply methods of analysis of chemical compounds and safety of milk and dairy products, as well as the methods for control of milk production and processing hygiene; ability to solve practical problems in milk production and processing "from farm to fork".

Learning Outcomes:

After completion of the course from this subject, student should be able to: properly take and transport samples (for the determination of the chemical composition and microbiological examination of milk and dairy products, to determine the somatic cells count in raw milk); carry out organoleptic inspection and detect flaws of milk and dairy products; determine active and potential acidity of the milk samples, perform the alcohol test and interpret the result; detect the presence of antibiotic residues in milk; detect the counterfeiting milk by water; perform quick methods for monitoring udder health changes (Draminsky test and CMT); carry out chemical and microbiological testing of milk and dairy products; define and explain, to the parties involved in the production and processing of milk, the requirements which must be fulfilled in accordance with applicable regulations, and assist in the implementation of biosecurity measures; point to the existence of specific problems and failure in control of production, processing and transporting of milk and dairy products, as well as participate in resolving and overcoming them.

Syllabus:

Theory

Introduction. The milk consumption and organization of milk production. organoleptic properties. Milk composition: dry matter, protein, fat, carbohydrates, minerals, vitamins and enzymes. The physical characteristics of milk: the freezing point, light refraction index, osmotic pressure, buffering capacity, redox potential, active and potential acidity. The milk composition of other domestic animals. Cow milking. Transport of milk. Microflora of milk. Heat treatments of milk. Somatic cell count and secretion disorder. Pathogenic microorganisms in milk. Fundamentals of milk microbiology in the epidemiology of food borne diseases in humans. Foreign substances in milk (antibiotics, pesticides, disinfectants). Fermented dairy products - safety and quality, critical control points in production in terms of food safety. Cheese - safety and quality. Other dairy products. Veterinary legislation and inspection of production and trade of dairy products and HACCP system.

Practice

Introduction. Definition of milk. Organoleptic inspection of milk. Milk quality assessment. Composition of milk. Regulations. Samples and sampling. Determination of active and potential (by Soxhlet-Henkel) acidity, milk freshness assessment (boiling test, alcohol test, red test and alizarol trial). Detection of enzymes in milk. Dry matter. Milk fat. Detection of counterfeiting milk by water: Determination of density, freezing point and light refraction index. Diagnosing disorders in the milk secretion. Somatic cell count. Procedure of taking milk samples for microbiological examination. Hygienic quality of milk. IBC and CFU. Detection of pathogenic bacteria in milk and detection of antibiotic residues in milk. Starter cultures. Rennet strength. Dairy products – organoleptic assessment, physical, chemical and bacteriological analysis. Regulations. Dairy (visiting dairy to get acquainted with the organization of the proceedings with milk and HACCP in practice). Hygienic inspection of dairy equipment and vessels. Test.

Required Reading:

1. Stojanović, L., Katić Vera: Higijena mleka. Veterinarska komora Beograd, 2004., 2011.

2. Katić Vera: Praktikum iz higijene mleka. Veterinarska komora Beograd, 2007.

3. Boboš, S., Vidić Branka: Mlečna žlezda preživara - morfologija, patologija, terapija. Monografija, Poljoprivredni fakultet Novi Sad, 2005.

4. Mansel W. Griffiths (ed.): Improving the safety and quality of milk, Volume 1: Milk production and processing, Woodhead Publishing Limited, 2010.

5. Mansel W. Griffiths (ed.): Improving the safety and quality of milk, Volume 2: Improving quality in milk products, Woodhead Publishing Limited, 2010.

6. Bačić, G.: Dajagnostika i liječenje mastitisa u goveda. Veterinarski fakultet, Zagreb, 2009.

Weekly Contact Hours: 60	**Lectures:** 30	**Practical work:** 30

Teaching Methods:

Interactive lectures with the application of audio-visual aids; Practical laboratory work with the keeping the diary of laboratory work, visits to dairies and institutes, analysis and interpretation of legislation related to the production and analysis of milk and dairy products.

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Active class participation	20	practical exam	5
Test	15	oral exam	50
Preliminary exam(s)		…….	
Diary of laboratory work	10		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.