Study program: Integrated Academic Studies in Pharmacy

Course title: Bromatology

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Course status: compulsory

ECTS Credits: 7

Condition: Medical biochemistry, Pathophysiology

Course aim

To introduce students to the relationship between food, nutrition and health in order of good health promotion. Introduction of food analysis methods and the assessment of food quality and food safety.

Expected outcome of the course:

Student should be familiar with the basic principles of optimal diet (nutrition recommendations), the roles of nutritive and regulatory substances, composition of foods in terms of nutritional content and regulatory substances, food biochemistry, chemical contaminants and food additives, foods for special dietary uses, food biotechnology, food safety and quality assurance systems and the legal aspects of food safety.

Student should be familiar with food analysis methods in the assessment of food quality and food safety and should know the basic principles of the rational use of dietary supplements.

Course description

Theoretical education

Food, diet, health and pharmacy. Determination of energy requirements of different population groups. Determination of energy value of foods. Biochemical characteristics of proteins. Proteins in foods. Proteins and health: physiological roles, nutritive characteristics, protein requirements of different population groups. Food allergies and intolerance. Biochemical characteristics of lipids. Lipids in foods. Lipid substitutes. Lipids and health: physiological roles, lipid requirements of different population groups, health risks. Biochemical properties of carbohydrates. Carbohydrates in foods. Carbohydrates and health: physiological roles, carbohydrate requirements of different population groups, dietary fibers, glycemic index of foods, health risks. Regulatory substances: vitamins and minerals. Water soluble vitamins and health: physiological roles, requirements of different population groups. Fat soluble vitamins and health: physiological roles, requirements of different population groups. Macro minerals: physiological roles, requirements of different population groups. Micro minerals (trace minerals): physiological roles, requirements of different population groups. Drinking water: physiological roles, requirements of different population groups, health risks and safety. Non-nutritive dietary constituents. Nutrition care process and pharmacy. Foods for special dietary uses: definition, legislation. Infant formulae. Dietary supplements: possibilities for use and rational use in different population groups. Probiotics, prebiotics and symbiotics. Dietary supplements in diseases caused by inadequate diet. Dietary supplements in athletes' diet. Foods, dietary supplements and drugs interactions. Genetically modified (GMO) food. Organic food. Functional food. Food labeling. Nutrition and health claims. Risk analysis: management, communication and risk assessment. Risk assessment: identification and characterization of hazard, exposure assessment and risk characterization. Nutrient risk assessment. Natural toxic food ingredients: antinutrients, hormone active substances, heterosides, alkaloids. Mycotoxins in food. Nitrate, nitrite and nitrosamines. Toxic elements. Polychlorinated biphenyls and dioxins. Polycyclic aromatic hydrocarbons. Pesticides residues. Veterinary drugs residues. Food additives: legal aspects, benefits and health risk. Food flavorings. Current topics in food safety in public health. Preventive systems in ensuring food safety. Safety of food packaging materials, cosmetics and toys.

Practical education

Energy requirements of different population groups. Protein determination by the method of Kjeldahl. Determination of hydroxyproline in meat and meat products. Determination of fat by the method of Soxhlet. Determination of the constants of fats and oils: saponification number. Deterioration of fats and oils: peroxide number. Determination of sugars by the method of Luff-Schoorl's. Drinking water (mineral water) safety. Preparation of water samples by solid phase extraction for the analysis of pesticide residues. Analysis of pesticide residues using gas chromatography – mass spectrometry. Preparation of food samples by QuEChERS method for the analysis of pesticide residues. Determination of colors using paper chromatography. Determination of preservatives, sweeteners and flavors by HPLC. Spectroscopic determination of nitrite in meat products. Labeling of foodstuffs. Nutrition and health claims. Rational use of dietary supplements.

Literature

Compulsory

1. Novaković B, Jusupović F, editors. Nutrition and health. Novi Sad (Serbia): Faculty of Medicine; 2014.– selected chapters translated into English
2. Novaković B, Torović Lj, editors. Bromatology - food quality and safety. Novi Sad (Serbia): Faculty of Medicine; 2014. – selected chapters translated into English

Additional

1. http://www.efsa.europa.eu
2. http://www.codexalimentarius.net
3. http://ec.europa.eu/food
4. http://www.who.int

Number of active classes	**Theoretical classes:** 60	**Practical classes:** 45

Teaching methods: theoretical and practical education.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	
Practices	20	Oral	50
Colloquium	20		
Essay			