

LO 3: GMMs IN FOOD PRODUCTION AND SAFETY

The **Learning Outcome (LO) 3: GMMs in food production and safety** is a brief prologue considering genetic modification (GM) in global food industry and world GM technology policy. It presents some definitions concerning the nature and safety of genetically modified foods. Different classifications regarding the food and food ingredients produced by means of GMMs are described. The general principles of safety assessment of GMMs in food are outlined. Information is provided on tools for elaboration of the assessment procedure for safety evaluation of GMM food. Elements, which should be taken into account in safety assessment, are described. Information on risks for human health imposed by genetically modified foods' and approaches for risk assessment are denoted. Safety aspects specific to GMMs are considered. An overview of molecular methods applied for control of genetically modified foods is made. Emphasis is given to the approaches for assessment of gene transfer, genetic stability and microbial pathogenicity.

LO 4: RISK ASSESSMENT OF GMMs AND DERIVED PRODUCTS

The **Learning Outcome (LO) 4: Risk assessment of GMMs and derived products** provides information about the concept of substantial equivalence to GMMs. Different groups GMMs and the products derived and applied for human and animal consumption are described. Information is provided on approaches applied in the environmental risk assessment of GMMs and their products. Effects of GMMs and food and feed derive from them on human and animal health is considered. A brief overview is given on the intended and unintended effects anticipated as a consequence of GMMs exposure and/or use. The potential GMM interaction with the intestinal microflora and the immune response is appraised. Finally, brief description of current developments in the field of GMOs detection and approval is presented.

BASIC DATA ABOUT THE COURSE

Course Title: Genetically Modified Microorganisms - challenges and limitations

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Course type:

Academic	Enrichment	Work-oriented training
✓		

Target Group: Teachers/trainers in adult education; career officers, counselors, inspectors; head teachers / principals; education manager and other management staff in adult training institutions; non-teaching administrative staff

EQF level:

EQF level 5	EQF level 6	EQF level 7
✓	✓	✓

Course aim: provides general information about GMMs in food production and safety; the approaches applied in the environmental risk assessment of GMMs and their products with emphasis on the effect on human and animal health.

Knowledge background: basic knowledge in biochemistry, microbiology and molecular biology

Course content:

Learning Outcome 3: GMMs in food production and safety

1. Introduction
2. Definitions on genetically modified foods' safety
3. Food safety assessment process
 - 3.1. The principle
 - 3.2. Specific considerations
 - 3.3. Additional elements
4. Genetically modified foods and human health – the potential risks
 - 4.1. Risks for human health imposed by genetically modified foods' application
 - 4.2. Approaches for risk assessment
 - 4.3. Safety aspects specific to GMMs
5. GMMs in food production
 - 5.1. Genetic modification techniques
 - 5.2. Molecular methods for control of genetically modified foods
 - 5.3. Molecular methods for detection and quantification of GMMs
 - 5.4. Assessment of gene transfer
 - 5.5. Genetic stability of microorganisms
 - 5.6. Microbial pathogenicity
6. References

Learning Outcome 4: Risk assessment of GMMs and derived products

1. Risk assessment of GMMs and derived products for human and animal health
 - 1.1. The concept of substantial equivalence to GMMs
 - 1.2. Application of comparative approach
 - 1.3. Intended and unintended effects
 - 1.4. Exposure to GMMs
 - 1.5. Effect on intestinal microflora
 - 1.6. Effect on immune system
2. The future perspectives
3. Concluding remarks
4. References