

RISKS AND IMPLICATIONS OF GENETICALLY MODIFIED PRODUCTS

Mureșan Laura

Transilvania University of Brasov, Romania, Faculty of Law and Sociology, Bd. Eroilor, nr.5, lauramureshan@yahoo.com, 0722/516412

Neacșu Andreea

Transilvania University of Brasov, Romania, Faculty of Economic Sciences, Bd. Eroilor, nr.5, deea_neacsu@yahoo.com, 0740/194425

Madar Anca

Transilvania University of Brasov, Romania, Faculty of Economic Sciences, Bd. Eroilor, nr.5, ancamadard@yahoo.com, 0745/345355

Abstract: Genetically modified products are not a new concept, not even for Romanian people. The most known and endearing tortoises were “mutant,” meaning genetically modified. The first product obtained through this technique and made for sale, was a genetically modified version of a hormone – BST somatotropina – which stimulated lactation in cows. The term “OMG” is used to refer to live organisms, plants or animals, who have been injected with genes, particles from other species’ DNA, trespassing the species barrier, for it to be able to have new properties.

Key words: genetically modified products, soy bean GM, legislation, risks.

Introduction

Genetically modified produce are products that have similar nutritional qualities, or sometimes even better qualities than those achieved through classic methods. “The new products” are the result of genetic engineering. A gene is a particle from the acid molecule DNA, and is responsible for a certain trait of an organism (like blood type).

Genetically modified products are not a new concept, not even for Romanian people. The most known and endearing tortoises were “mutant,” meaning genetically modified.

The first product obtained through this technique and made for sale, was a genetically modified version of a hormone – BST somatotropina – which stimulated lactation in cows. This product was made through the insertion of the gene for BST in bacteria, a method similarly used in the experiment for the making of insulin. After this realization the question of whether this hormone influences just the animal or if it influences the consumer as well, showed up.

Experimentally it was proven that an injection with BST would increase milk production by 15-20%. Canadian researchers, who were busy with the introduction of new genetically modified products on our markets, found that 30% of the rats that received an enhanced dosage of BST produced antibodies, which meant that the BST reached the blood circulation system. Only after 8 years from the realization of this study the end of the usage of this hormone was achieved in Canada.

In Romania there is a great deficit of information with regard to genetically modified organisms.

The term “OMG” is used to refer to live organisms, plants or animals, who have been injected with genes, particles from other species’ DNA, trespassing the species barrier, for it to be able to have new properties.

I. Are the products which contain OMG dangerous for the health of people and animals?

There are studies, unfortunately not too many, which prove this. So far, the results of some relevant studies on guinea pigs are available. One of the most interesting of these studies, which concerns us as well, was performed in Russia on the soy bean MG, the same type of soy bean MG cultivated in Romania since 1998 until last year, officially. “Officially,” because un-officially it is still cultivated.

The effects upon the two species of guinea pigs tested, who consumed the soy bean MG, were absolutely impressive; even the who participated in the study were shocked. It was found that in the tested animals there were malformations in the internal organs (kidney, brain, testicles), an increased aggressive temperament in the second generation animals, the reduced birthrate at half point, and the loss of maternal instincts in female guinea pigs, who killed their young and ate their brains.

Are the MG seed resistant and do they give least pretentious crops? Is this an advantage for farmers, especially for the ones in the Third World?

Definitely it is not an advantage for farmers anywhere; first of all because of the norms imposed by the producing companies. The farmers lose their primordial right of using the seed of a crop to another, making them obligated to buy a whole new lot of seeds from the company that produces them, every year.

Another problem is contamination. The crops of a farmer who does not wish to cultivate MG plants can be accidentally contaminated by natural pollenization (wind, insects) which the man, evidently, can not control. There are cases in which the producers of MG seeds solicit damages for the unwilling farmers with contaminated crops, since these farmers can't depend on the law's protection, while the MG seed producer is protected through his registered norms.

What is "a territory free of OMG"?

This is a concept from the resistance campaign against OMG, through which the local authorities (local councils, municipal councils) declare that they do not want to cultivate any kind of OMG on the territory they preside over. As soon as there will be enough local councils who take these kinds of decisions, this type of pressure, from a local level, will matter very much in decisions at the national level, regarding the MG cultures.

Are these types of territories, without OMG, present in Romania as well?

Of course. Forty-two places: 3 cities and 37 comunals from the counties of Cluj and Bistrita-Nasaud, have declared themselves OMG-free zones. The people with which they discussed were very receptive in these places and evidently, the result was positive – meaning that all the zones were declared "OMG free zones."

InfOMG had an "Information tour about Genetically Modified Organisms" in 3 countries: Romania, Bulgaria, and Macedonia. Why these countries?

Because it was found that in these 3 countries there is a great deficit of information for the citizens, a deficit of assimilable information. The subject of OMG can be perceived in the first phase as a very complicated one, even though it can be explained quite simply and intelligently, so that all the people can be conscious of what OMG are and why they create problems.

What results do you think this tour had in Romania?

The public interest for the information was visible. Generally, the reaction shown from Romanian was of not believing the safety of consuming these genetically modified products. There were questions about the impact of these genetically modified products on the human health and that of the environment. Many people were unhappy about the fact that the products which contain OMG are not labeled according to the operating legislation (HG 173/2006), which obviously trespasses upon the consumer's right to choose.

With this event, InfOMG and Friends of the Earth Europe launched a campaign of collecting signatures for the outlawing of genetically modified corn MON810 crops in Romania, product of Monsanto, recently authorized in Romania.

The campaign is still unfolding. Until presently there have been a couple thousand signatures collected.

II. What does the Romanian legislation say about OMG?

The Romanian legislation which regulates the introduction on the market of genetically modified organisms is harmonious with the communal legislation (Directive 2001/18/CE of the European Parliament and of the March 12 2001 Council regarding the deliberate semination in the environment of the genetically modified organisms). Art. 1 alin. 1 states the objective of the emergency ordinance number 43 from May 23 2007 regarding the deliberate introduction in the environment and the introduction on the market of genetically modified organisms, as being the necessary assurance of the legislative and institutional framework, harmonized with the communal one, such that the activities with genetically

modified organisms can unfold with respect to the precaution principle, for the assurance of human and environment health protection.

In the activities regulated by the emergency ordinance number 43/2007 there can be found the introduction on the market of genetically modified organisms, by themselves or components of other products (Art. 1 alin.2 lit. B).

This emergency ordinance number 43/2007 defines the most frequent notions utilized in the regulation of genetically modified organisms. In this way, the genetically modified organism is defined as being any live organism, except of humans, whose genetic material was modified in a different way than natural, besides the natural crossing and/or recombination. The genetic modification is legally defined as being the modification of the natural hereditary genetic information of an organism through techniques of genetic modification. The introduction on the market is defined as the availability of genetically modified organisms, with price of free, of the people with authorization for activities with genetically modified organisms. The notification is the transmission, from the notifier, to the competent authority, of necessary information about the background of the present normativ act. The product is one which is made up of, or contains, a genetically modified organism or a combination of genetically modified organisms and which is introduced on the market. Biosecurity is legally defined as being the total measures taken for minimalizing or eliminating the potential risks which can show up as a consequence of the use of genetically modified organisms, which could have adverse side effects upon human health and upon the durable conservation and utilization of biologic diversity. The evaluation of the risk upon human, animal, and environment health is a process destined to evaluate the direct or indirect risks, immediate or delayed, which the deliberate introduction in the environment or on the market can have upon human and environmental health.

The emergency ordinance number 43/2007 prohibits:

1. the activity of introduction on the market of a genetically modified organism, by itself or a component of a product, without authorization from the competent authority or without the authorization from another member state.
2. the activity of utilization of a product which does not respect the conditions from the legal authority obtained.
3. the activity of introducing on the market a genetically modified organism , by itself or as a component of another product, if the labeling and packaging does not respect the conditions of the legal authority obtained.

The labeling and packaging of product which contain genetically modified organisms has to be done conform the national and communal legislation on the subject.

The person which transmits a notification can only be a judicial person. He/she is obligated to ensure the correct evaluation of the potential adverse side effects upon human and environmental health, which could result, directly or indirectly, from the gene transfer from genetically modified organisms to other organisms. The evaluation is done for every case before introduction and takes into consideration the nature of the introduced product and that of the receiving environment, as well as the cumulative potential effects long-term, associated interactions with other genetically modified organisms and the surrounding environment. (Art. 5 alin. 1, Emergency ordinance number 43 from may 23 2007 regarding the deliberate introduction in the environment and on the market of genetically modified organisms).

The evaluation of the risk upon human and environment health is realized by independent scientific organists or independent experts, authorized or certified according to the legislation on the subject.

The operator who uses genetically modified organisms or carries on the introduction on the market, on import, export, transit, storing, manipulating, transporting of such genetically modified organism or a combination of such an organism, by itself or as a component to another product, has the legal obligation to take measures such that the unfolding activities to not have adverse side effects upon human, animal, and environment health. The costs of necessary biosecurity measures for the secure unfolding of the activities, as well as the costs of biosecurity measures necessary for the minimalization, mending or preventing consequences of adverse side effects determined from the use of genetically modified organisms are endured by this operator (Art. 9, emergency ordinance number 43/2007).

The operator who carries on the activities with genetically modified organisms, is obligated to nominalize a responsible regarding the biosecurity problems or to assure the collaboration with an external consultant,

with professional qualifications in biosecurity measures, and to assure the training of personal employees and of those direct contributors regarding the specific legislation about genetically modified organisms, operating legislation regarding the environment protection and legislation regarding work security.

Additionally, the operator who puts in motion these activities with genetically modified organisms has the following obligations:

1. to allow access of controlling authorities, to collaborate with these, and to present documents which demonstrate the nature of the used products, under genetic modification aspects, for the verification according to the precautions from the authorization of the competent authority or for the legal stabilization of the activity and of the manner in which the wishes regarding protraction were respected;
2. to allow sampling of the product for control;
3. to make available for controlling authorities the documents through which the mode of transport of genetically modified organisms, security measures for transport, place and way of storing, before and after introduction, information regarding packaging and labeling, waste disposal are set;
4. to keep documents regarding the unfolding activities, for a period of 10 years from the ending of the deliberate introduction on the market;
5. to assure the elaboration of emergency plans and to communicate them to the authorities with responsibility for emergency situations and to all those who could be affected.

The evaluation studies of risks for human and environmental health, which regards genetically modified organisms which contain one or more genes resistant to the antibiotics used in medical or veterinary treatments, has to contain distinct mentions about identification and progressive elimination of resistance markers to antibiotics from these organisms, which could have adverse side effects upon human and environmental health.

The application of precautions from the emergency ordinance number 43/2007 and the creation of the national biosecurity framework is realized through the participation and collaboration between: the central public authority for environmental protection, National Agency for Environment Protection, Commission for biologic security, Environmental National Guard, implicated authorities (central public authority for agriculture, veterinary and product safety control central public authority, health central public authority, consumer protection central public authority, and education, research, youth central public authority).

Any judicial person, who wishes to introduce on the market for the first time, a genetically modified organism or a combination of such organisms, by themselves or as components of other products, has the obligation to transmit preliminarily a notification to the competent authority, if Romania is the state where it is intended to introduce on the market for the first time this genetically modified organism. The notification is to be transmitted in electronic format, in romanian and english, as well as on hard paper, in 2 original copies, through mail, with receipt confirmation, or can be handed in to the competent authority, which records the notification on the date of receipt.

Conclusions:

There are risks from the consumption of genetically modified products to the consumer's health, of which the most important are:

1. Allergic effects

Newly inserted genes can produce proteins which, to some people, can determine allergies. The most frequent allergies are from milk, eggs, fish, cereals, and soy beans. At the beginning of the 90's when soy beans were discovered to have nutrition effects from the introduction of a gene from brazilian nuts, the potential risk was evident.

2. Antibiotic resistance

It is unknown that some produce genetically modified can raise the human resistance or animal resistance to antibiotics. For example, tomatoes genetically modified and consumer fresh have a gene marker (a resistant gene to antibiotics) which is resistant to neomycin or kanamicin. The same thing happens in the case of cotton seeds. Generally, the risk varies according to the origin of the implicated gene. Bacteria which produce lactic acid don't have to have the resistant gene to antibiotics.

3. Modifications at the metabolism level

Through the insertion of new genes other alterations can be produced at the genome level – meaning that the total genes of an organism – alterations which can generate in the host organism other effects besides the counted on one, like the lowering of the quantity of nutritive substances and the raising of the toxin levels in the host organism.

Suggestions:

- Romanian consumers have the right to know the truth about genetic engineering and about the contents of the products they consume.
- Farmers have the right to know what type of seeds they plant.
- Also, society on the whole has the right to make a good informative choice regarding the way of agriculture which they wish to practice.
- Presently, there has not been a focus of public attention about this subject, least of all there has not been any public proceedings on the subject.
- The intention of InfOMG is the objective informing about the situation of genetically modified organisms in Romania and abroad, and the making aware of the public regarding the impact of the introduction of this biotechnology in the environment and in the food circuit.
- Competent authorities should effectualize more controls to see if the legislation which regulates this subject will be respected.
- There has to be more intense programs and actions for the informing and educating of consumers with regard to OMG.

References:

1. Banu, C., ș.a.: Principii de drept alimentar. Editura Agir, București. 2003.
2. Codex Alimentarius FAO-WHO.
3. Madar, A., Neacșu A.: Verificarea calității mărfurilor alimentare. Editura Universității Transilvania din Brașov, 2004. pg. 4.
4. Ordonanța de urgență nr. 43 din 23 mai 2007 privind introducerea deliberată în mediu și introducerea pe piață a organismelor modificate genetic.
5. Directiva 2001/18/CE a Parlamentului European și a Consiliului din 12 martie 2001 privind diseminarea deliberată în mediu a organismelor modificate genetic.
6. Ordinul Ministerului Sănătății Nr. 975/1999.