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Editorial

Genetically Modified Foods Against Hunger in Developing Countries

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Based on population growth especially in developing countries, it is necessary to focus on increasing food production by 70% by the year 2050 (FAO, 2009). One of the proposed resolving ways would be applying biotechnology for producing genetically modified (GM) foods mostly harboring foreign DNA, followed by expressed protein involved in insect resistance and herbicide tolerance. But, there are very controversy theories for being safety of these kinds of foods. After this, many organizations reported various strategies for assessments of these products (Codex Alimentarius Commission, 2007; EC, 2004; EFSA, 2006; FAO/WHO, 2000) and indicated the tests for assessing the safety of this biotechnological food. Therefore, investigation on GM crops is critical to evaluate toxicity and allergenicity.

Many studies have been carried out about allergenicity of proteins expressed in GM crops (Cao et al., 2012; Thomas et al., 2004), but there are no reports of allergic effects, so far because of their rapidly degradation after exposure to digestive enzymes. However, there are many questions and further studies can be considered. In addition, toxicity is discussed in GM foods. So far, no toxicity effects have been reported after consumption of GM foods (Juberg et al., 2009; Stagg et al., 2012).

Finally, for believing the safety in GM foods in all countries and cultures seems necessary more and more investigations. The modern biotechnology tools may solve the hunger problems in countries especially the ones with high population growth and low incoming especially developing countries.

References

Cao B., He X., Luo Y., Ma L., Liu P., Cao S., Liu Y., Zou S., Xu W., Huang K. (2012). Safety assessment of dehydration-responsive element-binding (DREB) 4 protein expressed in *E. coli*. *Food and Chemical Toxicology*. 50: 4077-4084.

Codex Alimentarius Commission (2007). Report of the sixth session of the codex Ad Hoc intergovernmental task force on foods derived from biotechnology, alinorm 07/30/34, food and agriculture organization, Rome, Italy. Available from: http://www.codexalimentarius.net/ web/ archives.jsp?year=07.

European Communities (EC) (2004). Genetically modified crops in the EU: food safety assessment, regulation, and public concerns. European communities, Luxembourg, Belgium. p. 99. Available from: http://www.agbios.com/docroot/articles /05-268-002.pdf.

European Food Safety Authority (EFSA) (2006). Safety and nutritional assessment of GM plant derived foods/feed: the role of animal feeding trials. Draft report of the scientific panel on genetically modified organisms of the European food safety authority (EFSA). Available from: http://www.efsa. europa.eu/en/science/gmo/gmo_consultations/gmo_AnimalFeeding Trials.html.

Food and Agriculture Organization (FAO) (2009). How to feed the world in 2050. Discussion paper, high-level expert forum. The food and agriculture organization, Rome, Italy. http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf.

FAO/WHO. (2000). Safety aspects of genetically modified foods of plant origin. Report of a joint FAO/WHO expert consultation on foods derived from biotechnology. Rome, Italy.

Juberg D.R., Herman R.A., Thomas T., Brooks K.J., Delaney B. (2009). Acute and repeated dose (28 day) mouse oral toxicology studies with Cry34Ab1 and Cry35Ab1 Bt proteins used in coleopteran resistant DAS-59122-7 corn. *Regulatory Toxicology and Pharmacology: RTP*. 54: 154-163.

Stagg N.J., Thomas J., Herman R.A., Juberg D.R. (2012). Acute and 28-day repeated dose toxicology studies in mice with aryloxyalkanoate dioxygenase (AAD-1) protein expressed in 2, 4-D tolerant DAS-40278-9 maize. *Regulatory Toxicology and Pharmacology: RTP*. 62: 363-370.

Thomas K., Aalbers M., Bannon G.A., Bartels M., Dearman R.J., Esdaile D.J., Fu T.J., Glatt C.M., Hadfield N., Hatzos C., Hefle S.L., Heylings J.R., Goodman R.E., Henry B., Herouet C., Holsapple M., Ladics G.S., Landry T.D., MacIntosh S.C., Rice E.A., Privalle L.S., Steiner H.Y., Teshima R., van Ree R., Woolhiser M., Zawodny J. (2004). A multi-laboratory evaluation of a common *in vitro* pepsin digestion assay protocol used in assessing the safety of novel proteins. *Regulatory Toxicology and Pharmacology: RTP*. 39: 87-98.