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ETHICAL ISSUES IN LABELING AND TRACING GM FOOD

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Abstract:
Although the ethical issues in genetic modification or engineering are largely confined to medical applications and human therapy, debate around issues such as use of genetically modified food at the current time is a hot topic between scientists and even the lay public. The exercise of informed choice by consumer requires that they have accurate and unbiased information regarding what they eat. Since it is difficult to predict the impact of the GMF issue on consumer food choice in the world's markets due to the lack or inadequate information on food products at the point of purchase, consumers have not faced a choice between GM and non-GM food products. Furthermore, a growing segment of the population worldwide that has ethical or religious belief may classify GMF carrying animal or human genes as being unacceptable as food. A labeling policy and also tracing, to control and validate the information found on a label, considered among tools developed to backup any allegations and increase consumer's trust. Regulation concerning these aspects and the necessity of developing standards on a voluntary or mandatory basis in developing countries will be described.
Keywords: Biotechnology, genetically modified foods, ethics, labeling, mandatory labeling, voluntary labeling

مباحث اخلاقی در رابطه با برچسب گذاری و ردیابی مواد غذایی اصلاح شده ژنتیک

اگر چه مباحث اخلاقی در رابطه با اصلاح و مهندسی ژنتیک عمدتا" محدود به کاربردهای پزشکی و درمان انسان می باشند ، مباحثی مانند بکارگیری مواد غذایی اصلاح شده ژنتیک در حال حاضر موضوع بحث برانگیز بین دانشمندان و عموم مردم می باشد. انتخاب آگاهانه مصرف کنندگان مستلزم آنست که آنها در رابطه با آنچه که مصرف می کنند ، اطلاعات دقیق و صحیحی داشته باشند. از آنجا که اطلاعات کافی در مورد مواد غذایی GM وجود ندارد ، پیش بینی تاثیر این مواد بر روی سلامت مصرف کننده مشکل می باشد و به همین دلیل انتخاب مشتری بین مواد غذایی GM و غیر GM امکانپذیر نمی باشد. قوانین مربوط به این جنبه ها و لزوم وضع استانداردهای اختیاری یا اجباری در کشورهای در حال توسعه ، بیان خواهند شد.
کلمات کلیدی: بیوتکنولوژي، غذاهای اصلاح شده ژنتیک، برچسب گذاری، برچسب گذاری اختیاری، برچسب گذاری اجباری

Introduction:
Modern biotechnology, particularly the use of recombinant-DNA techniques, has allowed the isolation, cloning and incorporation of genes conferring novel or altered traits into plants, as well as other organisms. These techniques involve taking copies of genes from the cells of a plant, animal or microbe and inserting them into another cell to give a desired characteristic. The resulting plants or animals are often termed genetically modified (GM), and thus food derived from these organisms is referred to simply as GM food.

The use of modern biotechnology, especially for the production of food, continues to be the subject of considerable debate. While many consider the use of the technology to have the potential to increase productivity , provide innovative mechanisms to control devastating pests and diseases , and to produce foods with targeted health and nutritional benefits(McLaren, 1998:Peacock,2000) , others have suggested the production of GM foods might pose unknown risks in both the short and long term (Halloran & Hansen, 1998) and also raises major ethical and social questions for sections of the community(Kellow, 1999; Nestle, 1998).

Since food and feed products of modern biotechnology are now being commercialized and marketed in many countries, appropriate approaches are required to the effective regulation of these products. Governments worldwide have been developing regulatory frameworks to protect both the environment and human health from potential adverse effects that may arise from production of GM organisms (GMOs) and foods derived from them. This paper describes the development of the regulatory framework for GM foods and outlines the essential elements of a procedure to assess the safety of GM foods and their labeling, and identifies some of the major issues and challenges facing regulatory authorities both now and in the future.

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Labeling of GM foods

Labeling of GMO products has become a major issue worldwide, which can translate into a decrease for support of biotechnology products. Due to composition or end use of food products, broader labeling requirements were considered in view of growing public concern over GM foods. This resulted in a series of stakeholder consultations as well as commissioning of a study to investigate the costs to industry and enforcement agencies of broader labeling requirements. Labeling is now required in most countries, where:

- Novel DNA and/ or protein is present in the final food ;and / or
- The food has altered characteristics when compared with its conventional counterparts.

Exemption from these labeling requirements applies to:

- highly refined food where the effect of the refining process is to remove novel DNA and /or protein (e.g. sugars and oils);
- processing aids and food additives except those where novel DNA and/or protein is present in the final food;
- flavors which are present in a concentration less than or equal to 0.1% in the final food ;
- Food prepared at the point of sale (e.g. in the restaurants).

In the United States, the Food and Drug Administration (FDA) considers GM food products to be substantially equivalent to traditional (Non-GMO) foods and has decided that a special label is not needed in most cases. Rather, the FDA existing labeling policy permits manufacturers to label non-GM foods with voluntary statements about the production process that are truthful and not misleading in order to provide consumers with important information. Concerns about GMO products vary widely by country. For example, a very recent survey in the UK (2003) showed that 86% of the responders were unhappy with the idea of eating GM foods (McCarthy, 2003) and that 54% never want to see GM crops grown in Britain. In the US, however, a survey conducted for the International Food Information Council (IFIC) in May 2003 found that 62% of the Americans believe that biotechnology will benefit them or their families in the next five years. Labeling policies help to reduce the asymmetric information problem of GM practices that currently exist between producers and consumers (Hobbs and Plunkett, 1999). Thus, producers know a priori what technology they use and whether their crops are GM or not, while consumers do not have this information. However, GM food labeling policies differ from country to country presenting one of the greatest challenges for agricultural trade and, accordingly for the producers. As McCluskey (2000) points out, there are mainly three types of labeling schemes: labeling bar (the product does not satisfy certain requirements), voluntary labeling (used by companies which do not use biotechnology methods-GMO-free labels), and mandatory labeling (which obligates the use of a label if the products uses biotechnology methods). Several studies analyze the differences in labeling policies among countries. In a study, the advantages and disadvantages of different GMO labeling policies ere studied and the positions of the US government and the European Union on labeling were discussed (Caswell, 1998). This was concluded that governments base their policy decision on perceptions of how much information their citizens want about the biotechnology. In another study, about both advantages and drawbacks of voluntary and mandatory labeling , it was concluded that mandatory labeling makes more sense in countries where a large portion of the population care about GMOs, while voluntary labeling is likely to make sense in countries where there are fewer consumers concerned about GMOs (Caswell, 2000). Thus it is not surprising that there are differences in labeling policies among countries. In a recent study, the regression results for the three food products (vegetable oil, salmon, and corn flake breakfast cereal) showed that

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variables related to attitude, perception, labeling, demographic and price had significant effects on consumer choices between GM and non-GM food products (Chen and Chern, 2002).

International harmonization of regulations:

The current situation with different authorization and labeling regulations for products consisting of–or derived from-GMOs in different countries or trade areas is confusing and hampers international trade. Global harmonization of these regulations is therefore urgently needed. Only harmonization of national requirements for GMO-derived products will lead to increased transparency with respect to the international (GMO-derived) food supply chains. The Codex Alimentarius Commission has recently taken the leadership in the negotiation on definition of standards and guidelines in the GMO issue in general and on international systems of product tracing. The Codex Committee on Food Labeling is currently developing guidelines for labeling of GM foods (FAO/WHO, 2001).

Future directions and the implications for GM foods

As with any new enabling technology, gene technology may bring both potential benefits and raise concerns. The next generation of GM foods is likely to raise more complex and challenging issues for food regulators and may blur the boundary between foods and therapeutics. Future directions in the development of gene technology are likely to have significant impacts on the community and present many challenges for regulatory authorities. Some of the issues, which will need consideration include:

- Continuing high levels of consumer and community interest in the development of the technology in relation to GM foods and potential health impacts
- The development of genetically modified animals, including fish, and GM microorganisms and how these will be assessed for their safety
- An increasing number of GM foods with new properties which may provide benefits to consumers in taste, shelf-life , nutrition etc
- The development of GM foods with therapeutic effects. These will create challenges for food and therapeutic goods regulatory authorities in coordinating regulatory action
- Development of internationally agreed protocols and arrangements for the regulation of GM foods
- Monitoring and evaluation of potential and unforeseen health effects of both the current and future range of GM foods available commercially
- Harmonization of regulatory activity/safety assessment requirements and “work sharing”
- Capability and capacity building in the regulatory system
- The need for post-market monitoring and surveillance system for long-term health impacts

Conclusions

Interest in GM products has intensified as applications of gene technology have accelerated, particularly in agriculture and medicine. While gene technology offers the potential for significant benefits, including enhanced agricultural production, improved healthcare, and new possibilities for chemical and manufacturing industries, it has also raised concerns and generated considerable debate.

Much of this debate focuses on agricultural and food, and on consumers’ ”right to know” and make an informed choice in selecting food products. The debate also raises consumer concerns about potential health effects, ethical issues and potential environment impacts.

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