GENETICALLY MODIFIED FOODS

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Abstract

The genetic machinery of living organisms such as animals, plants or microorganisms can be alter by the genetic modification, a special set of gene technology. Recombinant DNA technology involves combining genes from different organisms and the resulting organism is said to be 'Genetically modified organism (GMO)'. GMO has become a disputable topic for both food producers and consumers as it is companied by environmental side effects and potential biomedical risks[1], [2]. The safety of genetically modified foods (GMFs) is a concern to the general public and also to the food industries and government regulatory agents.[3] Genetically modified foods from both flora and fauna have been developed for improved quality and nutritional value and in addition to these common GMO field crops are modified for pesticide and herbicide-tolerance[1], [4]. To estimate the merits and demerits of GM foods, complex studies are being carried out around the world independently. The aim of this study is to summarize up-to-date knowledge about the benefits and potential problems of GM food and also to introduce impact of the GM foods in the field. Increasing concerns from the public about GMO, particularly in the form of genetic modified (GM) foods, are aimed at the short-and long-lasting health problems that may result from this advanced biotechnology. Complex studies are being carried out around the world independently to evaluate the advantages and disadvantages of GM foods.

Keywords: - pesticides, herbicides, recombinant DNA, genetically modified organisms.

Introduction: -

GMO does not occur naturally by mating or natural recombination. The foods that are produced from genetically modified plants or animals are referred to as "GM foods". Several transgenic food crops are currently on the market, among them varieties of corn, squash, canola, soybeans, and cotton, from which cottonseed oil is produced.[5] GM crops are commonly manufactured and used around the world and are not negligible for their advantages. Taking into account all GM technology issues and doubts, inter-national organizations have recognized the use of certain products prepared by particular genetic events based on in vitro and in vivo studies. Most of these crops are engineered to help farmers deal with age-old agriculture problems such as weeds, insects, and disease. Biotech crops can carry special "tolerance" genes that help them stay alive on the spraying of chemicals that destroy nearly every other kind of plant. Genetically modified technology has the ability to solve agricultural issues such as biotic

and abiotic problems by improving resistance to pests and herbicides, drought tolerance, rapid maturation, and ultimately improving yield and dietary quality. In addition to these revolutionary benefits, some potential human, animal and environmental hazards for these species or products have been taken into consideration over the past centuries[6]. However, there is no adequate scientific evidence of their damaging impacts on humans or animals, and some new science and management methodologies (new technologies and laws) have also been established to mitigate environmental hazards. In order to generate GM foods, the gene(s) coding for certain traits need to introduce into a plant cell, and then regenerate a plant through tissue culture.

Results & Conclusion:

GM crops represent an important new technology which has the potential to do much good in the world. The people who all are involved in developing the new technology, like researchers in the public sector, in agrochemical or agricultural businesses or farmers and food manufacturers need to accept a very big responsibility to the public. The public concern at the present time about the introduction of GM food is growing at a high level. Into existing GE crops or into other crops, the genetically engineered traits are developed and inserted, understanding the impacts on all farmers will turn out to be even more important to make sure that genetic-engineering technology is used in a manner that promotes environment, economic, and social sustainability in agriculture.

References: -

[1] C. Zhang, R. Wohlhueter, and H. Zhang, “Genetically modified foods: A critical review of their promise and problems,” *Food Sci. Hum. Wellness*, vol. 5, no. 3, pp. 116–123, Sep. 2016.

[2] S. Chandler and J. M. Dunwell, “Gene flow, risk assessment and the environmental release of transgenic plants,” *Critical Reviews in Plant Sciences*, vol. 27, no. 1. pp. 25–49, Jan-2008.

[3] B. de Santis *et al.*, “Case studies on genetically modified organisms (GMOs): Potential risk scenarios and associated health indicators,” *Food Chem. Toxicol.*, vol. 117, pp. 36–65, Jul. 2018.

[4] B. Delaney, “Safety assessment of foods from genetically modified crops in countries with developing economies,” *Food and Chemical Toxicology*, vol. 86. Elsevier Ltd, pp. 132–143, 01-Dec-2015.

[5] M. Qaim, “Benefits of genetically modified crops for the poor: Household income, nutrition, and health,” *New Biotechnology*, vol. 27, no. 5. pp. 552–557, 30-Nov-2010.

[6] Zhang, Chen, Robert Wohlhueter, and Han Zhang. "Genetically modified foods: A critical review

of their promise and problems." *Food Science and Human Wellness* 5.3 (2016): 116-123.