



*In the name of God*

**Title:**

**The view of Iranian people about GMO  
products consumption**

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## Introduction:

- Biotechnology is a new field from biology which increases human's power to produce specific compounds in microorganisms, plants and animals.
- Since the middle of 20<sup>th</sup> century with discovery of DNA and introducing the field of molecular biology, biotechnology has started new ways and applications.
- One of current applications in biotechnology is translocation of genes from host organism to another. In general, genetically modified organism (GMO) technology allows us successful and efficient transfer of genetic material [1].
- In agriculture, GM technology and transgenic plants can play a significant role in developing new crops, reducing environmental impacts and protecting the earth for future generations [2].



## Introduction:

- It confers increased biological resistance to ever-present pests and diseases, thus reducing the need for chemical pesticides, decreasing the risk of crop failure, and increasing yields. It recovers plants flexibility to harsh growing conditions like salty soils, drought, temperature extremes and tolerance to environmentally safe herbicides that discourage weeds [3].
- With attention to decreased mortality in 20<sup>th</sup> century and growing population, another important contribution of GM technology is to satisfy the global need for increased food production.
- With awareness of limitations in the natural resources and agricultural farms, a solution to grow more food on less land in order to feed the growing population, is using GM technology.
- However, new technologies are subjected to intense public scrutiny, because there is no scientific information about effects of GMO consumption on human health during long periods of time.



## **Introduction:**

- Therefore, not only consumer's view and technological understanding are very important to GMO developers, but also governments should pay attention and respect to intense public scrutiny [4].
- With the understanding that Iran is the first country in the middle-East and north of Africa that has produced GM rice and it will be sold soon to individuals, knowing the opinion of Iranian people about using GM products is very important for government and biotechnologists.
- Here, we present a report about Iranian general public opinion on GM products and modern biotechnology.



## Materials and methods:

- The survey of public views about GM products consumption was performed and was a random survey of persons of fifteen years and older in several public places in Tehran between October of 2004 to December of 2006 (N = 137).
- For surveying, common places like vaccine injection department, Pasteur institute of Iran; were selected where all people with different scientific and social backgrounds referred to and we required their opinion about various items reflected by the questions (before 2007, this department was only vaccine injection center in Iran for injected Hepatitis B and Rabies vaccines as daily, so many people from different cities of Iran came here to get vaccines).
- For this study, some important measures of GM products consumption were examined:
  - (1) Whether the respondent had information about biotechnology or not.
  - (2) Whether the respondent had information about: 1-transgenic organisms and 2- their applications in medicine, pharmacy, industry and agriculture or not.



## Materials and methods:

- (3) With attention to advantages and disadvantages of GMOs, whether the respondent would use GMO products or not.
- (4) Whether the respondent would like to see GM products with specific labels in the markets or not.
- (5) If specific labels increase the cost of GM products, respondents would again buy them or not.
- (6) In general, whether the respondent admit consumption of the GM products.
- (7) Whether the respondent has positive view on research about transgenic organisms by biotechnology or not.





## Results:

- In general, 43% of respondents had information about biotechnology. 95% of respondents had positive opinion on the sale of GMO products with specific labels. About 88% of them replied that specific label is very necessary for GMO products, even if it increases their cost.
- Of 58% people admitted production transgenic organisms; but they were more interested to be performed more research about translocation gene processes in GMO products (Table 1).
- For creating a model, the identification of effective parameters was very important. The result showed that *education level*, *age* and *employment* have a direct relation with view of respondents about GMO products and biotechnology, while *gender* and *income level* have not a good relation with it (Table 2).

**Table 1-A:** The percentage of respondent response to questions based on individual parameters

| Participant categorical view   | Total | gender |      | Education level    |                              |
|--|-------|--------|------|--------------------|------------------------------|
|  |       | Female | Male | College and higher | High school diploma or lower |
| Respondent has information about biotechnology                               | 43    | 42     | 46   | 70                 | 6                            |
| Respondent would like to see GM products labeled in markets                  | 95    | 95     | 93   | 99                 | 90                           |
| Respondent would like to see labeled product, even if it rises the cost      | 87.9  | 82     | 84   | 88                 | 77                           |
| agree GMO products to be produced  | 58.4  | 58     | 59   | 64.9               | 53                           |
| Respondent has positive view for continuing research on transgenic organisms | 86.2  | 84     | 93   | 85                 | 86                           |



**Table 1-B:** The percentage of respondent response to questions based on individual parameters

| <b>Participant<br/>categorical view</b>   | <b>Age</b> |          | <b>Employment</b> |            | <b>Income</b> |        |
|---|------------|----------|-------------------|------------|---------------|--------|
|   | 15-40      | 40-older | Employed          | Unemployed | Below*        | Above* |
| <b>Respondent has information about biotechnology</b>                               | 53         | 25       | 53                | 13         | 67            | 53     |
| <b>Respondent would like to see GM products labeled in markets</b>                  | 99         | 81       | 97                | 92         | 97            | 94     |
| <b>Respondent would like to see labeled product, even if it rises the cost</b>      | 91         | 69       | 88                | 91         | 90            | 84     |
| <b>agree GMO products to be produced</b>  | 63         | 47       | 53                | 75         | 49            | 61     |
| <b>Respondent has positive view for continuing research on transgenic organisms</b> | 86         | 84       | 84                | 92         | 79            | 90     |

**\*: above of poverty line, below of poverty line**

**Table 2:** The multiple regression model of public view on GMO derived products

| GMO consumption model in Iran   | $\beta$  | Standard error   | 95% Confidence    |       | R <sup>2</sup> with other parameters | Significance |
|---------------------------------|----------|--|-------------------|-------|--------------------------------------|--------------|
|                                 |          |  | Interval          | t     |                                      |              |
| Constant                        | 0.2744   | 0.2170   | -0.4126 to 0.6439 | 1.264 |                                      | 0.2231       |
| gender                          | 0.1156   | 0.2504   | -0.4126 to 0.6439 | 0.88  | 0.9566                               | 0.43         |
| Education level                 | - 0.3098 | 0.3276   | -1.001 to 0.3815  | 2. 58 | 0.9498                               | 0.0098**     |
| Employment                      | 0.07387  | 0.1298   | -0.2001 to 0.3478 | 3.66  | 0.9409                               | 0.0083***    |
| Age                             | 0.1226   | 0.2429   | -0.3901 to 0.6352 | 2.053 | 0.9574                               | 0.048*       |
| Income                          | 0.3807   | 0.3032   | -0.2590 to 1.020  | 1.69  | 0.8687                               | 0.08262      |
| <b>Total R squared = 0.9659</b> |          | F (6, 137)= 53.5508, p < 0.0001***<br>*= it means that this factor has significant in level of 0.05%<br>**= it means that this factor has significant in level of 0.01%<br>***= it means that this factor has significant in level of 0.001% |                   |       |                                      |              |



## Discussion:

- This study expressed some information on Iranian public opinion on using GMO technology for producing biotechnological products and processes (especially agricultural products).
- The results illustrated that only 43% respondents have information about biotechnology, showing the low information level about biotechnology in Iran.
- About 95% of them would demand GMO with specific labels in the market, which may present a public doubt and non-confidence for using GMO products.
- Less than 89% persons agreed to label GMO even with increased cost of the product. This could indicate the importance of food safety and/or consumer right to choose for the respondents even with increased product cost.
- More than 58% of respondents would agree GMO products to be produced, showing low confidence on safety of these products from their views at this time.



## Discussion:

- Finally, 86% of respondents approved research in biotechnology and transgenic organism production, expressing a total admission for acceptance of transgenic organisms after undertaking harsh biosafety measures.
- Also, multiple regression analysis results demonstrated that three individual factors have significant effect on respondent's views on GMO products.
- First was the *education level* of individuals (Table 2). Results showed that college graduated individuals are more optimistic about GMO products in comparison with non-graduated persons; they have more knowledge about new technologies like biotechnology compared with non-graduated persons (Table I); so it assists them to get decision about GMO.
- Second was *employment* status of the respondents (Table 2). Interestingly, compared with unemployed individuals, they have more information about biotechnology; so it influences effectively on difference between their attitudes about GMO technology with unemployed persons (Table I).



## Discussion:

- Third was *age* (Table 2). While young people are optimistic to GMO products, older persons have more wariness views and are more careful about even with labeled GMO productions (Table I).
- In addition, it appears that Iranian persons would accept new things if they have not any affect on their health.
- Therefore, it is recommended to GMO researchers that perform precisely all biosafety protocols to check their GMO foods before delivering to the market, try to increase people's information on GMO technology and biotechnology and inform them as accurate what biosafety tests have been performed on, allow customers knowing what genetically modifications has new product, and finally continue intensively their researches about probable affects the products on human's healthy in long periods of time.
- Also, clients should pay attention to labeled GM products, perform accurately instruction of using them and assist researchers to study probable affects the products on human's healthy in long time periods.



## Key points:

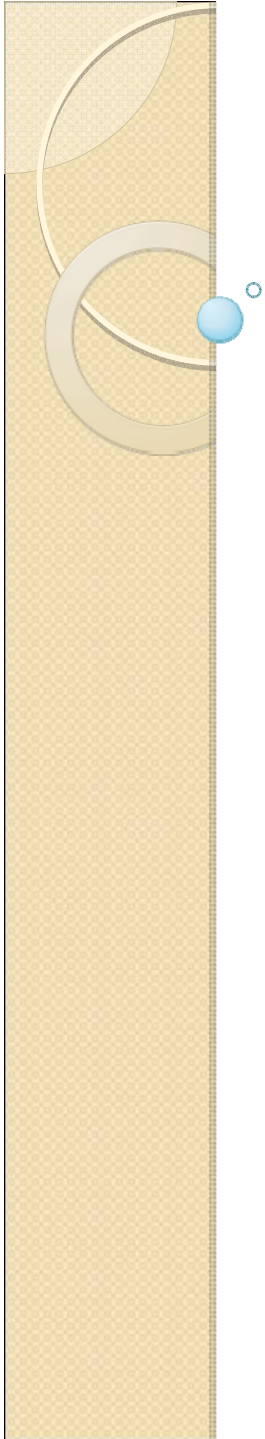
- 1-In our study, to make a preliminary view from people about GM products consumption, public places of Tehran was important for us, while now, we should continue our survey to smaller cities and countries of Iran to make a clear view from public views.
- 2-we didn't pay attention to sort of careers which have people, so in next steps of our study we must study the effect of type of career on their view about GMO.





## References:

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