

Consumer Awareness, Attitude towards exercising their Rights: Genetically Modified Foods

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ABSTRACT

Technology in molecular and cellular biology by which the genetic composition of food or food ingredients, recombinant DNA, genetic modification and genetic engineering is altered, is known as Genetic Modification. Although the focus of manufacture, production and sale of goods and service is the consumer, yet the consumer has little and/or no protection in market place. Consumer Protection Act was enacted in 1986 by the Government of India having its aims and objectives as the welfare and protection of consumers. Surveys conducted with 390 Respondents in Mumbai in 2011 suggest that more than 92% of people surveyed were either unaware or not bothered about the genetically modified foods. The study focuses on awareness of consumers of food they purchase, attitude towards exercising rights, willingness to pay premium for G.M Foods and whether they exercised their rights or not.

KEY WORDS: Genetically Modified Food, Consumer Exercising Rights, Safety Assessment.

INTRODUCTION

Consumers should have a right to choose ... whether or not to buy food produced from a GMO. This right of choice is envisaged as a constitutional right of every Indian citizen. Each and every one of us at some point or the other is a consumer. Hence as consumers and citizens we have a right to choose, however in order to exercise this right, a citizen / consumer must be aware of not only their rights as consumers but also awareness of Genetically Modified Foods, Genetic Engineering, risk / benefits of G.M Foods, which is not the case in India . In today's world, science is said to have answers to all

problems and the same is propounded by its supporters that Genetic Engineering in agriculture is essential as an answer to meet the growing need for food of world population which is gradually and stealthily growing by the millions with every passing year. Genetic Engineering (GE) involves taking genes from one species and transferring them to another species in an attempt to transfer a desired trait or character. Genetic Engineering is done with plants too, wherein genes taken from bacteria, viruses, insects, animals or even humans are inserted. GM crops presently in the market mainly aim at increasing the level of crop protection through the

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introduction of resistance in plants against diseases caused by insects or viruses or increased tolerance towards herbicides. The 3 major myths propounded by scientists and bio-technologist for making Genetic engineering the dominant technology used in the production and processing of food are: the myth of feeding the hunger, protecting the planet and food safety.

Policies concerning Labeling of products for their contents be they dangerous or nutritional information is very vague to such an extent that there is no way of curtailing / stopping the seeping of unlabelled foods with G.M ingredients into the markets. Mandatory labeling of G. M products has only recently been enacted thanks to the unflinching and unrelenting efforts from consumer and anti-G.M Groups. Section 22 of the FSSA- Food Safety and Standards Act, 2006 deals with regulation and labeling of G. M goods; however the same lacks notification as per the directives of the Health Ministry in 2010. As per the FSSAI- the Food Safety and Standards Authority of India, regulator of food safety in India, there is a scientific panel dealing with labeling issues and in the Ministry of Environment a Genetically Engineered Appraisal Committee (GEAC) dealing with imports of G.M Foods. However much to the disbelief and shock of Consumer rights activist's consumer organizations, anti-G.M Groups.

LITERATURE REVIEW

Although the Government has made labelling of G.M Foods mandatory, not much is said about unlabeled food with GM ingredients in the market. Pertinent to note that the policies/ laws are more

oriented towards packaged foods, and not foods available in the open markets.

A study by International Service for the Acquisition of Agro-biotech Applications (ISAAA) revealed that United States, Brazil, Argentina, India and Canada accounted for 90 % of G.M. crops grown. The study further revealed that China accounted for 7.5million whilst India 7.3 million. Studies further revealed that 79% of soybean crops, 70% of cotton crops and 32% of maize grown globally are GM crops.

No material is available on the public domain about the end use of the crops produced in the field trials. Regulation of GM goods including their labelling is covered under Section 22 of the Food Safety and Standards Act of 2006, however for reasons best known this particular section has not been notified by the Food Safety and Standards Authority of India (FSSAI) in 2010. As per the Act, the food safety regulator is to have a scientific panel on labelling issues and the import of GM foods are to be cleared by the Genetically Engineered Appraisal Committee (GEAC) in the ministry of environment. An interesting development in respect to labelling of G. M Foods, a new notification has been issued by the Ministry of Consumer Affairs under the metrology rules, which says "every package containing genetically modified food shall bear at the top of its principal display panel the words GM." What is surprising is that this new notification is issued under the metrology rules by the Ministry of Consumer Affairs and not the GEAC or FSSAI who deals with Food Safety issues which is supposed to empower consumers to make an informed choice whether to eat GM food or not. However, the

authority has so far not taken any initiative to formulate legal rules for GM contamination and has in effect left the country without a law to identify and penalize offenders related to GM contamination. Instantaneous steps should be taken by the authority to put a check on the growth of GM contamination as it is not only threat to the biodiversity and environment but also food security of the consumers.

OBJECTIVES

1. To understand the level of consumer awareness of GM foods.
2. To understand whether respondents are willing to pay a premium for genetically modified foods.
3. To explore the perception of respondents towards exercising their rights as consumers.

RESEARCH METHODOLOGY

The survey was conducted at Mumbai; Maharashtra considering 390 sample size .The type of sampling used is convenience sampling. The type of research was Exploratory Research and five point likert scale was used .The respondents ratio of Male to Female is 1:1. The age of the respondents is from 18 to 64 and above.

FINDINGS AND ANALYSIS

Researcher applied Cronbach alpha on IBM SPSS 20 test to study the reliability of the data and was successful as it turned out to be 0.73 which is **more than 0.7 and proves data to be reliable.**

**TABLE 1
RELIABILITY STATISTICS**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .73 | 14 |

Table 2. Break of Respondents were further categorized on the basis of the knowledge and information they had about genetically modified foods.

**TABLE 2
KNOWLEDGE &
INFORMATION OF GENETICALLY
MODIFIED FOODS**

| Sr. No. | Knowledge & Info on G.M Foods/ Bio-Tech | Total | Percentage |
|---------|---|------------|-------------|
| 1 | Aware | 128 | 33.3% |
| 2 | Unaware | 240 | 60% |
| 3 | Not bothered | 23 | 6.7% |
| | Grand Total | 390 | 100% |

Table 3. Break -of Respondents were further categorized on the basis of awareness of risk and benefits they had about G.M Foods

**TABLE 3
AWARENESS OF RISK/BENEFITS OF
GENETICALLY MODIFIED FOODS**

| Sr. No. | Awareness of Risk/ Benefit of G.M. Foods | Total | Percentage |
|---------|--|-------|------------|
| 1 | Aware | 117 | 30% |
| 2 | Unaware | 234 | 60% |
| 3 | Unconcerned | 39 | 10% |
| | Grand Total | 390 | 100 |

Table 4. categorized the consumers/respondents on the basis of awareness of their consumer rights

**TABLE 4
AWARENESS ABOUT CONSUMER RIGHTS**

| Sr.No. | Awareness on Consumer Rights | Total | Percentage |
|--------|------------------------------|------------|------------|
| 1 | Unaware | 289 | 73.3 |
| 2 | Aware | 101 | 26.7 |
| | Grand Total | 390 | 100 |

Table 5. Breakup of aware Respondent on the basis whether they are exercising their rights or not

**TABLE 5
AWARE CONSUMER EXERCISING / NON-EXERCISING THEIR RIGHTS**

| Sr. No. | Aware Respondent | Total | Percentage |
|---------|------------------|-------|------------|
| 1 | Exercising | 8 | 8 |
| 2 | Non Exercising | 93 | 92 |
| | Grand Total | 101 | 100 |

Correlations

| | | VAR0000 5 | VAR0000 6 |
|--------------------------|---------------------|----------------------|----------------------|
| Awareness of Respondents | Pearson Correlation | 1 | .0854** |
| | Sig. (2-tailed) | | .000 |
| | N | 390 | 390 |
| Exercise their rights | Pearson Correlation | .0854** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 390 | 390 |

** . Correlation is significant at the 0.01 level (2-tailed).

Changed from .0854 to - 0254

1. NULL HYPOTHESIS

Ho1 Consumers know their rights/duty as buyers and exercise their rights/duty by insisting for a bill and check the t expiry date on the packaged foods

ALTERNATIVE HYPOTHESIS

H11 Consumers are unaware of their rights/ duty as buyers

Variables considered to find out the correlation were Awareness of Respondents about their rights / duties as buyers, and Insisting of a bill, check the expiry date on the packaged foods

INTERPRETATION: The study shows there is low and positive correlation between the awareness of consumers of their rights /duties as buyers. Hence the Null Hypothesis is accepted that Consumers know their rights /duty as buyers but are not exercising their rights/duty by asking for a bill neither the respondents are particular about the expiry date on the packaged foods.

ANOVA

| | | Sum of Squares | df | Mean Square | F | Sig. |
|----------|----------------|-----------------------|-----------|--------------------|----------|-------------|
| VAR00001 | Between Groups | .058 | 1 | .058 | .764 | .384 |
| | Within Groups | 9.122 | 120 | .076 | | |
| | Total | 9.180 | 121 | | | |
| VAR00002 | Between Groups | .000 | 1 | .000 | .004 | .951 |
| | Within Groups | 16.040 | 120 | .134 | | |
| | Total | 16.041 | 121 | | | |
| VAR00003 | Between Groups | .058 | 1 | .058 | .764 | .384 |
| | Within Groups | 9.122 | 120 | .076 | | |
| | Total | 9.180 | 121 | | | |

INTERPRETATION: ANOVA One Way Test was conducted to test the significance if any of Gender on the awareness of consumers. This Hypothesis a tested with the help of questions as to their awareness of the food they consumed for men and women respondents, their marital status, and level of conscious about health / risk of G.M Foods.

It was observed that $P < 0.05$, hence we reject the null hypothesis that gender of consumers does not matter about the awareness of rights .The analysis showed that gender does play a role in

2. NULL HYPOTHESIS

H02 Gender of Consumers is independent of awareness of their rights

ALTERNATE HYPOTHESIS

H12 Gender of Consumers is dependent of awareness about their rights

awareness. It was further tested and found that married women with children were marginally more aware than the other respondents though not significant .The results showed that Gender does play a role.

3. NULL HYPOTHESIS

H03 Age of respondents is independent of awareness of the food they consume.

ALTERNATE HYPOTHESIS

H13 Age of respondents is dependent of awareness of the food they consume.

One Way ANOVA Test was applied to find the significance if any of Age on awareness of consumers about the foods they consume. To test the significance questions as to the awareness

about G.M Food/ bio-technology, awareness about risk/ benefit of G.M Foods, awareness about nutritional value of foods.

Oneway ANOVA

| | | Sum of Squares | Df | Mean Square | F | Sig. |
|----------|----------------|-----------------------|-----------|--------------------|----------|-------------|
| VAR00001 | Between Groups | 8.599 | 52 | .165 | .711 | .933 |
| | Within Groups | 78.399 | 337 | .233 | | |
| | Total | 86.997 | 389 | | | |
| VAR00002 | Between Groups | 8.599 | 52 | .165 | .711 | .933 |
| | Within Groups | 78.399 | 337 | .233 | | |
| | Total | 86.997 | 389 | | | |
| VAR00003 | Between Groups | 8.599 | 52 | .165 | .711 | .933 |
| | Within Groups | 78.399 | 337 | .233 | | |
| | Total | 86.997 | 389 | | | |
| VAR00004 | Between Groups | 8.599 | 52 | .165 | .711 | .933 |
| | Within Groups | 78.399 | 337 | .233 | | |
| | Total | 86.997 | 389 | | | |

ONEWAY VAR00001 VAR00002 VAR00003 VAR00004 BY VAR00006

INTERPRETATION: The p value was found to be <0.9333 which is >0.05 hence the Null hypothesis is accepted and arrived at consensus that age is independent on awareness of the food they consume.

4) NULL HYPOTHESIS

H₀4 Respondents' education qualification has no effect on their willingness to pay a premium for genetically modified foods.

ALTERNATE HYPOTHESIS

H₁4 Respondents' education qualification has an effect on their willingness to pay a premium for genetically modified foods.

Various variables were used to find the correlation between respondents' educational qualification on their willingness to pay a premium for genetically modified foods. Independent variable being educational qualification of Respondents was tested against each of the dependant variables of willingness to pay a premium which comprised of i.) Whether respondent would purchase a non-meat food product (example slow ripening of tomato or corn chips) that has been produced using genetically modified technology ii.) Whether respondent would purchase a meat product (example bst milk) that has been produced using GM iii.) Whether respondents would be willing to

pay a premium for GM potatoes if they were more nutritious than the usual potatoes they bought iv.) Whether respondent would be willing to pay a premium for GM beef if it contained less fat and lower cholesterol than the usual beef that they bought? v.) whether respondent would be willing to pay a premium for GM foods which claimed to be higher nutritional value.

Table 4.17 shows SPSS output for correlation between Respondents' education Level and their willingness to pay a premium.

TABLE 4.17
SPSS OUTPUT FOR CORRELATION BETWEEN RESPONDENTS' EDUCATION LEVEL AND THEIR WILLINGNESS TO PAY A PREMIUM

| Control Variables | | | Paying premium tomato | Paying premium meat Bst Milk | Paying Premium GM Potatoes | Paying premium GM beef | Paying Premium High Nutrition benefit |
|-------------------------|------------------------------|-------------------------|-----------------------|------------------------------|----------------------------|------------------------|---------------------------------------|
| Education qualification | Paying premium tomato | Correlation | 1.000 | .824 | .471 | .012 | .310 |
| | | Significance(2-tailed) | | .000 | .000 | .788 | .000 |
| | | Df | 0 | 503 | 503 | 503 | 503 |
| | Paying premium meat bst milk | Correlation | -.824 | 1.000 | .602 | .225 | .242 |
| | | Significance (2-tailed) | .000 | . | .000 | .000 | .000 |
| | | Df | 503 | 0 | 503 | 503 | 503 |
| | Paying premium GM potatoes | Correlation | .471 | .602 | 1.000 | .085 | -.008 |
| | | Significance (2-tailed) | .000 | .000 | . | .055 | .849 |
| | | Df | 503 | 503 | 0 | 503 | 503 |
| | Paying premium GM Beef | Correlation | .012 | .225 | .085 | 1.000 | .187 |
| | | Significance (2-tailed) | .788 | .000 | .055 | . | .000 |
| | | Df | 503 | 503 | 503 | 0 | 503 |
| | Paying high premium i | Correlation | -.310 | .242 | -.008 | .187 | 1.000 |
| | | Significance (2-tailed) | .000 | .000 | .849 | .000 | . |
| | | Df | 503 | 503 | 503 | 503 | 0 |

In order to test the relationship between the education qualification of respondents and their willingness to a premium for genetically modified foods, the test of correlation was conducted. It was observed that there is no correlation between educational qualification of respondents and their willingness to pay a premium for GM Foods. It was further observed that awareness level amongst respondents as per survey about genetically modified foods in Mumbai is very low. Consumers however are more likely to buy and pay a premium for foods which claim to have additional health benefits, having use of less to none pesticides.

LIMITATIONS OF THE STUDY

1. The study was restricted to Mumbai only.
2. The study was conducted using Diverse Sample.
3. Outcome of the study may vary depending on urban / rural area.
4. Study is restricted only to the aspect of awareness of Consumers about G.M. Foods and their rights as consumers.

CONCLUSION

Consumers in Mumbai have relatively very low level of awareness about Genetically Modified foods and their rights as consumers. It was further observed that though 26 % of respondents surveyed were aware of their rights as consumers only 8 % of them exercised their rights as consumers by either asking for a bill, checking the expiry date, demanding a exchange of goods sold beyond the expiry date, reading the contents, price- MRP. Age as per the survey was found to be independent of awareness of GM foods Gender however plays a significant role in the sense that married women with children are more conscious about the Food they eat with respect to

health , wellbeing and nutritional value . Educational qualification was found to have no correlation with Respondents willingness to pay a premium for G.M Foods; however it was observed that Respondents were willing to pay a premium for Foods which claimed to have extra / additional health benefits.

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