Predictors of Intention to Consume Genetically Modified Oil among Personnel of Community Health Care Centers in Yazd, Iran: An Application of the Theory of Planned Behavior

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ABSTRACT

Introduction: Genetically Modified (GM) food is a point of debate in the world. There have been few relevant studies in Iran, so this study aimed to predict the consumption of genetically modified oil by the staff of health centers based on the planned behavior theory.

Methods: In this cross-sectional study, 105 staff members of health care centers of Yazd in Iran completed a researcher-made questionnaire in 2017. The questionnaire validity and reliability were verified. The data were analyzed via SPSS 11.5, by Pearson correlation coefficient and linear regression model. The data were analyzed using SPSS software and at the number below 0.05 regarded as significant.

Results: Attitudes and subjective norms had the strongest positive, significant correlations with consuming genetically modified oil (r=0.619, r=0.526, p<0.01) respectively. Predictors of consuming intent for genetically modified oil showed that 43.2% of the variance of intention was determined by the attitude, subjective norms, and perceived behavioral control.

Conclusion: Since the attitude was identified as the strongest predictor of consuming intention of genetically modified (GM) oil, studying the factors influencing the attitude toward GM food in different social levels of Iran is recommend. The results provide important evidence for supporting the use of this theory in predictions of food-related consumption behaviors, especially in the area of new food products.

Keywords: Oil, food, Genetically Modified, Attitudes, intention, Theory of planned behavior

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Introduction

The earth population is predicted to reach 9 billion in the upcoming decades (1, 2). Proper nutrition is considered as an important aspect of health (3). To encounter food shortage, the use of genetic engineering and increased cultivation of Genetically Modified (GM) plants seem necessary (4). In spite of these challenges, GM products are one of the developing strategies regarding the increasing cultivation area (reaching 30 nations and 180 million hectares of cultivation area in 2014 comparing to 28 nations in 2012) (5). The value of GM and organic food products are frequently discussed, and they indicate facts about basic needs, objectives, and decisions regarding their superiority as valuable food sources (6). In the 1990s, the first act concerning GM food was done. In 2003, Iran joined the trend by the decision of the parliament (7). In general, GM food influences sustainability through food security, fabric products, providing cheaper food for livestock, supporting biodiversity, and etc. Global studies show that consumers are increasingly concerned about GM food, but various countries differ regarding its popularity (8, 9). However, many European and Japanese consumers hardly accept GM food (10, 11).

Huang et al. (2006) reported few concerns of the consumers in the US and developing countries about GM food (12), but there have been few studies about the attitudes of different social classes about GM food in Iran. Remarkably, most of these studies have been conducted on the educated population or the students as Ghanian et al. (13) studied the attitudes of agricultural engineering students about GM products (case study in southwest of Iran). Ghiyasvand Ghiyasi (14) also conducted a study in this field. Allahyarifard (2013) (7) studied religious attitudes toward GM products when Ghanian et al. (2016) (13) reported that respondents to their survey expressed positive attitudes toward GM products.

As the studies on attitudes and opinions of different populations about GM food in Iran are limited and these studies were carried out without a specific framework for predicting the consumption of GM food, it seems that studying factors related to people's intention or consuming GM food based on the theory of planned behavior can provide classified and more applicable information. Therefore, this study aimed at predicting the intention of consuming GM oil based on the theory of planned behavior. Oil has a particular position in the household diet In Iran, GM oil is a highly consumed product and part of the household food basket with the permission of the Ministry of Health.

As people's attitude is a positive or negative about the results of a certain behavior (15, 16), and the behavior itself is an outcome of intention, and besides, subjective norms imply the influence of social environment on behavioral intentions (17, 18); the attitudes and perceptions of health care centers' staff such as the agents of education in this area, can probably influence the consumption or non-consumption of GM products by other people.

The theory of planned behavior is regarded as one of the most applicable theoretical structures that can apply to predict and understand behaviors (1987) and to predict the occurrence of a certain behavior based on a person's intention. This theory has already been proven as a predicting model for the purchase intention of food products (19, 20). This theory uses three factors to predict behavior: 1) a positive attitude toward the behavior (attitude), 2) feeling socially pressured into a behavior (subjective norms), and 3) feeling the ability to perform a behavior (perceived behavioral control). Generally speaking, this model indicates a positive attitude toward a task, desirable subjective norms when high perceived behavioral control cause a person to form the intention for a behavior (21, 22).

The simplicity of this theory and the relatively favorable prediction of consumer intention and behavior made this theory receive great attention which has been widely and successfully used in consumer-related research. In this way, this study aimed to measure the relationship between parameters that can predict the intention to

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consume GM oil among the staff of health care centers in Yazd, Iran.

Methods

This study is an analytical cross-sectional study on the predictors of intention to consume GM oil in 105 staff members of Yazd's health care centers in 2017. The study population comprised all of the employees of the health care centers in Yazd. The sample consisted of 100 persons (n=50+8m), where m is the number of independent variables regarding the attrition rate of 5 %. Finally, 105 staff members of the health care centers were selected among 19 centers via random sampling. A multipart questionnaire was designed according to Francis et al. (2004) and used to collect data. First, an elicitation study was performed to develop a direct measuring tool for predicting the constructs of the theory of planned behavior. Accordingly, the authors conducted individual interviews including semi-structured questions with 15 staff members of health care centers who were familiar with the term "genetically modified food" and they were requested to express their opinions about the advantages and disadvantages of GM oil. They were asked to express their opinions about the organizations or groups that encouraged or discouraged them to use GM oil. The authors also asked the participants to speak about the factors or circumstances facilitate or complicate using GM oil. The responses helped the authors with extracting "behavioral beliefs", "sources of social pressure", and "belief control strength". Afterwards, two of the authors classified and listed the responses according to their frequency and developed the first draft of the questionnaire for attitude, subjective norms, and perceived behavioral control. Thus, the first version of the questionnaire was developed and its validity and reliability were measured. To verify face validity, the questionnaire was submitted to 20 staff members of the health care centers and their feedback regarding the clarity of the items and possible improvements were collected and finally, some modifications were made to the questionnaire. Content validity was approved both qualitatively and quantitatively. To determine quantitative content validity, the CVR and CVI indicators were assessed. Accordingly, the questionnaire was submitted to eight experts in the field of food health and safety, health education and their feedbacks were collected regarding the necessity of items, their relevance, clarity, and simplicity. Items with respective CVR and CVI values above 0.75 and 0.78 were approved. To measure qualitative content validity, the experts were asked about the grammar, wording, item significance, and placement, as well as the time required for completing the questionnaire.

For further modifications, the questionnaire was submitted to 20 staff members of the health care centers to verify the reliability and the Cronbach's alpha for the constructs was measured. Table 1 demonstrates the characteristics of the final questionnaire including construct names, a number of items in the scale, internal reliability (Cronbach's Alpha), measuring scale, item samples, and score range for each item.

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Table 1 . Characteristics of measuring tools for constructs of the theory of planned behavior

Construct name	Number of Items in the scale	Intrinsic reliability (Cronbach's alpha)		Scale	Item sample	Item score range	Construct score range
		A preliminary study (samples: 20)	Final study (samples: 105)				
Attitude	12	0.91	0.91	Completely disagree to completely agree	I am concerned about the health consequences of GM oil	1-5	12-60
Subjective norms	4	0.75	0.6	Completely disagree to completely agree	Most people whose opinions matter to me (spouse, family, coworkers, etc.) expect me to use GM oil.	1-5	4-20
Perceived behavioral control	4	0.65	0.55	Completely disagree to completely agree	I am responsible for making decisions about using or not using GM oil.	1-5	4-20
Behavioral intention (generalized intent) *	4	0.88	0.87	Completely disagree to completely agree	I will use GM oil if it is of better quality compared to other oils.	1-5	4-20
Behavioral intention (intention performance)*	1	-	-	A number of days per month	If you have one month worth of GM oil, how often will you use it in the next 30 days?	0-30	0-30

* The total score of behavioral intention was calculated as the sum of the generalized intention and intention performance (min. score = 4, max. score = 50).

The participation criterion was having heard the term GM food by the participant and their consent with participation. Non-agreement with participation and incompletion of the questionnaire would remove them from the participant group. The data were analyzed via SPSS 11.5 through descriptive statistics, Pearson correlation coefficients, and regression analysis.

Regarding ethical purposes, the qualified participants were selected after obtaining the permission of the health deputy of the university. The participants were ensured about the voluntary nature of their participation and confidentiality of their information. The ethics code IR.SSU.SPH.REC.1396.23 was obtained from the Research Ethics Committee of Yazd Shahid Sadoughi University of Medical Sciences for the study protocol.

Results

The participants were 105 staff members of the health care centers in Yazd, with a mean (SD) age, mean (SD) work experience, and mean (SD) education years of 31.6 (6.2), 6.5 (6.8), 16.23 (1.35), respectively. 72.4% (76) of them were females and 87.6% (92) were married. The majority %63.8 (67) had bachelor degrees and the

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household income for more than half (55.2%) (58) was 10–20 million IRR. Near a majority of participants (49.5%) claimed their financial status as good, while 45.7% claimed it as moderate (Table 2).

Table 2 . Absolute and relative frequency of the sample demographics characteristics

Variables		n	%
Gender	Male	29	27.6
	Female	76	72.4
	Total	105	100
Marital status	Married	92	87.6
	Single	12	11.4
	Divorced	1	1
	Total	105	100
Education	High school diploma	2	1.9
	College graduate (associate)	15	14.3
	Bachelor degree	67	63.8
	Postgraduate (Master's degree)	16	15.2
	PhD	5	4.8
	Total	105	100
Economy status	Monthly income < 10 million IRR	4	3.8
	Monthly income 10–20 million IRR	58	55.2
	Monthly income 20–30 million IRR	25	23.8
	Monthly income > 30 million IRR	18	17.1
	Total of 105	105	100
financial status	Excellent financial status	2	1.9
	Good financial status	52	49.5
	Moderate economic status	48	45.7
	Poor financial status	3	2.9
	Total	105	100

The mean score for attitude was 34.56 (7.94) which indicated a moderate attitude toward consuming GM oil by the participants. The mean score of 10.46 (2.41) for the subjective norm indicated moderate perceived social pressure by the people who may be in some way important to the participants. A score of 18.62 (2.30) for perceived behavioral control indicated sufficient control by the participants regarding the dietary use of GM oil. Finally, a mean score of 24.38 (13.39) indicated moderate intention to consume GM oil by the staff of health care centers (Table 3).

A correlation analysis was used to determine the correlation between the constructs of the theory of planned behavior applied to the intent to consume GM oil. Table3 demonstrate the correlation coefficients, mean values, and standard deviations. It shows that the intent to consume GM oil had a positive, significant, and relatively strong relationship with attitude (r=0.619). There was also a positive, significant, and moderate relationship between the intention to consume and to the subjective norms (r=0.526).

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Table 3. Correlation coefficients between the constructs of the theory of planned behavior applied to the intention to consume GM oil among the participants

Variable	Mean	Standard deviation	Attitude	Subjective norms	Perceived behavioral control	Behavioral intent
Attitude	34.56	7.94	1	-	-	-
Subjective norms	10.46	2.41	0.544 *	1	-	-
Perceived behavioral control	18.62	2.30	0.078	-0.167	1	-
Behavioral intention	24.38	13.39	0.619 *	0.526 *	0.085	1

* Variable correlation with a significance level of 0.01.

Analyzing the predictors of intention to consume GM oil based on regression analysis indicated that overall 43.2% of the variance in the score of intention was determined by the variables attitude, subjective norms, and perceived behavioral control with attitude being the most influential predictor ($p<0.001$, $\beta=0.450$, $F=25.653$).

Discussion

This study aimed to determine the predictors of the intention to consume GM oil among the staff of health care centers in Yazd using the theory of planned behavior. According to the findings, participants obtained more than half of the total score for the attitude parameter indicating that they had a moderate attitude toward the consumption of GM oil. However, some other studies in this field have reached inconsistent findings. Huang et al. (12) found that Chinese people had a strong tendency to buy GM food. In addition, Costa-font et al. (23) reported that half of the Spanish people had no moral issues for GM food. In their study, 40% of the Spanish people agreed with the advantageous nature of GM food for themselves, for the national economy, and for third world nations. Contrarily, Saher et al. (24) conducted a study on attitude toward GM and organic food in Finland, concluding that students had a mostly negative attitude toward GM food, but a mainly positive one to organic food. In their study, natural science education and health beliefs were the best predictors of the students' attitudes. Therefore, there is no inconsistency between the findings of the present study which indicates a moderate attitude toward GM food and that of the mentioned studies. This difference may be due to the cultural and social differences between the participants. There have also been a number of relevant studies in Iran such as Ghiyasvand et al. (14) who conducted a study in Qazvin, Iran and reported that the majority of participants (57%) had no specific attitude toward GM food and treated them the same as other products. Their findings are consistent with that of the present study in regards to the consumption of GM oil, and according to Ghiyasvand et al., such a middle-ground attitude can influence the tendency of people toward purchasing GM food. Naemi et al. (25) performed a study which participants were biotechnology specialists, when 44.5% of the participants had a positive attitude toward GM plants while the rest expressed a negative attitude. The shared aspect between the study and the aforementioned one is that participants were part of a population who were better-informed about GM food; therefore studies on different Iranian populations with varying economic-cultural status may yield different results.

In addition, when the overall attitude of participants in this study was moderate (i.e. not completely in agreement or disagreement), the results still indicated that attitude had the strongest significant relationship with intention. Further, the attitude was the strongest predictor of consuming intention for GM oil by the staff of health care centers. This finding confirms one of the hypotheses of the theory of planned behavior indicating that attitude can influence the intention for action. This is consistent with the findings of

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Yazdanpanah et al. (26) who reported the direct influence of attitude on the tendency of the employees of the Iranian Ministry of Agriculture to consume GM products. Kim et al. (21) also reported that attitude had the strongest impact on the consuming intention for GM food, with a positive relationship between attitude and intention. This finding is consistent with that of Abbasishavazi et al. (15), Chen et al. (20), French et al. (27) and McConnon et al. (28) who also implemented the theory of planned behavior in different areas. Therefore it can be argued that attitude can be a parameter for changing the consuming intention for GM food by the participants, where interventions affecting this attitude can effectively change the decision to consume GM oil.

Concerning subjective norms, the findings indicated moderate perceived social pressure by the participants for consuming GM oil. In other words, they did not experience any intense pressure by their important people in their lives (e.g. spouse, family, colleagues, friends, etc.) for using GM oil. This finding can have two implications. Firstly, intimate acquaintances probably had a moderate attitude toward consuming GM oil and secondly, these participants probably did not have many observations of using GM oil in their environment, as witnessing an action is another item of subjective norms influencing people. This study also showed subjective norms to be the second most influential variable with a positive relationship with intention and therefore the second predictor for consuming intention of GM oil. This finding confirms another hypothesis of the theory of planned behavior in which subjective norms and peer pressure can influence a person's intention for action. In line with the findings of this study, Morowatisharifabad (29) also showed that subjective norms perceived by peers, occupational health experts, and factory authorities were the most influential predictors of using hearing protection devices among the workers of textile factories. McConnon et al. (28) also confirmed the role of subjective norms in controlling overweight. Therefore, paying attention to the sources of social pressure and other people's opinions in a population can be an important determinant in planning for consumers of GM food.

Another finding of the study was the perceived behavioral control of the participants. While the mean score showed sufficient control by participants in consuming GM oil in their diet, it was the last influential predictor of the consuming intention for GM oil among the staff members (a prediction level of 10%). Azjen et al. (16) argued that perceived behavioral control is a significant, influential factor in behavior. Different studies have found different results for the predictivity of the perceived behavioral control and its correlation with the intention (28, 30). Kikulwe et al. (31) conducted a study on banana consumption in Uganda in which price and quality were the major parameters for the buyers. Ugandan people tended to buy GM banana if it had the same price as the non-modified variants. Since perceived behavioral control indicates the judgment of participants about overcoming the extrinsic obstacles for using GM oil, addressing problems such as price and providing facilities for easier access to products and labeling them can influence consuming intention of the target population.

Overall, the staff of health care centers in Yazd City showed a moderate consuming intention for GM oil. However, according to Costs-font et al. (17) above 80% of Spanish, Italian, and Grecian population disagreed with purchasing GM food. On the other hand, in this study, 43% of the variance in intention was determined by the three variables of attitude, subjective norm, and perceived behavioral control, so it can be conclude that changing the attitude, access and social pressure can influence the consuming intent for GM oil. Similarly, Kim et al. (21) also reported attitude, subjective norms, and perceived behavioral control as the strongest predictors of intention to genetically modified foods.

Conclusion

In general, as the theory of planned behavior could properly identify the predictors of the consuming intention for GM oil in the participants of the present study, the results provide important

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evidence for supporting the use of this theory in predictions of food-related consumption behaviors—especially in the area of new food products. Furthermore, as attitude significantly predicts the consuming intent of GM oil, studying the factors influencing the attitude toward GM food in different social levels of Iran is highly recommended. Furthermore, in spite of its high value, perceived behavioral control had the least predictive ability regarding the consuming intent for GM oil which necessitates other elicitation studies to qualitatively extract the controlling opinions regarding the consumption of GM food, especially oil in Iran for consumer market planning.

This study had a number of strengths and weaknesses. One of its strengths was the elicitation approach in designing the research tool. Psychometric procedure, especially content validity was used to provide a valid and reliable tool for the Iranian population reflecting their mental realities in order to be a more objective representation of the participants' views. Due to the considerable time spent on verifying the validity and reliability of the tools used in this study, they can be utilized in similar studies on GM food. Furthermore, multiple limitations must be accounted for while interpreting the findings of this study. First, there seems to be little public awareness regarding GM food in Iran, so the findings are not generalizable to the whole Iranian population. In addition, the limited sample size also reduces the generalizability. The cross-sectional nature of the study is another limiting factor for its predictive ability.

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Conflict of Interest

There are no conflicts of interest to declare.

References

1. Jacobsen SE, Sorensen M, Pedersen SM, et al. feeding the world: Genetically modified crops verses agricultural biodiversity. Agronomy Sustainable Developement. 2013; 33(4): 651-62.
2. Paarlberg RL. The Real Threat to GM crops in poor countries: consumer and policy resistance to GM foods in rich countries .Food policy. 2002; 27(3): 247-50.
3. McEwen A, Straus L, Croker H. Dietary beliefs and behavior of a UK Somali Population.Journal of Human Nutrition Dietetics.2009;22: 116–21.
4. Zhang D, Guo j. the Development and standardization of testing methods for genetically modified organisms and Drived Products.journal of integrative plant biology.2011;53(7): 539-51.
5. Tohidfar M, Khosravi S. Challenges for releasing BT transgenic plants. Journal Agricultural Biotechnology. 2015; 7(3): 33-54.[persian]
6. Magnusson MK, Hursti UKK. Consumer attitudes towards genetically modified foods.Appetite.2002; 39:9–24.
7. Allahyari Frad N. A study of Islamic (Shia) views about consumption of genetically modified organisms products. Medical Ethics and History of medicine. 2013;6(1): 74-83 .[Persian]
8. BredahlL.Consumers Cognitions with regard to genetically modified foods, Results of qualitative Study in four countries. Appetite.1999; 33(3): 343-60.
9. Gaskell G, Bauer MW, Durant J, et al. Worlds apart? The Reception of Genetically Modified Foods in Europe and the U. S. Science.1999; 285(5426): 384-7.
10. Hoban Tj. Consumer acceptance of biotechnology: An international perspective. Nature biotechnology. 1997; 15(3): 232-4.
11. Onyango B. Consumer Acceptance of Genetically Modified Foods: The Role of Product Benefits and Perceived Risks. Journal of Food Distribution research.2004; 35(1): 154-61.
12. Huang J, Qiu H, Bai J, et al. Awareness, acceptance and willingness to buy genetically modified foods in Urban China.Appetite.2006;46(2): 144-51.

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[DOR: 20.1001.1.23225688.2019.8.4.1.2]
[DOI: 10.18502/jchr.v8i4.2076]

13. Ghanian M, Ghoochani O, kitterlin M, et al .Attitudes of Agricultural Experts toward Genetically Modified Crops: A Case Study in Southwest Iran. Science and Engineering Ethics.2016; 2: 509–24.[Persian]
14. Ghiasvand GF, Mirakzadeh Aa, Shiri N. Factors Affecting Consumer Attitudes towards Genetically Modified (GM) Crops (Case study: Qazvin County). Iranian Journal of Agricultural Economics and Development Research.2015; 46(3): 427-38 .[Persian]
15. AbbasiShavazi M, Baghianimoghadam MH, Rezaeipandari H ,et al. Predictors of Using Respiratory Protection Masks among Workers of Sanitary Ware Companies in Yazd, Iran, Based on the Theory of Planned Behavior .Mazandaran University Medical Sciences.2017 ;27(151): 180-92. [Persian]
16. Ajzen I,Driver Bl .Prediction of leisure participation from behavioral, normative, and control beliefs: an application of the theory of planned behavior. Leisure Sciences.1991; 13 (3): 185-204.
17. Delshad Noghabi A, Darabi F, Moshki M. The Impact of education on the basis of the theory of planned behavior on the level and method of supervision of their parents on watching television by students. Journal of Torbat Heydariyeh University of medical Siences. 2016; 30: 406. [Persian]
18. Godin G, KOKG. The theory of planned behavior: A review Its Application to healh related behaviors.American Jounal of Health Promotion.1996; 11(2): 87-98.
19. Bredahl L. Determinants of consumer attitudes and purchase intentions with regard to genetically modified food–results of a cross-national survey.Consumer Policy. 2001; 24(1): 23-61.
20. Chen MF, Li HL. The consumer's attitude toward genetically modified foods in Taiwan. Food Quality and Preferences.2007; 18(4): 662-74.
21. Kim YG, Jang SY, Kim AK. Application of the theory of planned behavior to genetically modified foods: Moderating effects of food technology neophobia.Food Research International.2014; 62: 947-54.
22. Zhang M, Liu GL. The Effects of consumer's subjective and objective knowledge on perceptions and attitude towards genetically modified foods: objective knowledge as a determinant.International journal of food science and technology.2015; 50(5): 1198-1205.
23. Costa-Font M, Gil M. Structural Equation Modelling of Consumer Acceptance of Genetically Modified (GM) Food in the Mediterranean Europe: A Cross Country Study. Food Quality and Preference. 2009; 20(6): 399–409.
24. Saher M, Lindeman M, Hursti UKK. Attitudes towards genetically modified and organic foods.Appetite.2006; 46(3): 324-31.
25. Naeemi A, Pezeshki rad Gh, Ghareyazi B. An investigation of biotechnology experts'Attitudes in Univesity Centers of Tehran Province towards the Use of Transgenic Plants. Environmental Sciences.2010; 7(2): 77-91. [Persian]
26. Yazdanpanah M, Forouzani M, Bakhtiyari Z. Investigating the Tendency of Khuzestan Province Organization of Agriculture Jihad Experts towards Genetically Modified Crops. Iranian Agricaltural Extension and Education journal.2016; 12(1): 103-17. [Persian]
27. French DP, Sutton S, Hennings SJ, et al. The importance of Affective beliefs and attitudes in the theory of planned behavior: Predicting intentions to increase physical activity. Journal of Applied socialphycology.2005; 35(9): 1824-48.
28. McConnon A, Raats M,AstrupA,et al. Application of the Theory of Planned Behaviour to weight control in an overweight cohort. Results from A pan - European dietary intervention trial (DiOGenes). Appetite.2012; 58(1): 313-18.
29. Morowaty MA, Chaleshgar M, Abbasi shavazi M, et al. Evaluation of workers-related factors about using of hearing protection devices in textile factories, based on planned behaviuor theory.Occupational Medicine quarterly journal research center of industry related diseases.2013;5(2): 32-42. [Persian]
30. Schifter De, Ajzen I. Intention, perceived control and weight loss: An application of the theory of planned behavior.journal of personality and Social Psychology.1985; 49(3): 843-51.
31. Kikulwe EM, Wesseler J, Falck-Zepeda J. Attitudes,perceptions, and trust. Insights from a consumer survey regarding genetically modified banana in Uganda.Appetite. 2011; 57(2): 401-13.

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