



Original Research Article

FUNCTIONAL FOODS: AWARENESS AND ECOLOGICAL SUSTAINABILITY (A STUDY ON YOUNG EDUCATED WOMEN)

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Abstract: Functional foods are food imparting specific health-enhancing and disease-curing benefits beyond basic nutritional needs. To reach at a level of sustainable ecology, it is important to establish a balance between production and consumption processes which could be achieved by an increased demand, commercial viability and continuous supply for these foods. Thus our study aimed at, not only to study functional foods and their ecological sustainability but also to seek awareness of our subject about these foods. Women if informed would propagate their knowledge in the society by 'word of mouth' and influence it to accept these foods and maintain balanced food ecology.

Key Words: functional foods, ecology, awareness, educated women

INTRODUCTION

Ecology is the study of interaction of living organisms with their environment, it makes our survival and sustainability possible and ensures a healthy life, but with the growing instances of human interference with nature; it has resulted in imbalance of ecology. The devastating incidences of calamities, climatic extremities, epidemics are all proven and visible results of it.

One such discipline is the food ecology, a subject of immediate and deep concern. Food is something indispensable for survival; which when ingested and digested give us energy to work; and the absence of which will result in fatigue and illness. It acts as fuel for the body.

The body needs various kinds of foods with varied nutrients to meet its daily demands, and the shortage or absence of any of these nutrients may result in disease or deficiency. To combat such problems a new concept has emerged known as Functional Foods.

For many centuries there has been a deep-rooted belief that foods and herbs have health-giving and curative properties. In the present century, we have increasingly turned to drugs to treat, alleviate or prevent diseases. However since the discovery of nutrients and with our increasing analytical capabilities, we are becoming more knowledgeable of naturally occurring chemicals in foods and their effects on the human body (Labuza, 1994).

Definition of Functional Foods

Goldberg (1994) defined functional foods as "any food or food ingredient that has a positive impact on an individual's health, physical performance or state of mind, in addition to its nutritive value".

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Japanese Ministry of Health and Family Welfare, specified that a functional food must satisfy three conditions: Firstly, they are foods, not capsules, tablets or powders, which are derived from naturally-occurring ingredients. Secondly, they can and should be consumed as part of the daily diet. Thirdly, they have a particular function when ingested, serving to regulate a particular body process, such as prevention of specific disease (e.g. heart and artery disease).

History

The original concept of functional foods was born in Japan in the 1980's. Dietary fibre was the first of the functional ingredient to be a commercial success. The product credited with being the first Japanese functional food is; a dietary fibre containing soft drink called Fibre Mini launched in 1988, which uses water-soluble polydextrose as its functional ingredient and is marketed for 'gut regulation'. (Heasman, 1997).

The term 'functional foods' was actually dropped and replaced by the term 'foods for specific health use' (FOSHU). Twelve health enhancing ingredients were recognized, dietary fibre, oligosaccharides, sugar alcohols, peptides and proteins, glucosides, alcohols, isoprenoids and vitamins, cholines, lactic acid bacteria, minerals and polyunsaturated fatty acids. (Ichikawa, 1994)

Classification

Naturally nutritious (e.g. wholemeal bread, soymilk, phyto chemicals etc.). Fortified (e.g. orange juice with added calcium energy drinks, fortified biscuits, iodised salt etc.

Engineered foods (e.g. probiotic yoghurts, cholesterol lowering spreads etc.)



Table 1: Functional Foods, their Key Components and Potential Health Benefits

Functional food	Key component	Potential health benefits
Black and green tea	Catechins	Reduce risk for cancer
Broccoli and other cruciferous vegetables	Sulforeaphane	Reduce risk for cancer
Citrus fruits	Limonoids	Reduce risk for cancer
Fish	Omega-3 fatty acids	Reduce risk for heart disease
Fruits & vegetables	Many different phytochemicals	Reduce risk for cancer & heart disease
Garlic	Sulfur compounds	Reduce risk for cancer & heart disease
Oats & oat-containing foods	Soluble fiber beta glucan	Reduce cholesterol
Purple grape juice & red wine	Polyphenolic compounds	Support normal, healthy cardiovascular function
Soy foods	Soy protein	Reduce cholesterol
Tomatoes & tomato products	Lycopene	Reduce risk for cancer
Yogurt & fermented dairy products	Probiotics	Improve gastrointestinal health
Beef	CLA	Anti-carcinogenic
Carrot	Beta-carotene	Anti-oxidant

(Block et al., 1992)

Uses

There is widespread recognition that diet plays an important role in the prevention of many diseases like cardiovascular diseases, some cancers, osteoporosis, inflammatory conditions and obesity.

Cardiovascular Disease (CVD) accounts for 50% of the total death rate. The major causes being smoking, hypertension and elevated blood cholesterol. Dietary anti-oxidants play an important role in preventing oxidation of LDL, PUFA and cholesterol. Ingredients that have found widest application with the promise of lowering blood cholesterol include soluble and insoluble fibres and fatty acids, others include palm oil and plant sterols. (Young, 1997).

Treatment: High levels of soluble fibre such as Quaker Oats.' The packaging states that this cereal is a rich source of Oat-bran, which could help reduce your cholesterol level, as part of a low fat diet. (Anonymous, 1996).

Cancer is the second biggest cause of deaths in the world, after heart disease accounting for 20% of all deaths. Genetic causes are viewed as a significant risk factor for cancer but studies suggest that approximately 30% of all cancer deaths may relate to diet (Eddy, 1986)

Treatment: Manipulating dietary intake is a realistic approach to reduce cancer risk. Many foods, including carrots cucumber, apples, strawberries, soybeans, brussels sprouts, broccoli, peppers, fish and citrus fruits are believed to contain anti-carcinogenic components (Milner, 1994).

Obesity is one of the most serious diet-related problems in the western world, predicting a number of disease conditions such as heart disease, hypertension and diabetes. A variety of approaches to weight control are practiced currently, including low-calorie versions of standard food and drink products, meal replacements, hypnosis, drug therapy. However, these do not seem to have resulted in any decline (Young, 1997).

Treatment: Anorectic agents (such as caffeine, thiamine and zinc) and dietary fibres or complex carbohydrates which delay stomach emptying, digestion and assimilation (Walquist, 1994).

Osteoporosis is defined as a disorder resulting from a combination of low bone mass (osteopenia) and low trauma fractures.

Treatment: Focus has been on enrichment of dairy products such as milk and children's desserts. Eg- In Ireland, Goldern Yalis Super Plus low-fat milk is fortified with calcium, vitamin A and D and folic acid. (Young, 1997).

Significance

India currently occupies a back seat in the race to supremacy in the functional foods market. Consumer awareness is very low and promotion of functional foods is very important. Food technologists developing functional foods are facing certain constraints; the most prominent being consumer awareness which is indispensable for the promotion of Functional Foods. The final criteria by which food is judged and accepted by consumers relate to the sensory properties.

The study was conducted at Women's College AMU, Aligarh. As Women's College is an epitome of women education. It seemed good enough reason to get an insight of what these educated women think about the "concept of Functional Foods." Girls from all over India and world come here to receive education, build their personalities, shape their career and achieve their goals. Thus the college plays a significant role as an institution of not only formal education but a place for all round; personal, social and professional development both for present and future life of these women students. They belong to different regions, religion and cultures of varying age group. Thus they were homogeneous as far as sex was concerned and heterogeneous as far as age, region, religion and culture were concerned. Thus the sample varied according to the dimensions of the study.

Objectives

General: To study the importance of functional foods in food ecology.

Specific:

- To find the awareness level of educated young women about functional foods.
- To create awareness on sustainability of functional foods in balancing food ecology.

MATERIAL AND METHODS

The study locale selected was Women’s College, Abdullah hall, A.M.U. Aligarh. The study tools implemented were questionnaire, hedonic scale, visual aids (charts, posters, pamphlets).The sample was selected by applying statistical technique, simple random sampling. The size of the sample was 100 female under-graduate students in the faculties of Science, Life Science and Agricultural Science between 18-22 years of age.

The questionnaires were distributed, and the respondents were requested to return it duly filled with unbiased information within the controlled time period of approximately 20 minutes.

The Hedonic scale was personally administered and collected from the subjects once it was filled on the spot. The sample group was asked to taste the developed Functional Foods and rate it accordingly with suggestions. Thus the sample group was used both as taste panelists and target audience for awareness campaign.

First food selected was beef fat, where conjugated linoleic acid; CLA was the functional ingredient which was used in biscuits for its anti-cancer properties and second ingredient was carrot powder having beta-carotene with anti-oxidant properties. Both these ingredients can help in balancing food ecology. As carrot powder is prepared from blanched carrots it would serve the demand in off-season or to the places having its deficiency. It can be used in making snacks like matri. Similarly biscuits are non-perishable and can be supplied to regions where desired. These products when modified could be stored for longer duration and would compensate the inflatory demands thus giving a positive response to sustain food ecology.

DISCUSSION

Some interesting analysis were made during the course of the study. These are discussed under the following headings.

Finding awareness level

After analyzing the questionnaire the following information was obtained:

Table 2: Influence of Advertisements on Diet and Health

Response	No. of girls	Percentage
Yes	63	63%
No	37	37%
Total	100	100%

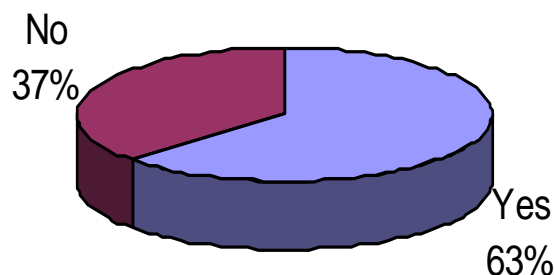


Figure 1:

Table 3: Brand Curiosity

Response	No. of girls	Percentage
Yes	73	73%
No	27	27%
Total	100	100%

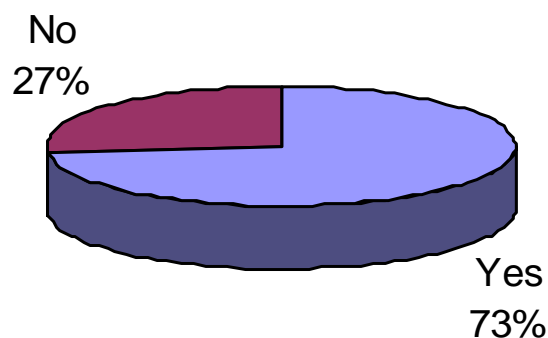


Figure 2:

Table 4: Conflict between Taste and Health

Response	No. of girls	Percentage
Taste	63	63%
Health Effects	37	37%
Total	100	100%

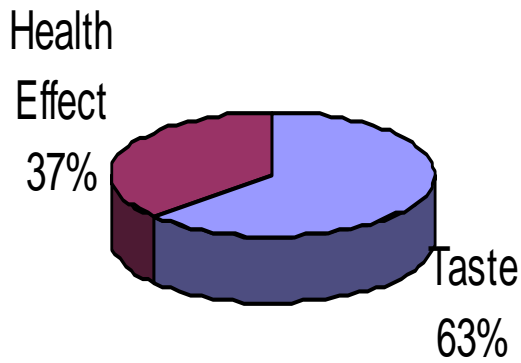


Figure 3:

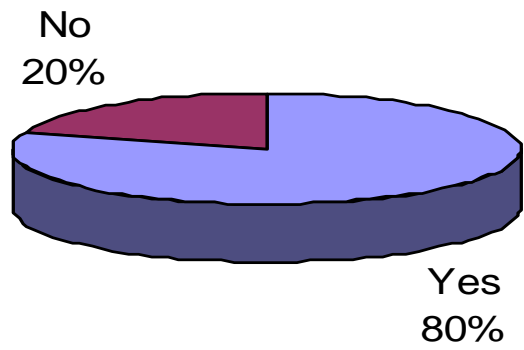


Figure 6:

Table 5: Awareness about Supplemented Foods

Response	No. of girls	Percentage
Yes	90	90%
No	10	10%
Total	100	100%

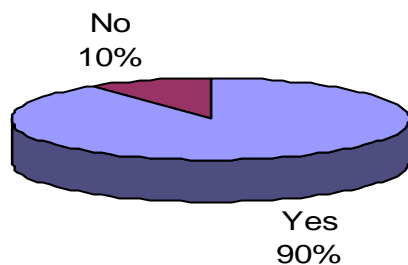


Figure 4:

Table 8: Knowledge about Foods Substituting Medicine

Response	No. of girls	Percentage
Yes	90	90%
No	10	10%
Total	100	100%

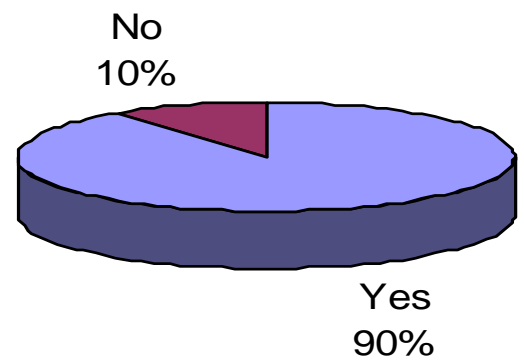


Figure 7:

Table 6: Brand Suspicion

Response	No. of girls	Percentage
Yes	77	77%
No	23	23%
Total	100	100%

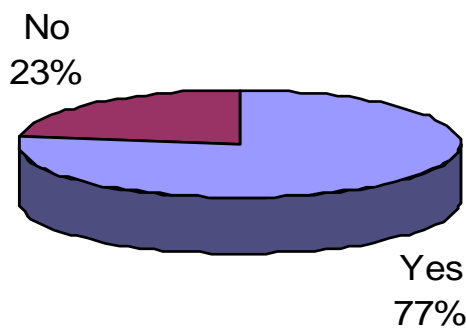


Figure 5:

Table 9: Herbs behind Fortified Foods

Response	No. of girls	Percentage
Yes	21	21%
No	79	79%
Total	100	100%

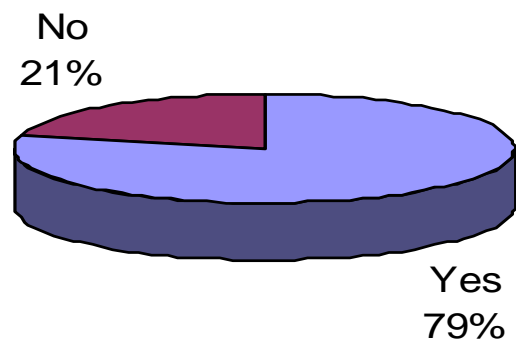


Figure 8:

Table 7: Knowledge about Medical Foods

Response	No. of girls	Percentage
Yes	80	80%
No	20	20%
Total	100	100%

Table 10: Similarity between Natural Foods and Functional Foods

Response	No. of girls	Percentage
Yes	50	50%
No	50	50%
Total	100	100%

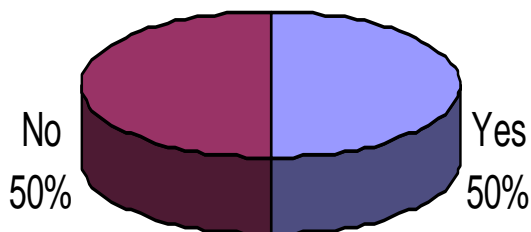


Figure 9:

Table 11: Knowledge about Functional Foods

Response	No. of girls	Percentage
Yes	67	67%
No	33	33%
Total	100	100%

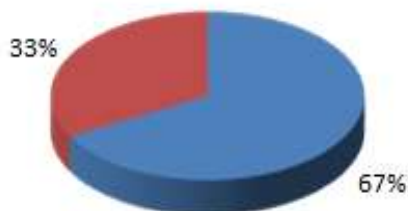


Figure 10:

Creating awareness

A small lecture was delivered before the target group on the importance of building sustainable ecology by using functional foods and it was presumed that the presenters will play a substantial role in popularizing Functional Foods by word of mouth. Interactive Session enabled the researcher to have a direct communication with the subject and influence their opinions by making them taste the developed products. Visual aids were used to trigger the session.

RESULTS AND CONCLUSION

To find the awareness level of the sample group a questionnaire was prepared consisting of 10 questions which were directly or indirectly associated

with Functional Foods. The purpose was to find out ‘what the sample knew about Functional Foods’.

Sixty-three percent girls of the sample group were influenced by advertisements on diet and health. Seventy-three percent girls enjoyed trying new brands of health products. Sixty three percent girls were tempted by the taste of the food product while the rest were tempted by their health-effects. Ninety percent girls were aware of food supplemented with nutrients.

Seventy-seven percent girls were scared of trying new brands of food products because of their negative effects on health they have heard. Eighty-percent girls believed in the development of foods that can cure a disease or a deficiency. Ninety-percent girls believed that food can substitute medicine if tried on a regular basis. Seventy-nine percent girls think that fortified foods are not purely herbal. Fifty percent girls believe that Functional Food is synonym for natural foods. Sixty-seven percent girls possessed correct knowledge about Functional Foods. The awareness level is in the infancy stage but keenness to know is sky-high provided; correct information about ecology is disseminated and use of functional foods is encouraged. Hedonic rating scale brought forth; overall positive response for biscuits as forty-nine percent and matri; fifty three percent. The responses of the awareness programme/ interactive session created a ray of hope for a dawn of sustainable food ecology.

Scope

Emphasis on other areas in this field is not only imperative but it is vital for expanding its future potentials. These areas may be biochemical tests for acceptance, shelf-life of the products, safety and cost; concerns where serious efforts are needed.

CONCLUSION

If the functional food products are consumed as a part of daily diet they will enable us to opt out medicinal pills from our routine reducing not only the mortality rate due to poverty, under-nutrition and drudgery but also in balancing the ecology. The items developed from functional foods are non-perishable for a considerable duration of time, and can be transported to places where people are suffering from their deficiencies. Also the cost of these products being very nominal they could even become popular in lower socio-economic groups, who are the potential sufferers.

Further as young women are the future mothers of our society who share the burden of perpetuating and sustaining life, so no other target could have proved more suitable and interesting for the study. The educated informed women of today will pose the future of tomorrow, thus it was imperative to realize that these future women not only learn about their health and well-being but serve as contributors for the entire society rather ecology. Science graduates are expected for their inclination towards nature which had instigated their scientific minds for wellness of nature. Future of these foods is very promising; their acceptance could lead to a revolution in sustaining the food ecology.

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