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Research Paper

Nutritional and hygienic assessment of pizza sold by small vendors in Rajkot city and its comparison with home made sample

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ABSTRACT : Pizza is a popular fast food and is crowned as king of evening snack. As a general pattern, it composed of a pizza base made from fermented batter of Maida and wheat flour, served with different toppings of vegetables, pasta, and macaroni with cheese. Sample of pizza were collected from four different food zones of Rajkot city and its microbial analysis, nutritional analysis were carried out and hygienic practices made out and compared with home made pizza. The analysis was done in terms of total microbial lode present per sample and presence of enteric group of organisms. As it is popular in Gujarat, so attempts were made for necessary awareness amongst the consumers and necessary remedial actions to prevent the same during its preparation and serving with suggestion for hygienic.

KEY WORDS : Vendor's food, Home made food, Hygienic practices, Nutrient agar, MacConkeys agar

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As a general pattern, it is composed of a pizza base made from fermented batter of Maida and wheat flour, served with different toppings of vegetables, pasta and macaroni with cheese.

Food is the usual vehicle for meeting the need for nutrients, but foods differ in their nutrient content. No one food can be depended upon to provide all the nutrients necessary for normal growth and health. Nutritive value refers to the nutrient content of a specific amount of food. Nutrients promote health by making possible the normal operation and maintenance of the body.

Food is food to humans and microbes. Role of microorganisms in food are spoilage and food poisoning. Microorganisms are found throughout the natural environment. People eat street foods for certain reasons as fast-foods are cheap, convenient and save time economics of scale, plus high cost of cooking fuel often make street foods cheaper than food prepared at home.

RESEARCH METHODS

Food samples were collected from the four main areas in Rajkot city. Freshly prepared food samples were collected from four different food zones of city like (1) Indira circle, (2) Bhaktinagar circle (3) Sant Kabir road (4) Race Course ring road.

All vendors were asked about approximate amount of ingredients used in cooking of 5 kg food items. On bases of that amount, raw ingredients for 100 g of food was calculated.

Generally middle and higher middle class people of Rajkot city prejerred the above selected items at home. Fifty middle class families were given a questionnaire to find out the ingredients and correct method of cooking of above mentioned pizza. On the basis of the results of questionnaire, the average ingredients were obtained and a recipe was standardized.

After standardizing home made recipes for ingredients and amount prepared were compared with vendor's food samples for nutritional and microbial quality and observation of the hygienic practices.

Nutritional content of home made food was rich as it contained large amount of potato and tomato. While vendors food contained more amount of butter (fats) and cabbage, a cheap ingredient widely available (Table A).

Table A : Ingredients and amounts for vendor's and standardized home made pizza

Ingredients	Amounts in (100 g)	
	Vendor's foods (g)	Standardized home made foods (g)
Wheat flour (refined)	30	30
Cheese	5	10
Tomato	10	15
Onion	10	10
Potato	10	15
Cabbage	10	-
Butter	8	2
Spice	10	10
Oil	5	2
Water	2	2

Sample selection and preparation for nutritional analysis :

All the food items that were collected were freshly prepared by vendors. All the food samples were collected at 10:00 p.m. on first day and packed in plastic containers. After this, these samples were individually homogenized in mixer and 100 g sample was packed immediately in containers. These containers were stored at -34^{0}C in freezer. Home made food sample were also prepared, homogenized and preserved along with samples collected from vendors. The chemical analysis was carried out, next day at 9.00 A.M.

Sample preparation for microbial analysis :

From each of the homogenized food samples, exactly 1 g food sample was weighed and suspended in 9 ml of sterile distilled water blank. This was considered as 10^1 dilutions. After which serial dilutions 10^1, 10^2 were prepared and 10^3 dilutions were selected for inoculation of bacteriological media.

Hygienic practices :

Observations were made for hygienic practices as compared to homemakers such as; wearing clean clothes, apron and hair cap, washing hands, nails cut, smoking during work, chewing betel, splitting near by, scratching nose while work.

Statistical analysis :

As per the above observation of the samples collected, it was observed that the various nutritive properties have got variations in their values, but after applying the scientific statistical tools (t-test) on the same data. It was observed from the analysis that the calculated value was more/less than the tabulated value (approach p value); therefore, the hypothesis is accepted or rejected.

Method for nutritional analysis of food :

Next day at 9 A.M., these samples were analyzed to derive nutritive values in laboratory. Carbohydrates, protein, fat, fibre, moisture, pH, calcium, iron, sodium, potassium, vitamin B_1, B_2, niacin and vitamin C were estimated. Total carbohydrates estimated by Anthrone method (Sadashivam Manickam, 1991), fat was analyzed by AOAC (1970). Total proteins, ascorbic acid by Sadashivam Manickam (1991). Calcium was determined by titrimetric method, AOAC. Sodium, potassium were determined in aqueous solution of ash sample (Jackson, 1973). Colorimetric method using 20 per cent KCNs and 2N Hcl determined iron.

■ RESEARCH FINDINGS AND DISCUSSION

By using above mentioned procedures, different nutrients were analyzed. The nutrient content of all the samples were as shown in Table 1. All these values are from 100 g of sample.

From the result of Table 1, it was observed that amount

Table 1 : Nutrient compositions of different samples

Nutrients	Sample 1	Sample 2	Sample 3	Sample 4	Homemade
Carbohydrate(g)	16.00*	16.00*	17.00	15.00*	19.00
Protein(g)	2.80	2.80	2.70*	2.60*	2.90
Fat(g)	12.00*	12.80*	10.30*	13.00*	5.60
Fiber(g)	0.01	0.01	0.01	0.009*	0.01
Moisture (%)	58.00	56.00*	60.00*	61.00*	55.00
Ascorbic acid (mg)	0.35*	0.30*	0.41*	0.30*	1.00
Calcium(mg)	30.00	30.00	29.00*	28.00*	31.00
Iron(mg)	0.32*	0.33*	0.31*	0.29*	0.40
Sodium(mg)	12.00*	31.00*	10.10*	12.00*	20.00
Potassium(mg)	22.00	23.00	25.00*	24.00*	20.00

* S= Significant

of carbohydrates and proteins were more in homemade food as compared to vendor's food because homemade food contained more amounts of potatoes and cheese but vended sample contained more cabbage. In all the vended samples there was more of fat than homemade sample because pizza is baked with good amount of butter the fat content. Moisture content of homemade sample was least in all food samples as more potatoes and cheese were used. Other nutrients were more in homemade sample than other samples.

Microbial analysis of food sample :

Food contains a large number of microbial organisms, which enter through the various ways like by ingredients used, handling and process of preparation.

Microbial analysis of pizza samples collected from 4 different places was carried out (Table 2 and 3). pH of vended food was very acidic more than that of home made food. microorganisms are present as a resistant dormant form. Generally acquired from air, may be dust, dirt etc. The basic food material used in pizza bread, if not stored properly or unhygienic practices are employed in the handling; storing and its transportation may result in getting contaminated with the organisms.

The vended food spore formers quantity was more than home made (Table 4), that may be correlated to the improper, unhygienic conditions during its preparation and is adding to overall microbial population. These organisms may also enter via salad, dressings, which are made on pizza bread and various other toppings made.

All the gram positive cocci are not pathogenic, but they

Table 2 : Standard plate counts in pizza

Food sample	pH	TNC CFU / 1ml food sample	Gram staining of randomly selected colonies (% Viable count)				
			Spore forms	Yeast cell	Gram-ve rods	Gram +ve Cocci	
						In bunch	In chain
1.	4.3	260 x10^2	10	15	50	35	15
2.	4.3	275 x10^2	12	17	45	29	17
3.	4.2	290 x10^2	13	19	55	25	19
4.	4.1	285 x10^2	10	16	47	30	15
Homemade	4.9	150 x10^2	07	13	30	15	05

Table 3 : Coli form counts in pizza

Food sample	TNC CFU/ 1ml food sample	Gram staining Gram –ve Short rod (Presence %)
1.	25 x10^2	100
2.	17 x10^2	100
3.	19 x10^2	100
4.	20 x10^2	100
Home made	5x10^2	100

Table 4 : Hygienic and sanitation observation or sanitary practices (Pizza)

Sr. No.	Details	No. of vendor's (Out of four)	Home made (Only one)
1.	Hygienic practices		
(a)	Wearing clean clothes	1	1
(b)	Using apron and hair cap	2	1
(c)	Washing hands before preparation	-	1
(d)	Nails cut and while sneezing and coughing	1	1
2.	Unhygienic practices		
(a)	Smoking during work	1	-
(b)	Chewing betel	2	-
(c)	Spitting near by	1	-
(d)	Scratching/picking nose while work	2	-

may be saprophytes also. These organisms are normally found as an inhabitant of human skin and mucous membrane. They may get entry into food via unhygienic practices of the persons who are responsible / involved in the preparation of such foods.

Only 25 per cent of vendors were wearing clean clothes with nails cut and following the healthy practice of taking precautions during coughing, sneezing. 50 per cent of them used aprons and hair cap. None of them had habit of washing hands during preparation.

Chewing of tobacco and picking of nose were commonly observed and smoking and spitting in near of food preparing zone were also noticed. Candrasekhar and Kowsaly (2003) also made some observedion on microbial and chemical contamination of vended foods versus home mad and restaurant foods.

Summary and conclusion :

Although presence of certain saprophytes was observed which may serve as opportunists. Their entry into food via unhygienic preparation practices can't be ruled out.

In the present study, knowledge gained through this study will help people to understand the importance of food they eat. It will help them in changing their eating practices and motivate them to eat nutritious and hygienic foods. This study will be able to find out nutrients and which microorganisms are present in small vendor's foods. Vendor's food is very cheaper, but does not maintain good health. People will know about difference between home made food and vendor's food by this study. Unhygienic foods items are rich in cholesterol and this was also identified by this study.

People are provided with scientific knowledge about food they eat; it will be of great help to them and scientific knowledge about vended foods, will offer choice of food items.

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■ REFERENCES

AOAC (1970). Association of Official Analytical Chemist. Official methods of analysis of AOAC international, (vol-1 and 11) 17th (Ed.), AOAC International Gaithershury, M.D. U.S.A.

Ban, Wart and George, J. (1987). Basic food microbiology, C.B.S. publishers, DELHI (India).

Bansal, R. (1993). Scoring systerm for evaluating food hygiene of catering, *J.Nutrition diet*, **31**: 8.

Chandrasekhar, S. and Kowsaly, C. (2003). Proximate composition, microbial and chemical contamination of street vended foods versus homemade and restaurant foods from Kochi, Kerala. *J. Food Sci. Technol.,* **40**: 58-62.

Frazier, W. and Weshoff, D. (1983). Food Microbiology, Tata, Macgraw-Hill Publishing Company Limited, NEW DELHI (India).

Goyle, A. and Dugar, N. (1994). Quality evaluation of three-canteen snacks nutritive fat and bacteriological, *J. Indian Food Packer,* **31**: 166-167.

Gunasekaran, G., (1987). Laboratory manual in microbiology, C.R.C. publishing, FLORIDA.

John, T. Nickerson (1974). Microbiology of food and food processing, American Elsevier publishing company, NEW YORK.

Marriott, G. (1985). Principles of food sanitation, published by Van N. Ostrand Reinhold Company, NEW YORK.

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