



MICROBIOLOGICAL QUALITY EVALUATION ON POTATO CHIPS IN VARANASI CITY OF UTTAR PRADESH

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Article Received on 22/12/2016

Article Revised on 12/01/2017

Article Accepted on 02/02/2017

ABSTRACT

Microbial analysis is essential part of food safety. Confidence in the safety and integrity of the food supply is an important requirement for consumers. In the present study an attempt was made to assess the bacteriological quality of potato chips. The objective of the study is to determine the bacteriological quality of the market available potato chips collected from Varanasi city. For microbiological test sample were used in triplate form. Specific culture media were used for identification of microbes (Bacteria). For the identification and microbial analysis culture media were used and for confirmation of gram positive bacteria gram staining have done. Number of gram positive seen in potato chips. The selected isolates were characterized based on morphological, biochemical and physiological characteristics. Aim of find out microbial quality evaluation in all market available potato chips.

KEYWORDS: Bacteria, Potato chips, Gram positive, Gram negative.

INTRODUCTION

In the Global food market, confectionary industry play essential role. It represent wide array of confectionary such as potato chips Candies, Jam, Jelly, Toffee, Fudge etc. today, most of the people depend on snacks for a significant portion of their nutritional requirements. This is common among young generations – “the youths” (singles and students) with our young ladies occupying the greatest proportion of this class. A snack is seen in western culture as a type of food not meant to be eaten as a main meal of the day like breakfast, lunch or dinner but rather to assuage a person’s hunger between meals, providing a brief supply of energy for the body (James, A. S., 2005). Snacks are ready-to-eat food, raw or cooked, hot or chilled but ready for immediate consumption at the point of sale without further treatment (Tsang, O. 2002).

The street food is a growing sector in many developing countries in the last decades with linked to urbanization. It is now widely recognized by food and health agencies to possess a huge socio-economic power. The sector therefore, has an immense employment and income generating potential (Thilde, 2006).

Most street vended foods are snack items (foods that are consumed especially between lunch and dinner). One of the more popular snacks is potato chips. Potato chips are piece of potato which have been sliced extremely thin and then fired or baked until they become crisp and

ready to eat (Tambeker et al., 2011). Hygienic and quality potato chips preparation is vary from processor to processor (Jackson and Berga, 2003; Ndungu, 2007). Food hygiene requires clean environment at every stage of the food preparation process because microbes can be found in every where (Peter and Martin, 2011).

Since potato chips can be found easily with cheap cost and sours of income, it has important role in snack times. But the biological safety of street vended foods are always in doubt and most of ready to eat foods do not fulfill bacteriological quality standards (Mirriam et al., 2012) This is as a result of the traditional processing methods that are used in the preparation, packaging and personal hygiene of food handlers (Felglo and Sakyi, 2012). The objective of our study was microbial analysis of different confectionary product on different media and assures quality of confectionary product.

MATERIAL AND METHOD

This study has been completed in Centre for National Facility for Tribal and Herbal Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India.

SAMPLE COLLECTION AND ANALYSIS

The samples were collected aseptically in sterilized plastic bags, transferred and preserved in microbiology laboratory at 4⁰C refrigerator for further analysis. Ten grams of potato chips were added in to sterile stomacher

bag containing 90 ml of buffered peptone water (13g/L peptone, 3.56g/L KH_2PO_4 , 7.23g/L Na_2HPO_4 , 4.3g/L NaCl) and mixed together using stomacher blender. One milliliter of each sample was taken and added into test tube containing 9 ml of normal saline (0.85% w/v) and was mixed well using vortex. Then, the serial dilution was made up to 10-15 using test tubes. After mixing each tube, 0.2 ml suspension was transferred and spread on to a sterile solid agar plates in duplicate for total viable count, of bacteria respectively. The plates were incubated at 37°C for 24 hrs for bacteria. After the incubation period completed, the results of each plate having colonies were recorded and pure colonies having different morphology were subculture to test tubes containing nutrient agar slant. All the test tubes containing selected cultures were incubated for 24hrs in 37°C and after incubation; slants were preserved at 4°C for further analysis (Feglo and Sakgi, 2012).

DATA ANALYSIS

The collected and recorded data were analyzed using Excel office 2007 to determine the average cfu/g of the sample and to make tables.

Table :

S.N.	Junk Food Article (status in market)	No. Of Aerobic Colonies/gm
1	Local Chips 1 (Packed)	$>10^9$ /gm
2	Local chips 2 (Open)	$>10^{12}$ /gm
3	Local chips 3 (Packed)	$>10^{10}$ /gm

RESULT AND DISCUSSION

Out of three samples of potato chips, the exploration of aerobic colony count reveals that all three samples were beyond the WHO permissible limits ($>10^7$ /gm). The detail results are shown in Table. Local Chips samples inoculate have microbial growth of rod shaped in purple colour (Gram Positive). The oval shaped microbial growth was also found in all three inoculated samples. The present Study was conducted on markets available packed potato chips and revealed that almost all the samples are in unacceptable sanitation. As the result indicated that the required quality and safety levels of the potato chips is not acceptable.

REFERENCES

- James, A. S. (2005). The role of breakfast in the treatment of obesity: A randomized clinical trial. *American Journal of Clinical Nutrition*, 55: 645-65.
- Jackson NK, Baga L (2003). Potato processing, quality evaluation procedures for research and food industry application in East and central Africa. *Kenya agricultural research institute*, 1-20.
- Feglo P, Sakgi K (2012). Bacteriological contamination of street vending food in Kumasi, Ghana. *Journal of medical and biomedical sciences*, 1(1): 1-8.

- Miriam EN, Collins EO, Nicolin FT, Ezekier G, Reland NN (2012). Food borne pathogens recovered from ready-to-eat foods from road side cafeteria and retail outlets in Alice, East Cape Province, and South Africa: Public Health Implications. *Int. J. Environ. Res. Publ. Health*, 9: 2608-2619.
- Ndungu EK (2007). Sensory quality of deep far fried potato chips manufactured from potatoes with different physio-chemical characteristics. *University of van Pretoria*, 1-110.
- Peters F, Martin H (2011). Selling Street and snack food Food and agriculture diversification, 1-90.
- Tamberkar DH, Kulkarni RV, Shirsat SD, Bhadang DG (2011). Bacteriological quality of street vended food panipuki. *Bioscience discovery*, 12(3): 350-354.
- Thilde R (2006). Street food quality a matter of neatness and trust. A quality study of local practices and perceptions of food quality, food hygiene and food safety in urban kumasi, Ghana. *University of Copenhagen*, 1-83.
- Tsang, O. (2002). Guidelines for Ready-To-Eat Food. Road and Environmental Hygiene; Department, Hong Kong. Pp 15 – 16.