

Ascertaining shelf life of selected food items stored in household refrigerators for consumer safety

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Study was planned with the objective to undertake microbiological and toxicity analysis to ascertain shelf-life of selected perishable products stored under refrigeration conditions in selected storage materials. This was being done to suggest safe refrigerated food storage practices for health safety. Results indicated that seepage of chromium content from stainless steel containers in stored food items resulted in maximum seepage (996.7%) in milk after two days followed by presence of chromium in *paneer* (569.56%); cooked meat (164.86%) and wheat flour dough (151.04%). Recommended food containers for storage in refrigerator were stainless steel and glass bottles in which food items come packed for minimizing growth of yeast and mould and Total Plate Count of selected food items. However due to heavy seepage of chromium content in stored food items (in stainless steel container) up to 966.7 per cent; it is not advisable to store food items in refrigerator for longer duration.

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INTRODUCTION

Perishable foods are those foods which deteriorate and usually require some sort of refrigerated storage. Refrigeration is employed to control the rates of certain chemical and enzymatic reactions as well as rates of growth and metabolism of food microorganisms (Srivastava and Kumar, 1994). Household refrigerators usually run at 4.4-7.2°C. However, studies have shown that perishable food will deteriorate, even at refrigerator temperature, due to spoilage because of microorganisms, enzymes and oxidation (Jay, 2000).

Principal requirements for effective refrigerated storage are controlled low temperature, air circulation and humidity control. However, aerial oxygen, type of container or wrapping

material they are stored in and duration of storage are also important factors that influence type of microbial growth, toxicity and spoilage of food during refrigerated storage. Refrigerated foods are therefore subject to spoilage by moulds and bacteria (Roday, 1999). Moreover, the temperature and climatic conditions prevalent in India, as well as the pH values of most food items are conducive to growth and proliferation of bacteria causing food borne diseases.

There is a wide variety of food containers and packing materials available in the market including glass, metals, paper and the recent entry as food storage containers is that of plastic and stainless steel containers. Styrofoam food containers emit benzene and styrene into our food which can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate and even death (Potter, 2003). However, there are evidences of seepage of metals or chemicals from materials and containers in which food is cooked and stored even for shorter duration as reported by Bhutani (2005). Therefore, a clear indication of other factors like effect of food container and unhygienic handling of food items (in refrigerator) is seen.

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