FRUITS AND VEGETABLES– THEIR HEALTH POTENTIAL

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INTRODUCTION

India is the second largest producer of fruits and vegetables covering an area of 6.11 million ha with annual production of 86.60 million metric tonnes. The vegetable cultivation area was 9.54 million ha with annual production of 169.48 million metric tonnes during 2014-2015 (Agricultural and Processed Food Products Export Development Authority, 2015). In developing countries like India, the post-harvest losses were more than 25.0%. In human diet, due to its nutritional quality, they played an important role but generally high moisture content of above 80.0% makes them more liable to deterioration under tropical conditions.

The availability of fruits are seasonal in different regions and wasted in large quantities due to improper warehouse facilities, lack of proper handling, distribution, marketing and storage.

Indigenous varieties of fruits and vegetables

The pineapple (*Ananas comosus*) was a tropical edible plant belonging to Bromeliaceae family, first cultivated by European hothouses in 1720. It was an economical fruit and known as queen of fruits for its flavour and taste. The pineapple cultivation was introduced to India in 1548 with varieties like Kew, Giant Kew, Queen and Mauritious. Queen and Kew were mostly grown in the North East part of India. The nutritional quality of honey queen variety was more than that of Giant Kew variety. The Kew variety fruits weighed about 1.5-2.5 Kg, whereas, queen variety weighed about 0.9-1.3 Kg.

Dates (*Phoenix dactylifera L.*) were cultivated since 4,000 BC in Mesopotamia. Earlier the date palm was introduced to India in Kutch, Gujarat about 800 BC. The climatic limitations made it impossible to fully ripen fruits on the trees and therefore harvest was done at khalal stage with subsequent artificial ripening in India.

Beetroot (*Beta vulgaris L.*) was introduced to India in1750s and accounted for only 16.0 –20.0 % world area where as production accounted for only 11.0 –13.0 % of the world. It was grown at least 2000 years ago as a garden vegetable in wet soils.

Pumpkin (*Curcubita moschata*) was grown throughout the tropical and subtropical regions of world. The geographical origin of pumpkin seeds and oil was from Austria, China and Russia.

To reduce the post-harvest losses emphasis should be done on the technologies methods to improve global food security by reducing the losses and improving the economy of agricultural produce. Main causes for them are improper handling practices, storage methods, preservation techniques and microbial spoilage up to 40.0%.

Methods to control losses after harvesting

- Immediate cooling after the post-harvest reduces the losses of fruits and vegetables. It has found that 0.453 Kg of ice decreased the temperature of 1.36 Kg fruits and vegetables from 85° to 40° F.
- Relative humidity of 80-95% helps to improve the shelf life of fruits and vegetables.
- Modified atmospheric packaging at 10°C and 15°Chelps to control the oxygen and carbon dioxide levels to improve their longevity.

Value added products of fruits and vegetables

- Products like squashes, jams, jellies, bars, marmalades, toffies and pickles were made with fruits and vegetables to improve its nutrient content and shelf life.
- Nutrient dense bars are good source of fibre and had low amounts of energy and carbohydrates in it compared to energy dense snacks.

Fruits and vegetables were the important constituent of the human diet. Besides nutrition they are rich in non-nutritive compounds like phytochemicals and antioxidants that reduce the risk of cardiovascular diseases, stroke, cancers, chronic diseases and other life style ailments. The Institute of Medicine (IOM) recommended an adequate intake of fiber as 14.0 g/1000 Kcal/day. Many of plant foods were high in dietary fiber and phytoestrogens that can lower chronic disease.

Fruit and nuts bar

Vegetable Kitchidi

Vegetable salad

The intake of adequate amount of micronutrient rich foods helped to reduce the risk of stroke. The increased fruit and vegetable consumption by 200.0g decreased the risk by 32.0%. The relative risk of stroke for servings 3 to 5 was 0.89 whereas for more than five contributed to decreased risk. Consumption of citrus fruits influenced the risk of stroke in diabetes patients with reduction by 42.0%.

Consumption patterns

The most consumed fruits during the week were banana with 75.56 %, papaya with 36.76 %, mango with 35.56 %, oranges with 35.45 % and pineapple with 26.67 %. Besides, apple, rose apple (Jambu) and avocado were consumed to a lesser extent while grapes, dates, Sultanas and other dried fruit products were consumed in frequently.

Antioxidants and its health benefits

Regular or increased consumption of fruits may promote general health and well-being as well as reduce the risk of life style diseases. The controlling of interactions among targeted bioactive and other food components during food processing, handling and storage can be the key to ensure that a stable and appealing functional food was produced using fruits and vegetables. The manipulation of beneficial synergies among ingredients in food formulation and processing methods has the potential to lead to substantial food innovations with improved health benefits.

CONCLUSION

The intake of fruit-based snack bars can reduce the life style diseases due to the presence of high dietary fibre, low fat and high amount of protein in them. Value added products can help in help in reducing post-harvest losses