

**STUDIES ON IMPACT OF PROCESSING ON PHYSIOCHEMICAL AND
BIOCHEMICAL PROPERTIES OF FRUITS AND VEGETABLES**

SYNOPSIS SUBMITTED BY:

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Synopsis

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India is blessed with abundant of fruits and vegetable crops as this fruits and vegetables are seasonal and perishable so we have to preserve those scientifically to reduce their wastage. Hence we apply the preservation technique dealing with the process of treating and handling fruits to stop the loss of quality, edibility and their nutritive value. Maintenance of nutritive value, texture and flavor are important in preserving its values as food. Their nutritional value is highest when they are fresh, but it is not always possible to consume them immediately. During the harvest season, their plentifully available but at other times it is scarce. Moreover, most fruits and vegetables are only edible for a very short time, unless they are promptly and properly preserved

Citrus fruits characteristically high in citric acid include oranges, grapefruits, lemon etc. Citrus fruits contain a range of key nutrients including high levels of vitamin C and significant amounts of dietary fibre, beta-carotene and folic acid. They have a low ratio of sodium to potassium and are low in fat and dietary energy, making them nutrient dense, energy-dilute foods with a low glycaemic index. Citrus fruits are also extremely rich in antioxidants. In recent years increasing attention has been given to the sum of biologically active elements found in citrus fruits particularly their plant-based non-nutrients called phytochemicals – because of the role they might play in preventing a range of chronic disease conditions including cancer and heart disease. Citrus fruits contain hundreds of phytochemicals and there is increasing interest in the possibility that these substances contribute to optimal health and may protect against some of the common chronic diseases such as cancer and cardiovascular disease, degenerative eye and cognitive conditions, and general damage caused by ageing.

Modified atmosphere packaging (MAP) of fresh fruits and vegetables is based on modifying the levels of O₂ and CO₂ without addition of any preservative in the atmosphere produced inside a package sealed with some type of polymer film. The growth of organisms is thereby reduced and

the life of the product is thus extended. Additionally, the desired atmosphere can reduce the respiration rate, and ethylene production, physiological changes.

Dehydration of fruits and vegetables is one of the oldest and easiest methods of food preservation. Drying food is also a way of preserving seasonal foods for later use. The basic objective in drying food products is the removal of water in the solids up to a certain level, at which microbial spoilage is minimized. The wide variety of dehydrated foods (dried fruits, dry mixes and soups, etc.), which today are available to the consumer and the interesting concern for meeting quality specifications; emphasize the need for a thorough understanding of the operation. Dehydrated products can be used in many processed or ready-to-eat foods in place of fresh foods due to several advantages such as convenience in transportation, storage, preparation and use. Dehydrated products need to be rehydrated before consumption or further processing.

Rehydration i.e. moisturizing of dry material is influenced by several factors, grouped as intrinsic factors and extrinsic factors. Physical and chemical changes that take place during drying affect the quality of the dehydrated product. Rehydration can be considered as a measure of the injuries to the material caused by drying and treatments preceding dehydration.

Osmotic dehydration has received greater attention in recent years as an effective method for preservation of fruits and vegetables. It facilitates processing of fruits and vegetables with retention of initial fruit characteristics as color, aroma, texture and nutritional composition. It is less energy intensive than air or vacuum drying process because it can be conducted at low or ambient temperature. They are the potential source of dietary antioxidants which play a crucial role in preservation of various diseases. Polyphenols possess anticarcinogenic, anti-inflammatory, antihepatotoxic, antibacterial, antiviral, antiallergic, antithrombic and antioxidative effect. Fruits and vegetables are rich in polyphenols. However processing is believed to be responsible for losses in natural antioxidants activities. Thus nutritional quality and health promoting capacity of fruits and vegetables due to processing, spoilage have become increasingly a serious problem.

Diets rich in vegetables and fruit have been linked with lower rates of cancer and coronary heart disease. Plant-based phenols, flavonoids, isoflavones, terpenes, glucosinolates, and other

compounds that are present in the everyday diet are reported to have antioxidant and anticarcinogenic properties and a wide spectrum of tumor-blocking activities. The search for the mechanisms of chemoprotection has focused on the biological activity of compounds found in cruciferous and green leafy vegetables, soybeans, citrus fruit, green tea, and red wine. These compounds, known as phytochemicals or phytonutrients, hold major promise in the creation of designer foods for the dietary prevention of chronic disease.

However bitterness is usually unpleasant, but sometimes desirable in moderate amounts, and is perceived predominantly at the back of and sometimes along the sides of the tongue. Bitterness of citrus juices significant quality and acceptability of juice and juice based product. So removal of bitterness is important to improve taste, quality as well as acceptability of the product. Therefore it is of great importance to study the impact of processing and storage on quality of food.

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