

Sustainable agriculture for the future

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# Processing of Health Foods

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**H**ealth foods can be defined as any natural food which is popularly believed to promote or sustain good health. Eating healthy can then be defined as eating a variety of foods that supplies you with the nutrients required to maintain good health, supply the human body with energy and leave the consumer feeling good and satisfied. Necessary nutrients include protein, carbohydrates, fat, water vitamins and minerals.

However, not all fresh foods are available in all locations or available year-round. Enter agro-processing. Without the aid of food processing, we would not have the convenience of the large variety of food products available in supermarkets and other food outlets. Processing of raw products has several advantages:

- It allows for the year-round availability of food that has only a limited growing season or is not grown in certain areas due to soil

and climate factors;

- Processing extends the self-life of products;
- Food processing improves the safety of our food supply through processes intended to destroy harmful bacteria and packaging that helps in the prevention of food tampering.

Most value-added food products available to consumers have been processed in some way of other, even if the processing is as simple as cleaning produce before it is packed in plastic or net bags. Two types of processing methods may be performed on raw materials:

- Primary processing includes the simplest processes such as washing, peeling, chopping, ageing, the milling of wheat for flour, and the processing of sugarcane;
- Secondary processing involves the conversion of primary processed products into more complex food products and includes procedures such as mixing, depositing, layering, extruding, drying,



fortifying, fermentation, pasteurization, clarification, heating etc.

#### **HEALTH FOOD PROCESSING OPTIONS:**

##### **Dehydrated Apple Pieces:**

Dehydrated apple pieces have a moisture content below 3.5%. It has a shelf life of several years at ambient temperatures. It is produced from dried (evaporated) apple pieces that undergo a secondary dehydration process. Dehydration takes place in tunnel or continuous belt dryers. As an alternative, Fresh diced apple pieces can be dried in one operation using a fluidised bed dryer.

##### **Apple Cider Vinegar:**

Vinegar is the sour liquid obtained by naturally fermenting the juice of any fruit, cereal, or sugar substance. Apple vinegar is produced by alcoholic fermentation followed by acetous bacterial oxidation of apple juice. Apple vinegar should contain between 5 and 12% acetic acid. Apple cider vinegar is produced from apple juice or diluted concentrate. The process consists of two fermentation processes, followed by a clarification process.

##### **Explosion Puffed Blueberries:**

Explosion puffed blueberries are dehydrated berries with a porous, slightly puffed, crunchy texture. It has an intense fruit flavour and is used in cereal mixes, especially ready-to-eat breakfast cereals.

##### **Banana Flakes:**

Banana flakes is the dried product produced from banana puree. Drying is performed on drum (roller) dryers. The flakes can be ground to produce a banana powder. Banana flakes and powder is used by the baking and confectionery industry.

##### **Dehydrated Banana Slices:**

Dehydrated banana slices are prepared from ripe, peeled bananas by air convection or vacuum drying process. The slices are dehydrated by air convection to a moisture content of 5 - 7 %. It is also possible to reduce the moisture content to between 3.2 - 3.5%. Vacuum dehydration produces a superior low-moisture, a crisp chip-like snack that retains its original colour and flavour for over a year.



##### **Solar Dried Bananas:**

Solar dried bananas have a moisture content of 15 % (water activity level = 0.55), a soft, leathery texture and a characteristic banana flavour. Ideally, the colour should be as light as possible. The Cavendish banana cultivar is the popular choice for drying. Solar drying makes maximum use of solar heat to dry a food product. It can be used as a replacement for sun drying since it has fewer losses, and dust contamination and reduces the drying time. It does, however, still require fair weather conditions to be effective. The solar drier described in this report process 500 kg batches of peeled bananas.

##### **Roasted Almonds:**

Nuts are usually roasted to improve their taste, aroma, and texture. Roasting is defined as the exposure of a food product to dry heat at high temperatures with the aim to cook and/or browning food. Most nuts are roasted without their shell with the exception being pistachio nuts.

##### **Almond Meal:**

Almond meal or almond flour may be used as a gluten-free alternative to wheat flour in cooking and baking methods. In baking, it is used in pastry and confectionery, in almond macarons, sweet pastries, cake and pie fillings

and it is one of the two main ingredients of marzipan (almond paste). Almond meal has also become an important ingredient in baking for low carbohydrate diets as it adds moistness and a rich nutty flavour to the final product. Almond meal or flour is produced from ground sweet almonds.

### **Canned Asparagus:**

Whole asparagus spears are canned upright in tin cans filled with a brine solution to extend the availability of asparagus for use in salads and baked goods. Asparagus pieces or tips may also be canned. The canned product is classified according to the size (diameter) of the spears. Young, thin spears are softer and less fibrous.

### **Fresh Cut Bell Pepper:**

Fresh cut produce is any fresh fruit or vegetable that has been physically altered from its original form but remains fresh. It has been trimmed, peeled, washed, and cut to make a product that is 100 % usable, with no wastage. The product is then packaged for consumer convenience. Another term used for fresh cut produce is “minimally processed refrigerated (MPR) products”.

Bell peppers come in a variety of colours, including green, red, yellow, orange, purple, brown and black. All the coloured varieties are green in their immature state and gradually colour as they mature. This colourful array makes bell peppers an attractive ingredient in salads, stir-fries, and various other vegetable dishes. Minimal processing and refrigerated storage are the best method to preserve the

firm and fleshy texture of bell peppers for fresh use. Minimally processed refrigerated bell peppers are washed, sorted, and packed in a ready-to-use state either as whole fruit or in slices.

### **Carrot Juice:**

Carrot juice is the strained liquid extracted from carrot puree. It is served as a beverage and is often blended with other fruit or vegetable juices. Carrot juice has a bright orange colour, like fresh orange juice. It is rich in antioxidants such as Beta-carotene. It is usually canned or aseptically packaged to ensure a shelf life of 9 months at 20 °C.

### **Roasted Garlic Puree:**

Roasted garlic puree is a sweet appetiser used with bread, a vegetable dish or ice cream. The whole garlic head is used for preparing roasted garlic. The pungent flavour of the garlic is caused by a chemical reaction that occurs when the garlic cells are broken. The flavour is intense shortly after cutting or chopping. This reaction is not possible after the garlic has been cooked, which is why roasted garlic has a sweet taste.

### **Conclusion:**

This article contains only some of the processing options available to produce fresh and long-life health foods. Processing options are wide-ranged. A complete publication on the processing of health foods is available at the ARC-Agricultural Engineering campus of the ARC-NRE.

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