

Paper No. 6

Paper Title: Technology of Fruits and Vegetables

Module No. 20

Module Title: Technology of Chutneys

Introduction

According to FSSR (2011), Chutneys are the product prepared from washed, clean, sound raw fruits and/or vegetables of any suitable variety, which have been peeled, sliced or chopped or shredded and comminuted followed by cooking in vinegar, sweetened with sugar or dried fruit and flavoured with spices and simmered for a long time until they reach the consistency of jam. Chutneys should be smooth and pulpy with a mellow flavor and are best left to mature to blend flavours for at least one month. Chutney of good quality should be palatable and appetizing and improves the digestion. In general, chutneys fall into two distinct categories: freshly made preparations for immediate consumption, and cooked preparations intended to keep as long as a year, which can be grouped further according to their saltiness, sweetness, sourness, or spiciness. Many recipes combine several elements of these basic flavors, and textures range from coarsely chopped preserves to smooth sauces. Some of the most common chutneys are those made with mangoes, coconut, sesame, peanuts, or the ground leaves of herbs, especially mint or coriander. Mango chutney is an important food product exported from India to many countries. Apple and apricot chutney are also very popular in the country.

The product may contain permitted food additives and shall conform to the microbiological requirements as per food safety and standards rules. It shall meet the following requirements:

1.	Total Soluble Solids (m/m)	
	a) Fruit Chutney	Not less than 50.0 %
	b) Vegetable Chutney	Not less than 25.0 %
	c) Hot and Sour (spicy Chutney)	Not less than 25.0 %
2.	Fruits and Vegetable content (m/m)	Not less than 40.0 %
3.	pH	Not more than 4.6
4.	Total ash (m/m)	Not more than 5.0 %
5.	Ash insoluble in hydrochloric acid (m/m)	Not more than 0.5 %

Ingredients

Good quality vegetables, dried fruits and herbs are the basic ingredient for chutney preparation. They are combined with vinegar, salt, spices and sugar in various proportions according to the desired result in a variety of ways.

- 1. Fresh Fruits and Vegetables:** It should be of optimum quality and any molded or diseased fruit should be discarded completely. Vegetables must be young and crisp,

although tomatoes should be ripe rather than hard and under-ripe. Fruits like apricot and peaches should be ripe or they begin to soften. Lower grade fruits can be used since they are cooked to a puree consistency.

2. **Dried fruits:** These are included to add flavour and texture as well as for partial replacement of sugar. Larger dried fruits should be chopped or mince while smaller ones can be used as whole and they should be seedless.
3. **Vinegar:** It acts as a preservative by penetrating and replacing the liquid (mostly water) and thereby inhibiting the growth of microorganism which would cause the spoilage of food. Red wine vinegar is red to rose in colour and is useful when making chutney of red fruits such as plums or redcurrants. Cider vinegar has a distinctive cidery flavour and used for apple chutneys.
4. **Salt:** Non iodized salt should be used to prevent the darkening of the end product. Apart from flavouring, it draws out the water from the fruits which can then be replaced by vinegar.
5. **Sugar:** It acts as both a flavourer and preservative. It is an indispensable ingredient in chutney. For light coloured chutney, it is wise to add sugar towards the end of the cooking time to avoid darkening of the product. Brown sugar is often used in chutney to provide more taste.
6. **Alternative Sweeteners:** Honey, molasses, golden syrup can all replace some of the sugar and always add flavour and colour.
7. **Spices:** Chutneys are flavoured with spices. Generally ground spices are used. Recently bought ground spices give the best flavour. Fresh ginger, chilli pepper and garlic are all considered as spices.

Equipment

Iron and copper made utensils and equipment should not be used as they are acted upon by vinegar. Small amounts of these metals act as catalyst for rancidity in the product. Furthermore these metals react with spices and tannins of the fruit resulting in the formation of black compounds which adversely affect the colour, flavour and taste of the product. Therefore, it is wise to use equipment made from nickel or stainless steel (SS) or strengthened glass such as Pyrex.

1. **Chopping and Mincing:** Chopping board and sharp knives are essential for vegetables and fruits. Dried fruits can be minced along with other ingredients using hand or an electric mincer.
2. **Cooking:** Special preserving or saucepans made of stainless steel or aluminium are ideal. Saucepans should be large enough to accommodate all the ingredients to about two-thirds full. Large SS or wooden spoons are ideal for stirring the ingredients while cooking.
3. **Bottling:** Strong glass jars fitted with plastic screw tops or plastic coated metal screw tops are used. Chutneys should be covered with waxed paper discs before the screw tops

are put on and make sure that no air bubble should be trapped underneath by pressing well. All jars should be thoroughly cleaned and sterilized before use. Chutneys should be stored in a dry, cool, well ventilated place for no longer than six months, afterwards vinegar may start to evaporate and the chutney will dry out.

Method for Making Chutney

Chutneys are usually made with a mixture of fruits and vegetables.

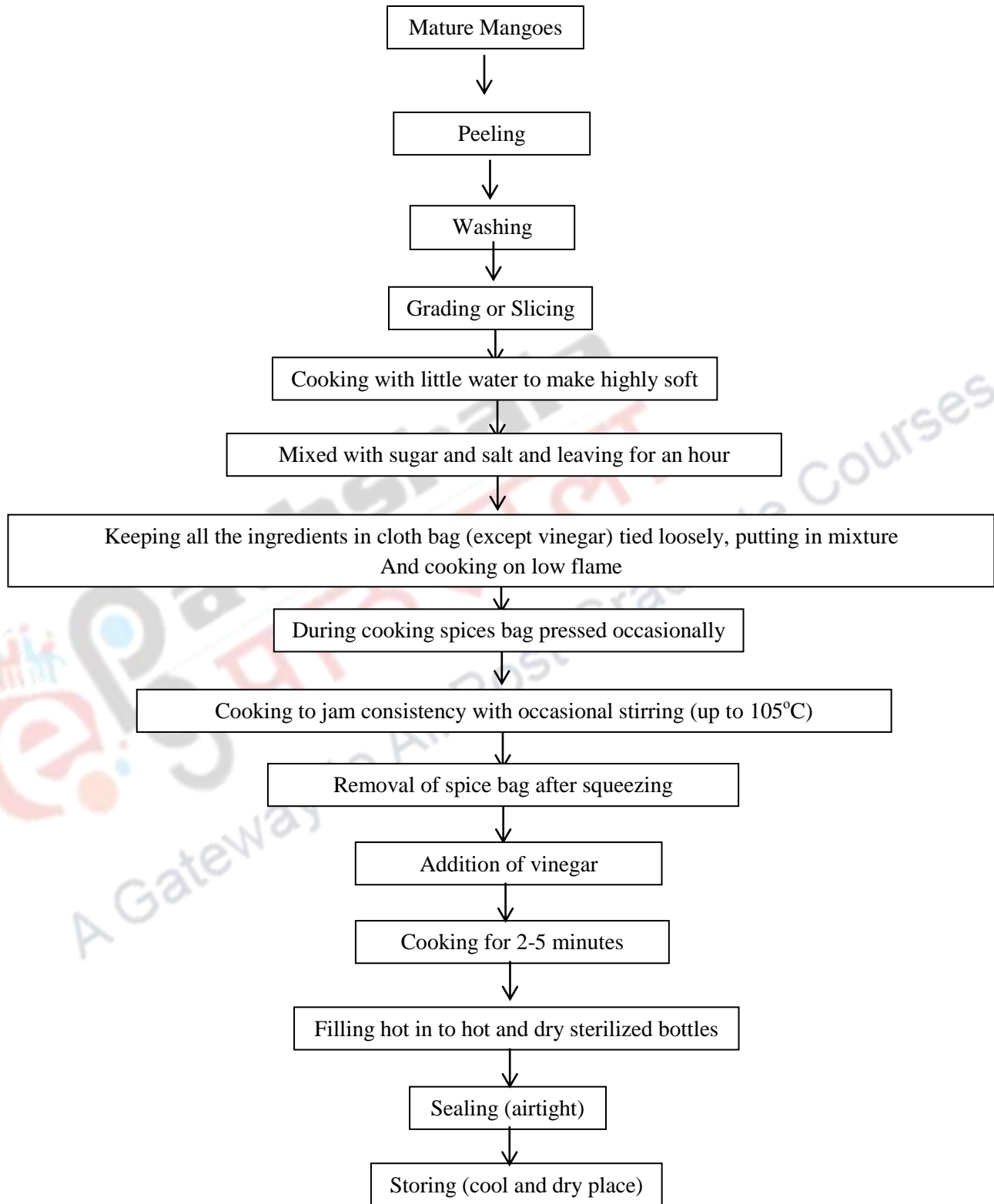
1. **Initial preparation:** The fruit or vegetables are thoroughly washed and cut in to slices or pieces of suitable sizes and softened by boiling in water. After this, they can be chopped by hand or by a mixer. Hard fruit are minced by mincer which is difficult to chop. Dried fruits may be softened by soaking in vinegar up to 12 hours in advance.
2. **Cooking:** In simple chutney making procedure, all the ingredients are put together in the pan and brought up to boil and then gently simmered to form a thick puree with a consistency of jam. Sugar produces a darker colour when cook for a long time. For pale colour chutney, white sugar should be added after all the ingredients have cooked out. During initial cooking, chutney will be stirred in a span of every ten minutes, but towards the final stage, chutney become thicker thereby it requires frequent stirring to prevent it from sticking to the bottom of the pan. Chutneys are ready, when they are thick, bubbling and leave the impression of the dragged spoon which persists for a few seconds.
3. **Bottling:** As soon as the chutney stops bubbling, it is ladled in to warm sterilized jar followed by pressing after each ladleful to dislodge the air bubble. Any drips or stickiness on the rim is wiped off and chutney is covered immediately.
4. **Storing:** Chutneys improves and mellow with keeping, so they are left unopened at least one month or more.

Chutney preparation

There are a large number of recipes for chutneys. However, mango, apple and apricot chutney are of particular interest in our country.

1. **Sweet Mango Chutney:** Mango chutneys are very special. The flesh softens and stays intact and blends easily with sugar, spices and vinegar without losing its flavour. Mango chutney is very dark in colour, rich, hot and fruity that still maintains the quality of mango.

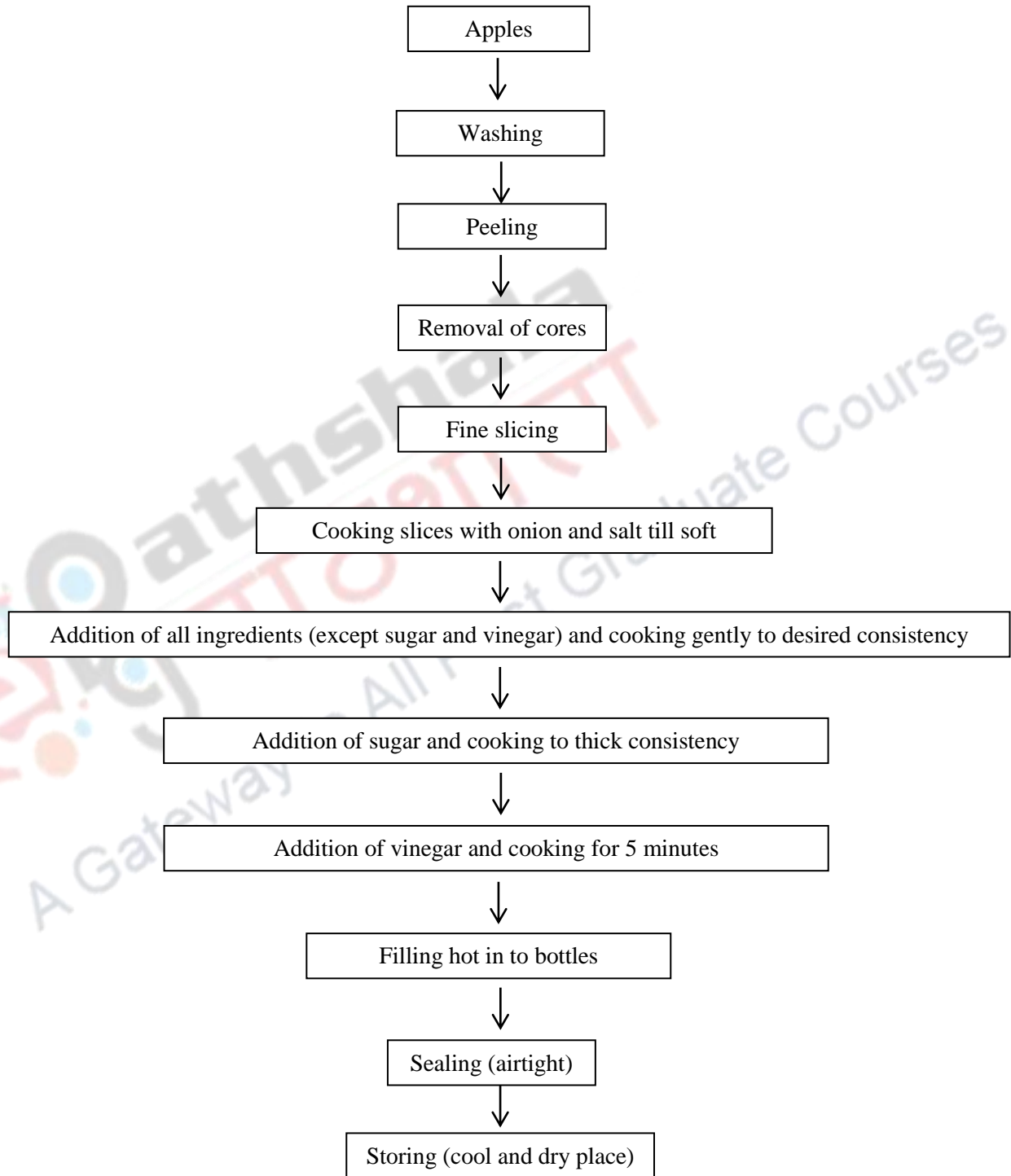
Processing Flow Sheet for Sweet Mango Chutney



(Source: Srivastava and Kumar, 2002)

2. **Apple Chutney:** Select fresh and ripe apples for best result.

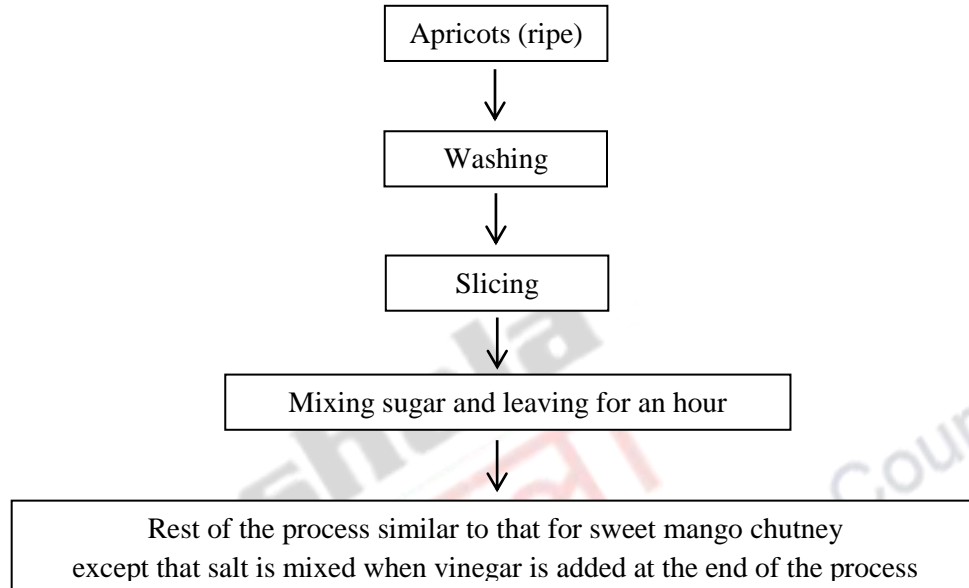
Processing Flow Sheet for Apple Chutney



(Srivastava and Kumar (3rd edition), Fruit and Vegetable Preservation- Principles and Practices Pp:255)

3. **Apricot Chutney:** Firm and fully ripe apricots of the white or yellow variety gives the best chutney.

Processing Flow Sheet for Apricot Chutney



(Srivastava and Kumar (3rd edition), Fruit and Vegetable Preservation- Principles and Practices Pp:257)

Suggested Reading

1. Srivastava, R. P. and Kumar, S. (2002). Fruit and Vegetable Preservation- Principles and Practices. International Book Distributing Company, Lucknow, India.
2. Lal, G., Siddappaa, G. S. and Tandon, G. L. (1998). Preservation of Fruits and Vegetables. Indian Council of Agricultural Research, New Delhi.
3. Duff, G. (1995). Pickles, Relishes and Chutneys- Cookbook. Apple Press Limited, London (UK).