Unit I - Topic 1

What is a Squash?

Squash (sometimes known as **cordial** in English, **dilute** in Hiberno English, and **diluting juice** in Scottish English . is a non-alcoholic beverage concentrated syrup used in beverage making. It is usually fruit-flavoured, made from fruit juice, water, and sugar or a sugar substitute. Modern squashes may also contain food colouring and additional flavouring. Some traditional squashes contain herbal extracts, most notably elderflower and ginger.

Drinks

Squash is mixed with a certain amount of water or carbonated water before drinking. The amount of water added is to taste, with the squash becoming less strong the more it is diluted. As a drink mixer, it may be combined with an alcoholic beverage to prepare a cocktail.

Citrus fruits (particularly orange, lime and lemon) or a blend of fruits and berries are commonly used as the base of squash.[2]

Traditional squashes in Britain are usually flavoured with elderflower, orange, lemon, or blackcurrant. Raspberry and blackberry are popular in Eastern Europe, and currants is a common ingredient in the Low Countries.

Preparation

Squash is prepared by combining one part concentrate with four or five parts water (carbonated or still). Double-strength squash and traditional cordials, which are thicker, are mixed with nine parts water to one part concentrate. Some squash concentrates are quite weak, and these are sometimes mixed with one part concentrate and two or three parts water.

Storage

Most cordials and squashes contain preservatives such as potassium sorbate or (in traditional cordials) sulphites, as they are designed to be stored on shelves. They keep well because of the preservatives and their high sugar content. Nonetheless, some choose to store their squash in refrigerators.

Ingredients

Ingredients in squashes and cordials have evolved over the years. A traditional cordial contains three ingredients: sugar, juice or plant extract and some water. Usually it can contain an acidifier such as citric acid or in very old-fashioned cordials lemon juice, or even spices such as cinnamon or cloves. Recreations of these traditional preparations often contain a preservative especially sulphur dioxide, although sugar alone will keep it fresh for quite a long time. Modern squash drinks are generally more complex and sugar free squash even more so; the ingredients are usually water, sweetener such as aspartame or sodium saccharin, juice in a low quantity (typically 5–10 percent), large quantities of flavouring, preservatives and sometimes a colour such as anthocyanin. In the middle are ordinary squashes, which contain sugar, water, a larger amount of juice, preservatives, colouring such as anthocyanin and often a small amount of flavouring. Although colours such as Allura Red

AC and Sunset Yellow FCF are occasionally used in squash, most modern British companies are gradually aiming to use natural colours such as beta carotene or anthocyanins, and natural flavourings.

Flavourings

Traditional squashes may be flavoured with elderflowers, lemon, pomegranate, apple, strawberry, chokeberry (often with spices such as cinnamon or cloves added), orange, pear, or raspberry.

Modern squashes usually have simpler flavours, such as orange, apple, summer fruit (mixed berries), blackcurrant, apple and blackcurrant, peach, pineapple, mango, lime, or lemon.

Preparation of Squash

Principle
Fruit beverages are prepared from fruit juices or pulp and preserved by chemical preservatives or by heat application.

Requirements

Raw materials, equipment and apparatus

1. Fruit/vegetable, sugar
2. Peeler
3. Juicer
4. Pulper
5. Filter cloth / sieve

6. Pans of suitable size
7. Volumetric flask
8. Measuring cylinder
9. Weighing balance*Chemicals and reagents*

1. Hydrochloric acid
2. Citric acid / ascorbic acid
3. Potassium metabisulphite
4. Sodium benzoate

Ingredients

Juice - 2.5 kg
Sugar - 4.141 kg
Citric acid - 100 g 4.25 Kg
KMS - 9 g
Water - (10-2.5+4.25) = 3.25 Lts

Theory

Squash should contain at least 25% fruit juice or pulp and 40 to 50% total soluble solids commercially. About 1% citric acid and 350 ppm Sulphur dioxide or 600 ppm sodium benzoate are added as preservatives. By careful attention to hygienic condition the concentration of SO_2 in the squash can be safely reduced to about 250 ppm. Fruits most commonly used for preparing beverages are sweet orange, sour lime, mandarin (sangtra) loose jacket orange, mango, apple, grape fruit, pineapple, lemon etc.

Method of calculation

For the preparation of 10 liters of squash follow the procedure given below:

1. Calculate the amount of juice required as per commercial specification

Required juice = (25/100) × 10 = 2.5 lts.

2. Measure the TSS using a refractometer (say the TSS is 30%)

Calculate the total solids content of the juice i.e. 0.3 X 2.5 = 0.75 kg

3. The final required TSS content in the product is to be saying 50%. The TSS required to be added to obtain the final product is (0.5 × 10 – 0.75) kg = 4.25 kg

4. The amount of soluble solids in the form of citric acid and KMS is Citric acid @ 1%, in the final produce is 100 g i.e. 0.1 kg. 600 ppm SO2 (1.5g/litre of KMS being equivalent to 1000 ppm) @ 0.9g KMS/litre. i.e. 0.9 x 10 = 9 g i.e 0.009 kg.

5. Amount of solids to be added in the form of sugar is 4.25–(0.1+0.009)= 4.141 kg.

Preparation procedure

1. As prescribe dissolve sugar in water, add citric acid and give a boil.
2. Any dirt is strain through a fine muslin cloth.
3. The syrup is cooled slightly.
4. Extract juice from fresh fruits by crushing and pressing them by using suitable juice extractors, basket presses or fruit pulper. Fruits, which require preheating, should be preheated before extraction.
5. Strain and filter the juice to remove suspended matter consisting of broken fruit tissue, seed, skin, etc. Clarify the juice if required using a suitable method.
6. The clean syrup is blended with fruit juice.
7. Add colour as required and then essence.
8. To improve flavour peal emulsion of 2 to 4 oranges for every 100 oranges taken or an appropriate quantity of an essential oil is added to the squash.
9. After mixing all the ingredients a calculated quantity of preservative, about 28 g for every 454 gram of squash is added.
10. Now fill the squash into sterilized bottles, leaving about 1.2 to 2.5 cm of head space.

Observations

Determine TSS and acidity.

Result

Acidity of the given squash, cordial, nectar, RTS beverage = % (w/v)
TSS of the given squash, cordial, nectar, RTS beverage = %

Precautions

- All equipment used in the preparation of fruit juices and beverages should be rust and acid proof.
- Copper and iron vessels should be strictly avoided as these metals react with fruit acids, and cause blackening of the product.
- Avoid exposure of juice to atmosphere as it will spoil the colour, taste and aroma and also reduce the Vitamin content.