Module no 7: Technology of manufacturing spice oil & oleoresins

7.1. Introduction

Oleoresins are flavoured compounds obtained by the solvent extraction of the ground spices. They have aroma and posses and attributes which contribute to the taste like pungency. All spices contain essential oils in various proportions which can be extracted by steam distillation. Oleoresins are preferred because of their microbiological advantages and uniformly in flavour and pungency, easy to store and transport. They have several applications like preparations of beverages, soup powders, curry powders, confectioneries, noodles, canned meats, sauces.

Compliance under PFA Act is mandatory. ISI has specified quality standards vide IS 5832 & 7826 of 1975. Oleoresins have large domestic as well as export markets. They are consumed by broad spectrum of manufacturer like beverages, soup powders, curry powders, confectioneries, noodles, canned meats, sauces, poultry products and so on. Most of the end use industries are growing steadily and bound to increase with increase preference of quality products. The use of spice is rapidly replaced with oleoresins and exports of these products instead of raw spices results in considerable value addition.

7.1.1. Types:

Ajowan seed oleoresin, black pepper oleoresin, capsicum (chilli) oleoresin, cardamom oleoresin, cassia bark oleoresin, celery seedoleoresin, cinnamon bark oleoresin, clove bud oleoresin, coriander seedoleoresin, cumin seed oleoresin, curcumin powder, date extract, fennel seed oleoresin, galangal oleoresin, ginger oleoresin, juniper berry oleoresin, mace oleoresin, nutmeg oleoresin, olibanum resinold parsleyseed oleoresin, turmeric oleoresin, white pepper oleoresin, zingiber oleoresin, paprica oleoresin:

7.2. Manufacturing process:

Various raw spices are cleaned and then ground to require meshing size. The extraction is undertaken with the help of proper solvent. The solvents that can be used are hexane, acetone, ethylene dichloride or alcohol. Extraction is done by percolation of the solvents at room temperature through a bed of ground spices packed in a SS percolator. The dark viscous extract containing not less than 10% of total soluble solids are drawn off and distilled under reduce pressure to remove the excess of solvent. The essential oil is obtained by steam distillation.

7.2.1. Paprika oleoresin

(Also known as **paprika extract**) is an oil soluble extract from the fruits of Capsicum Annum Linn or Capsicum Frutescent (Indian red chillies), and is primarily used as a colouring and/or flavouring in food products. It is composed of capsaicin, the main flavouring compound giving pungency in higher concentrations, and **capsanthin** and **capsorubin**, the main colouring compounds (among other carotenoids). Extraction is performed by percolation with a variety of solvents,

primarily hexane, which are removed prior to use. Foods coloured with paprika oleoresin include cheese, orange juice, spice mixtures, sauces, sweets and emulsified processed meats. In poultry feed it is used to deepen the colour of egg yolks. In the United States, paprika oleoresin is listed as a colour additive "exempt from certification" and generally classified as a natural colour. In Europe, paprika oleoresin (extract), and the compounds capsanthin and capsorubin are designated by E160c.

7.2.2. Turmeric Oleoresin

It is extracted from curcuma longa L., a member of ginger family. Obtained by solvent extraction of the ground spice, contains colouring matter, volatile-oil, fatty oil and bitter principles. It is orange-red in colour and consists of an upper oily layer and a lower crystalline layer. Colouring components are curcumin and curcuminoids. It is Fat and alcohol soluble, cold water insoluble; commercially dissolve curcumin in polysorbate-80 or –60 to make it water dispersible. It has good heat stability and poor light stability. The colour hue change with pH greenish in acidic pH, orange yellow in neutral pH, more stable in acidic pH than in neutral or alkaline pH. Used in pickle, bakery, confectionery pudding, gelatin, gummy bears, yogurt, popcorn and finger foods.

7.2.3. Black Pepper Oleoresin:

Description: Oleoresin Black Pepper is the natural extract of dried tender berries of Piper Nigrum Linn of family Piperaceae. It is obtained by the solvent extraction of Black Pepper and the solvent traces are removed by distilling it in vacuum at controlled temperature.

Physical Appearance: It is a yellowish brown viscous liquid with pungent slightly biting aroma of Black Pepper. Spice Equivalent: About 5-10 kgs of Oleoresin replaces 100 Kgs of dried black Pepper.

Packing: 10, 20, and 40 Kg HDPE Carbouys5, 10, 20, 40 Stainless Steel containers Shelf life and Storage: 18 months. Product should be stored in full tight containers at controlled atmosphere protected from direct heat and light.

7.2.4. Rose Mary Oleoresin:

Rosemary Oleoresin Extract (also known as ROE) is not a preservative, it is an antioxidant - these slow the rancidity of Oils. If using to extend the shelf life of fixed oils (such as Hemp, Avocado etc), it must be added to the oils when they are fresh before oxidation has started. It is also most effective if thoroughly dispersed in the oil. Rosemary Oleoresin Extract is a thick liquid, which can be difficult to blend. It is suggested to remove a small portion of the base oil, mix thoroughly, and then re-introduce this into the bulk fixed oil. Rosemary Oleoresin will also add shelf life to Sugar/Salt Scrubs, Balms and Moisturisers (Creams and Lotions) and it is added during the cool down phase or when the Preservative is added to the formula.

Usage 2 - 10 drops per 100g of product Usage Rate: 0.1% 0.5%.

7.2.5. Ginger Oleoresin:

On steam distillation, dried, cracked and comminute ginger yields 1.0 to 3.0% of pale yellow, viscid oil. The oil possesses the aromatic odour but not the pungent flavour of the spice. Of course, the odour of the oil is quite lasting.

Ginger Oleoresin is obtained by extraction of powdered dried ginger with suitable solvents like alcohol, acetone etc. Unlike volatile oil, it contains both the volatile oil and the non-volatile pungent principles for which ginger is so highly esteemed. Concentration of the acetone extract under vacuum and on complete removal of even traces of the solvent used yields the so called oleoresin of ginger.

Ginger oleoresin is manufactured on a commercial scale in India and abroad and is in great demand by the various food industries. The aroma of ginger is pleasant and spicy and the flavour penetrating, slightly biting due to antiseptic or pungent compounds present in it, which makes it indispensable in the manufacture of a number of food products like ginger bread, confectionary, ginger ale, curry powders, soft drinks, vegetable, meat and fish curries, ginger cocktail, sauces etc. Ginger preserves and ginger candy prepared from green or fresh ginger is quite favourite of many and find great demand. A number of alcoholic beverages are prepared from ginger in foreign countries, such as ginger brandy, ginger wine, ginger beer etc.

7.2.6. Cinnamon Bark Oleoresin:

Cinnamon oleoresin is prepared by extracting cinnamon bark with organic solvent. Oleoresin yield varies form 10 to 12 per cent. The oleoresin is dispersed on sugar, salt and used for flavouring processed foods.

SUGGESTED READINGS

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