

## **Module–22: Essential oils & Oleoresins**

### **22. Cardamom:**

#### **22.1 Cardamom (Small)**

Scientific name of cardamom is *Elettaria Cardamom muton* and belong to Zingiberaceae Family, popularly known as the Queen of spice. This is also used for medicinal purposes both in Allopathy and in Ayurveda. In the Middle East countries, cardamom is used mainly for preparation of Gahwa or Arab coffee (cardamom flavored coffee). Seeds are black when they fully ripe in a capsule and embedded or covered with their white mucilaginous coat, seeds are 15-20 per capsule with a hard seed coat. (Trilocular capsule-Fruit)

Essential oils and oleoresins of spices are considered as luxurious items because of their uses in aromatherapy, food and pharmaceutical industries. Moreover, they also possess antioxidant and antimicrobial efficiency. Cardamom oil is extracted from *Elettariacardomomum* (also known as *Elettariacardomomum* var. *cardomomum*) of the Zingiberaceae family and is also known as cardamomi, cardomum and Mysore cardamom oil properties. Cardamom oil is sweet, spicy and almost balsamic in fragrance, is clear to pale yellow in color and slightly watery in viscosity.

#### **22.2 Extraction of Essential Oil**

The essential oil of Cardamom is extracted by steam distillation from the seeds of the fruit gathered just before they are ripe. The yield is 1-5 %. On steam distillation, the spices yield their volatile constituents. The essential oils thus obtained are endowed with the major part of the spice flavor and fragrance properties. Spice oils, although characterized on the basis of their physico-chemical properties, including GLC and spectrophotometric characteristics, are ultimately judged by sensory and olfactory evaluation.

#### **21.3 Chemical composition**

The main constituents of its essential oil are Sabinene, Limonene, Terpenene, Eugenol, Cineol, Nerol, Geraniol, Linalool, Nerodilol, Heptenone, Borneol, Alpha Terpineol, Beta Terpineol, Terpinyl Acetate, Alpha Pinene, Myrcene, Cymene, Neryl Acetate, Methyl Heptenone, Linalyl Acetate and Heptacosane etc.

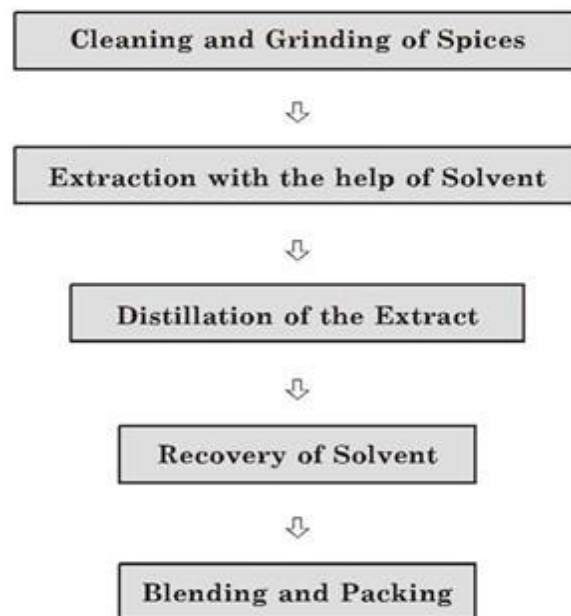
#### **22.4 Cardamom Oleoresin**

The oleoresins, containing all the volatile as well as non-volatile constituents of the spices, most closely represent the total flavor of the fresh spice; most closely represent the total flavor of the fresh spice in a highly concentrated form. Therefore, oleoresins are preferred spice extract used for flavoring purposes. Oleoresins are the concentrated form of spices where you get the wholesome flavor and aroma of the spice. Oleoresins are characterized by high potency of active components which enables their usage in small dosages.

Oleoresins are preferred because of their microbiological advantages and uniformly in flavor 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. Spice Oils and Oleoresins can be used to advantage wherever spices are used, except in those applications where the appearance/ filler aspect of spice is important. Usage of spice oleoresins leads to standardization in taste and consistency in flavor. They are also used as a base for a number of seasonings.

In green cardamom, greenish to brown semi solid liquid has a great potential to become prime ingredient for not only as food preservative but also flavor enhancer for food industry which is full with triglyceride and steroid components. The product has been very seasonal with the yield mounting up to 4% by using solvent extraction method.

#### Process Description



**Fig. No. 22.1 Oleoresins Conversion from Whole Spices**

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.

## 22.5 Health Benefits of Cardamom Essential Oil

The health benefits of Cardamom Essential Oil can be attributed to its properties like anti spasmodic, neutralizes adverse effects of chemotherapy, reduces nausea, anti septic, anti microbial, aphrodisiac, astringent, digestive, stomachic, stimulant, diuretic etc.

### A list of health benefits of Cardamom Oil & Oleorins

- **Anti Spasmodic:** Cardamom Oil is equally beneficial in curing muscular and respiratory spasms, thereby giving relief in muscle pulls and cramps, asthma, whooping cough etc.
- **Anti Septic & Anti Microbial:** It has very strong anti septic and anti microbial properties, which are safe too. If used as a mouth wash by adding few drops of this oil in water, it disinfects the oral cavity of the germs and drives away bad breath. It can also be added to drinking water to kill germs in it. It can also be used in food stuffs as a flavoring agent, which, on the other hand, will keep them safe from spoiling under microbial action. Mild solution in water can be used to bathe to disinfect the skin and hair.
- **Digestive & Stomachic:** It is the essential oil in Cardamom which makes it a good digestive. This oil boosts up digestion by stimulating the whole digestive system. It is also Stomachic which means it keeps stomach healthy and functioning properly. It helps maintain proper secretion of gastric juices, acids and bile in the stomach. It also protects stomach from infections.
- **Stimulant:** It stimulates things up. This stimulating effect also boosts up spirit in cases of depression, fatigue etc. It also stimulates secretion of various enzymes and hormones, gastric juices, peristaltic motion, circulation, excretion etc. thus maintaining proper metabolism.
- **Warming:** Cardamom Oil has a warming effect. This effect heats up the body, promote sweating, helps clear toughened cough and also gives relief in cold. It also gives relief in headache resulting from cold and used in curing diarrhea caused due to effect of extreme cold.
- **Diuretic:** It promotes urination, helping lose weight, lower blood pressure, remove toxins and clean calcium and urea deposits in kidneys.
- **Aphrodisiac:** Cardamom Oil has arousing effects. It helps cure sexual weakness, erectile dysfunctions, impotence, loss of libido or frigidity etc.
- **Other Benefits:** Cardamom Oil helps neutralize effects of tobacco, insect bites and ingestion of mild poisons, clear bowels, cures colic, removes bad breath, cures oral infections and toothache etc.
- **Blending:** Cardamom Oil blends well with Rose, Orange, Bergamot, Cinnamon, Cloves, Caraway and Cedar Wood Oil.

**Precautions:** No toxic effects have been noticed. Ingestion in overdose may result in unrest and extra heating up of the body and the digestive system, resulting in loose motions and irritation. Pregnant

ladies and lactating mothers are advised not to intake Cardamom Oil, since the irritation or warming effect may harm the baby.

#### **SUGGESTED READINGS:**

- De Silva, K.T., *A manual on the essential oil industry*. 1995, Vienna: UNIDO. 232.
- GUENTHER, E., Cardamom. In *The Essential Oils*. Vol 5, Robert E. Krieger Publishing, New York 1975, 85.
- LAWRENCE, B.M., Major tropical spices – cardamom (*Elettariacardamomum*). In *Essential Oils*. Allured Publ., Wheaton, III. 1979, 104.
- Ravindran, P.N. and K.J. Madhusoodanan, *Cardamom: the genus Elettaria*, in *Cardamom: the genus Elettaria*. 2002.
- Tainter, D.R. and G. A.T, *Spices and Seasonings: a food technology handbook*. 2001: John Wiley and Sons Inc., New York. 248.
- Verlet, N., *Overview of the essential oils economy*. *Acta Horticulturae*, 1993(No.333): p. 65-72.

