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Medicinal properties of cardamom *Elettaria cardamomum*

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Abstract

Cardamom (*Elettaria cardamomum* Maton), a native of high ranges of Western Ghats of India, is an ecofriendly plantation spice crop. Apart from its use as a flavoring agent in food preparations, confectioneries and cosmetics, cardamom is used both in ancient and modern medicines. An attempt is made in this paper to cover the geo-ecological requirements, area and production, ancient uses and history, modern use, medicinal properties, aromatic constituent's etc.

Introduction

The history of Indian spices dates back to the beginning of the human civilization. There are references about Indian spices and their uses in the Vedas (6000 BC), by Manu, the law-giver in 4000 BC, by the Babylonians and Assyrians (around 3000 BC) and in the Old Testament (1000 BC) of the bible. Spices were inducements for war, voyages, expeditions, and romance and in shaping the course of world events and history. India is the largest producer, consumer and exporter of spices in the world.

Small cardamom of commerce, popularly known, as queen of spices is the dried fruit of tall perennial herbaceous plant, (*Elettaria cardamomum* Maton) belongs to the family Zingiberaceae. It is a shade loving plant cultivated at an altitude of 600 to 1200 m above MSL with an annual rainfall of 1500 to 4000 mm and a temperature range of 10 to 35 c. Till recently India was the main producer and exporter of cardamom. Of late Guatemala has emerged as a keen competitor to Indian cardamom in the international market. Tanzania, Srilanka, El Salvador, Veitnam, Laos, Combodia and Papua New Guinea are the other cardamom growing countries. In India cardamom is cultivated in the southern states of Kerala, Karnataka and Tamilnadu. Kerala accounts for 60 % of the cultivation and production followed by Karnataka 30% and Tamil Nadu 105%.

Area and Production: India has the largest area under cardamom in the world but the productivity is poor. The yield in the recent years has started increasing albeit slowly with increase in use of better planting materials.

Area, output and yield of small cardamom

Year	Total area (ha)	Output (M.T)	Yield (kg/ha)
1970-71	91480	3170	46
1975-76	91480	3000	44
1980-81	93950	4400	62
1985-86	100000	4700	77
1990-91	81544	4750	78
1995-96	83902	7900	128
1996-97	73593	6625	125
1997-98	72444	7900	149

(source: Spices Board, trade estimates)

The productivity of small cardamom in India went up from around 3000 tonnes in 1960-61 to 4750 tonnes in 1990-91 and about 6400 tonnes in 1994-95. The output went upto 7900 tonnes in 1995-96 before falling to 6625 tonnes in 1996-97 due to unfavorable weather and rising to 7900 tonnes in 1997-98.

Ancient uses and history: Cardamom is an ancient spice and has the longest influence in India, its birthplace. Since 4 th century BC, it has been used in medicine and cooking. Cardamom has long been used in Middle East. Cardamom was grown in the royal gardens of Babylon in 721 BC. It was mentioned in an Egyptian papyrus as early as 1550 BC which described its numerous medical properties. The ancient Greeks and Romans also used it in food, medicines and perfumes. The Vikings,

who discovered it on a trip to India, enjoyed cardamom in festival cakes. Cardamoms were first imported to Europe in 1214, where it was used in pomanders, and ascribed aphrodisiac properties.

Modern uses: Cardamom is widely used in Indian cooking. It is an essential ingredient in garam masala and also used as a breath freshener. It is common to pop the whole pod or a seed or two and chew on them after a spicy meal. They also believe this aids in digestion. In fact, recent studies suggest that cardamom may prevent teeth cavities. In the Middle East, cardamom is widely considered as an aphrodisiac. Scandinavians still use cardamom to spice their "Danish pastry" and other deserts, as well as meat dishes like Swedish meatballs. Cardamom also features prominently in German cookies. In south Asia and South East Asia, cardamom is an ingredient in betelnut chewing.

Medicinal properties: It is very common to use tinctures of cardamom in medicines for windiness or stomachic. Powdered cardamom seeds are invariably mixed with ground ginger, cloves and caraway and used mainly for combating digestive ailments. It is used as a powerful pleasant aromatic stimulant, carminative, stomachic and diuretic. Use of cardamom checks nausea and vomiting. In the present day stress prone population cardamom is used invariably as cardiac stimulant.

A Popular nasal application is prepared by using extracts of cardamom, neem and myrobalans along with animal fat and camphor. Cardamom seeds are chewed to prevent unpleasant smell in mouth, indigestion, nausea and vomiting due to sickness and to prevent pyrosis (excessive watering in mouth). Gargling with the infusion of cardamom and cinnamon is known to cure pharyngitis, sour throat, and hoarseness during the infective stage of flue. Powdered seeds of cardamom boiled with tea-water imparts very pleasant aroma to the tea and it can be used as medicine for scanty urination, diarrohea, decently, palpitation of the heart, exhaustion due to over work, depression etc. It is believed that eating cardamom capsule daily along with a tablespoon of honey improves eye site, strengthens the nervous system and thus improves health of the person.

Krishnamurthy [5] described Ela class (27 plant group including cardamom) as being capable of destroying Kapa and poison, promoting skin complexion, destroying itching, pustules and akotha (a kind of leprosy or ring worm with large round spots).

Cardamom in action, it is aromatic, cardiac, carminative, deodorant, digestive, diuretic, expectorant, purgative, stimulant, thirst reliever and tonic. Useful in asthma, burning sensation, cold and cough, diseases of bladder and kidney, flatulence, heart weakness, indigestion, scanty urine and piles [2].

The seeds are aromatic, acrid, sweet, cooling, stimulant, carminative, stomachic, diuretic, cardiotonic, abortifacient and are useful in bronchitis, hemorrhoids, stangury, renal and vesical calculi, anorexia, dyspepsia, gastropathy and vitiated condition of vata [2].

The seed is fragrant tonic to the heart, stomachic, laxative, lessens inflammation, useful in headache [3].

Medicinal properties of aromatic compounds of cardamom: The most significant component of cardamom, as spice, is the volatile oil with its characteristic aroma, described generally as comphoraceous, sweet, aromatic spicy. The cardamom oil has little mono- or sesquiterpenic hydrocarbons and is dominantly made up of oxygenated compounds, all of which are potential aroma compounds. While many of the identified compounds (alcohols, esters, and aldehydes) - are commonly found in many spice oils (or even volatiles of many different foods), the dominance of the ether, 1,8- cineole and the esters, ∝-terpinyl and linalyl acetates in the composition, make the cardamom volatiles a unique combination [7,8]. The aroma differences in different sources of cardamom are attributed to the proportion of the esters and 1,8 cineole [4,9].

Main components of cardamom volatile oil (Lawrence 1973)

Components	Percentage
∝- pinene	1.5
β- pinene	0.2
sabinene	2.8
myrcene	1.6
∝-Phellandrene	0.2
limonene	11.6
1,8, cineole	36.3
γ-terpinene	0.7

p-cymene	0.1
terpinolene	0.5
linalool	3.0
linalyl acetate	2.5
terpinen-4 -01	0.9
∝-terpineol	2.6
∝-teripinyl acetate	31.3
citronellol	0.3
nerol	0.5
geraniol	0.5
Methyl eugenol	0.2
trans - nerolidol	2.7

Besides the usual terpene hydrocarbon and alcohols as minor compounds and the dominance of 1,8 - cineole and ∝-terpinyl acetate, it is significant that methyl eugenol also has been identified [6]. The basic cardamom aroma produced by a combination of the major components, ∝-terpinyl acetate and 1,8 - cineole. These aromatic compounds are reported to be antiseptic, antiinflamatory, carminative and stimulating.

With the development of modern science and technology and awareness among people about use of natural products both in food and medicines what is needed is a thorough reevaluation of indigenous traditions of sciences and technologies as part of our present day search for alternatives.

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