



AJAMODA (*APIUM LEPTOPHYLLUM*)- A NATURAL PAINKILLER

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ABSTRACT

'Ajamoda' is an important drug of Ayurveda, Siddha and Unani systems of medicine, which consists of umbelliferous fruits. The drug to be used in the formulations are fruits of *Apium leptophyllum*. *Apium* is a genus of about 20 species of flowering plants in the family Apiaceae. Some species are edible, notably *Apium graveolance*, *Apium leptophyllum*, which includes the commercially important vegetables celery, celeriac and chinese celery. It is grown extensively in the South Asia, Southeast Asia, and Indonesia. Its aromatic dried fruits, like its close relative ajwain, are often used in Bengali cuisine but are rarely used in the rest of India. The fresh leaves are used as an herb in Thailand and it is used medicinally in Myanmar. The small dried fruits, commonly referred to as seeds, are similar in appearance to those of ajwain, celery, and caraway. Because of their similarity in both appearance and flavor, it is often confused or substituted with celery seed. *Ajamoda* consists of dried, aromatic fruits of *Apium leptophyllum* (Pers.) F. V. M. ex Benth. (Fam. Umbelliferae); an annual herb cultivated in Andhra Pradesh, Gujarat, Madhya Pradesh and Karnataka; collected by thrashing plants on a mat and dried in shade or in drying sheds. The oil of seeds of *Ajamoda* is also used in compounding Ayurvedic formulations. While, fatty oil of seeds is antispasmodic and nerve stimulant, seeds of celery are rich in vitamin-B.

KEYWORDS: *Ajamoda*, *Apium leptophyllum*, umbelliferous, Celery, Aromatic.

INTRODUCTION

Apium is an annual or biennial herb, erect, glabrous with fistular, angular stem. Leaves pinnate, leaflets 1-6 cm lobed incised, glabrous, sheath white margined, petioles to 1 cm. long or lacking in upper leaves. Umbels leaf opposed, 12-15 rays. Involucre and involucre absent. Umbellules 20-25 flowered, white in colour and blooming in the month of march to continue upto june. In India it is cultivated in hilly areas. It is propagated by seeds^[1]. *Ajamoda* has intense smell like that of goat and ass besides fruits, leaves also are aromatic. Fruits are on the top which is collected. It stimulates digestive fire and is useful in many disorders including worm and diseases of elephants^[2].

Nomenclature

Common name • Bengali: জোয়ান Jowan • Gujarati: અજવો
Yavano • Hindi: अजवाइन, अजवायन Ajwain • Kannada:
ajamoola, oma, omu, ajamoda • Marathi: ओवा Ova • Nepali:
जवानो Javano • Sanskrit: अजमोद Ajamoda, अजमोदिका
Ajamodika, dipyaka, • Tamil: ஒமம் Omam • Telugu:
omaa, vamu • Urdu: अजवाइन Ajwain

Botanical name: *Trachyspermum ammi*

Family: Apiaceae (Carrot family)

English names: Bishop's Weed, Carom Seeds, Thymol Seeds

MATERIAL AND METHODS

a) Macroscopic Description

Drug consists of small, ovoid fruit; bulk colour yellowish brown, mainly occur as entire cremocarps with pedicel attached or detached and bifid stylopod, free ends curved sometimes occurs as separate mericarps; cremocarps glabrous, ovoid to conical, about 1.5-3.0 mm long and 1.2-2.8 mm wide, yellow to yellowish green; separated mericarps broadly ovoid, more or less curved, dorsal surface convex with five equally distinct, longitudinal primary ridges; at the summit curved stylopodiurn, commissural surface flat, showing darker and light coloured longitudinal bands, former representing the position of vittae and vascular bundles ; odour; aromatic; taste, slightly bitter giving a sensation of warmth to tongue.

b) Microscopic Description

Transverse section of fruit shows mericarps with four large vittae on dorsal surface, two on commissural surface and four primary ridges on dorsal surface; 3-5 secondary oil canals present under each primary ridge and also between ridges; carpophore present on commissural surface; epicarp cells with thin striated cuticle, outer walls drawn into papillae; stomata, anomocytic type upto 35 µ in diameter; mesocarp consists of polygonal paranchyma.; with thickened and lignified cells, measuring 30-62-95µ. in diameter with oval to round pits; collateral vascular bundles lie beneath epicarp; tracheids 25-203-388 µ in

length with spiral, scalariform or reticulate thickenings; xylem parenchyma lignified, elongated with elliptical pits, measuring 52-118-176 by 13-30-44 μ large secondary vittae towards endosperm measure upto 123 μ in width and towards periphery the smallest vittae measuring 184 μ in diameter. Powder-Shows moderately thick-walled cell of epicarp exhibiting characteristic striations and occasional presence of stoma, fragments of trichomes and glandular hairs, reticulate parenchymatous cells of mesocarp, fragments of yellowish-brown vittae; fragments of endosperm thick-walled polygonal cells containing aleurone grain and micro rosette crystals of calcium oxalate.

Identity, Purity and Strength

Foreign matter (Including f Stalk) Not more than 5 per cent, Appendix 2.2.2.

Total Ash Not more than 14 per cent, Appendix 2.2.3.

Acid-insoluble ash Not more than 14 per cent, Appendix 2.2.4.

Alcohol-soluble extractive Not less than 14 per cent, Appendix 2.2.6.

Water-soluble extractive Not less than 3 per cent, Appendix 2.2.7.

Volatile oil Not less than 2 per cent v/w, Appendix 2.2.10

Properties and actions

Rasa : *Katu, Tikta*

Guna : *Laghu, Ruksha*

Virya : *Usna*

Vipaka : *Katu*

Karma : *Deepana, Vidahi, Kaphavatajit, Rucikrt, Krmijit,*

Important formulations: *Ajamodarka, Ajamodadi Churna, Hingvastaka churna.*

Therapeutic uses: *Gulma, Aruci, adhmaana, Hikka, Chardi Krimi Roga.*

Dose: 1-3 g of the drug in powder form.

Note: *Trachyspermum roxburghianum* (DC) Sprague Syn. *Carum roxburghianum* Benth. Hook.f. is the common market substitute^[3].

Chemical composition

The main chemical constituents of the seeds of the herb are 21.8% fat, 21.2% fibre, and 24.6% carbohydrates per 100 grams of the seeds. The main minerals in the seeds are calcium, phosphorus and iron, while its major vitamins are carotene, thiamine, riboflavin and niacin. When crushed, the seeds yield an essential oil, 50% of which consists of thymol, a well-known antiseptic compound^[4]. Ajamoda consists of dried, aromatic fruits of *Apium leptophyllum* (Pers.) F.V.M.ex Benth. (Fam. Umbelliferae); an annual herb cultivated in Andhra Pradesh, Gujarat, Madhya Pradesh and Karnataka; collected by thrashing plants on a mat and dried in shade or in drying sheds.

Classical Uses of Ajamoda

1. Diarrhoea and dysentery: Milk mixed with ghee, honey, and the powder of sugar, Ajamoda, Aralu an madhuka should be taken in diarrhoea associated with pain^[5].

2. Hoarseness of voice- Goat's Ghrita processed with Yavaksara and Ajamoda or Chitraka and Amalaka or *Devdaru* and *Ajamoda* mixed with honey is useful in the disorder caused by *Vata*^[6].

3.Gravels- In case of gravels (in urinary bladder) the following formulation is used- bones of heron, camel and ass, *Gokshuru, Talapatra, Ajamoda* and root (bark) of *Kadamba* and *Bilva* all mixed together are taken with wine or warm water^[7].

4. Indigestion and loss of appetite- *Ajamoda* is one of the ingredients of the popular formulation '*Hingvastaka churna*'^[8].

5. Amavata- *Ajamoda* is the chief drug in *Ajamodadi Vataka* prescribed for *Amavata*^[9].

6. Impurity of breast-milk caused by Vata- The child should be given to lick ghee mixed or cooked with powder of *Rasna, Ajamoda, Sarala,* and *Devadaru* along with sugarcandy^[10].

7. Some other uses- used as carminative, stomachic, nerve tonic, emmenagogue, stomach trouble. For complaints of depression and sleeplessness. Rheumatic pain in muscles of neck and sacrum.^[11]

Therapeutic Actions

1. Essential oil found to possess tranquillizing as well as anticonvulsant activities.
2. In a study by Kooti et al. it was shown that celery can protect spermatozoa and testes of rats against the toxic effects of propylene glycol.^[12] The results in an in vitro study evaluated the ability of methanol extract of celery to remove OH and DPPH and inhibition of liposomal peroxidation showed that extract obtained from the leaves of celery root, is effective in the removal of free radicals and DPPH and reduces the intensity of LPX (liposomal peroxidation) indicating its protective activity (antioxidants).
3. Celery can regulate heart function. It can also stimulate pancreas to secrete insulin to reduce blood glucose levels, so that it can be used to reduce or treat diabetes complications.^[13]
4. Celery has the ideal quantities of iron and magnesium to stop oncological diseases from progressing. The juice extracted from the petioles can be used for oedema, rheumatic tendencies, gout, flatulence, chronic pulmonary catarrh, tendencies toward overweight and lack of appetite.^[14]
5. Celery seed is effective on liver injuries in rats which were caused by a single dose of paracetamol. It was noticed clear that celery has the protective activity against thioacetamide drugs.^[15]
6. The nitrogenous part of essential oil was found to have CNS activity. It provides protection against supramaximal seizure threshold test but was not effective against convulsions induced by metrazole or strychnine. (Kulshresth et al.,1967)
7. An alkaloidal fraction from the seeds also showed tranquillizing activity. The extract reduced mortality in aggregated mice by amphetamines. (Kulshresth et.al.,1970).
8. Both dialysed and no-dialysed solutions of aqueous extract on i.v. administration caused abrupt decrease

in B.P. of rabbits and significant increase in force of contraction of isolated heart of guinea pigs with no marked change in rate of contraction (Varasam Paeschararthara 1977,4,10)

9. 3-N-Butylphthalide and 3-N-Butyl-4,5-Dihydrophthalide exhibited anticonvulsant activity (Yaouxue Tongbao 1984,19,670).^[16]

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