

A COMPREHENSIVE LITERATURE REVIEW ON AJAMODA (*APIUM GRAVEOLENS*)

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Article Received on
07 July 2025,

Revised on 27 July 2025,
Accepted on 17 August 2025

DOI: 10.20959/wjpr202517-38068



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ABSTRACT

Ayurveda is one of the world's oldest holistic healing system. Ayurveda, the science of life and it is often called "mother of all healing". Ayurvedic herbs play an important role in Ayurvedic treatment, from ancient time to this modern time. Indian medicinal plants are the essence of ayurveda and Ayurvedic treatments. They produce miraculous effect when they used judicially and clocking with the basic principles. The drug AJAMODA(*Apium graveolens* Linn.), which is available everywhere and is known to have multiple actions. The genus *Apium* include twenty species, that species that spread across the globe with major distribution in Europe and Asia. India is endowed with rich wealth of medicinal plants. In Indian system of medicine *Apium Graveolens*, it is used for treating Joint pain, fluid retention, Bronchitis, Asthma, Spleen and liver disorders. *Ajamoda* is a fragrant plant with multifaceted medicinal properties like anti-oxidant, anti-cancer, anti-inflammatory, anti-spasmodic, anti-bacterial etc. It is

used as single remedy in medicinal preparation. The current review is to summarize its historal review, Discription, therapeutic activity, Pharmacological activity of *Apium graveolens* mentioned in various ayurvedic as well as modern literature.

KEYWORDS: *Apium Graveolens*, Antimicrobial action, pharmacology.

INTRODUCTION

Historical review

History of medicine and healing with medicinal plants is as old as mankind itself. The connection between man and his search for drugs in nature dates from the far past. History of Ayurveda can be described in different periods, being Vedic kala then comes Samhita kala, Sangraha kala and Adhunik kala.

[A] PURANA KALA

In Garuda purana, in 197th chapter- preparations of medicinal oils and Ghritas and in 195th chapter, Medical treatment of female complaints, Ajamoda is used as one of ingredient.

[B] SAMHITA KALA

1.Charaka Samhita (3000-2000 BC) – (Sharma P.V, 2003)

The references about the plant “AJAMODA”, with its preparations and indications are available in Brihatrayees and Lagutrayees.

Charaka Samhita, the ancient literature on Indian science, especially deals with the clinical medicines (Charakastu chikitsite). There are many references are found in Charaka Samhita regarding the drug Ajamoda.

- 1) Cha.su. 4/6 - It is one among Deepaneeya dashemaani.
- 2) Cha.su. 4/45 - It is mentioned under Shoolaprashamana Gana.
- 3) Cha.su. 23/18 - It is one of the ingredient in Trayushanaadi Mantha.
- 4) Cha.su. 25/48 - It is one among 26 Phalaasava preparation.
- 5) Cha.vi. 8/151 - Mentioned in Shirovirechana dravya.
- 6) Cha.chi. 3/267 - Mentioned in Agarvaadi taila preparation.
1. 7)Cha.chi 5/79-84 - Mentioned in Hingvaadi churna, gutika preparation.
- 7) Cha.chi. 5/91 - Mentioned in Shatyaadi churna preparation.
- 8) Cha.Chi.11/90 - Mentioned in Shaadava preparation.
- 9) Cha.chi.12/43-46 - Mentioned in preparation of Kshaara gutika.
- 10)Cha.chi. 14/74-75 - Mentioned in Takraarista preparation.
- 11)Cha.chi. 15/96 - Mentioned in preparation of chitrakaadi gutika.
- 12)Cha.chi.15/189-191 - Mentioned in preparation of Panchama Kshaara.
- 13)Cha.chi. 30/54-55 - Mentioned in preparation of Pippalyaadi yoga.
- 14)Cha.ka. 7/15 - It is one among 18 yoga of Nishotha.

- 15) Cha. Ka. 7/40-45 - Mentioned in preparation of Kalyanaka Guda.
- 16) Cha.ka. 7/51-53 - Mentioned in preparation of Trivrutaadi modaka.
- 17) Cha.si.4/13-16 - in preparation of Saindavaadi Anvaasana taila

2. Sushruta Samhita (200AD) :- - Sharma P.V, 2003

- 1) Su.su. 38/22-23 - pippalyaadi gana
- 2) Su.chi.5/7 - Vata prabhala vatarakta chikitsa
- 3) Su.chi.5/28 - Vataroge Hingvaadi choorna
- 4) Su.chi.7/18 - kraunchasyaadi yogaha
- 5) Su.chi. 8/17 - shataponake shastra karmanaha paschat karma
- 6) Su.chi.14/10 - Udareshu katipaye samanya yogaha
- 7) Su.chi.37/16 - Chitrakaadi tailam.
- 8) Su.chi.37/41 - Triphalaadi tailam
- 9) Su. Ka. 5/63 - sarva vishe ajito agadaha
- 10) Su.ut.36/7 - Naigamesharta Dhoopah.
- 11) Su.ut.40/79 - pakwa pittaatisaara shamana yogah
- 1) 12) Su.ut.40/153 - Pravaahika chikitsa
- 12) Su.ut. 41/50 - Elaadi rasaayana
- 13) Su.ut. 42/42 - gulme paaneeya ksaarah
- 14) Su.ut.43/12 - vata hridroga chikitsa
- 15) Su.ut. 44/28 - Panduroga chikitsa
- 16) Su.ut. 52/38 - Kaase kalyana Gudaha
- 17) Su.ut. 53/11 - Vaataja swarabheda chikitsa.
- 18) Su.ut. 56/17 - Visuchikaadi chikitsa
- 19) Su.ut.62/28 – Phalagritam

3. Ashtanga Hridaya (7 AD) Comment. Arunadatta–Sarvangasundara (13 AD)

- 1) A.H. Su. 15/33 - Vatsakaadi Gana
- 2) A.H.chi. 5/28-32 - Elaadi lehya and Rasayana
- 3) A.H.chi. 8/77 - Changeri Ghrita
- 4) A.H.chi. 11/28-29 - Kraunchasyaadi churna
- 5) A.H.chi.14/35 - Trikatukaadi churna
- 6) A.H.ka. 2/17-20 - Kalyanaka Guda
- 7) A.H.ka. 4/64 - Saindavaadi taila

8) A.H.ut.2/12 - Balaartha raasnaadi ghrita

9) A.H.ut. 34/30-31 - Vachaadi churna yoniparshwartyaadi Nashakam.

4. BHELA SAMHITA: In this samhita, Ajamoda is one of ingredient in '**pippalyaadi paana pralepanam**', which is used in **kushta vyadhi** as paana and pralepa. Also it is one of ingredient mentioned in '**Dadika Ghrita**' which is used in unmada.koshta shoola, Apasmara.

5. HAARITA SAMHITA: In this samhita, tritiya stana 5th chapter, 'Krimi roga prakara and Bheda', while explaining '**Krimi patana ka Aushadha**' mentioned Ajamoda. In tritiya stana 7th Adyaya-Shoola nidana, Ajamoda is mentioned as ingredient in '**Hingvaadi gutika**'. It is also mentioned in the preparation of Ajamodadi aushadi and Ajamodadi churna.

6. YOGA RATNAKARA: In this Ajamoda is one of the ingredient in Vaishvanara choorna, Astanga avalehika, Sringyaadi kwatha, Darvyadhi kwatha, Catuhsastika srngyadhi kwatha, Kurantakadinama lehyam, Yogaraja guggulu, Surana moda, Sadsiti guggulu.

7. CHAKRADATTA: Ajamoda is one of ingredient in '**Hingvaadya churna gudika**', '**Rasonaadya Ghrita**'.

8. SHAARANGADHARA SAMHITA :-In this text, Ajamoda is used in many formulations. Those are Astavimshaka gana kwatha, Ajamodaadi churna, Kapittastaka churna, Mahakhandava churna, Narayana churna, Lavanatritayaadya churna, Chitrakaadi churna, Ajamodadi churna, Hingvaadi churna, Kankayana gutika, Yogaraja guggulu, phala ghrita, Agnitundi vati.

9. BHAIJAYA RATNAVALI In this text, Ajamoda is mentioned in different preparations explained in different rogaadikaara's. The preparations are like Takraarista, Yogaraja guggulu, Mahayogaraja guggulu, Chitrakadi vati, Lavangaadi vati, Mahashankha vati, Bhargi sharkara, Ajamodadi churnam, Kalyana Avalehya.

[C] NIGHANTU KALA

1. Astanga Nighantu (7th - 9th A.D):- 3rd chapter **pippalyadi gana**, Ajamoda has been explained.

2. Sushruta Nighantu (9th century A.D) :- It is explained in 11th chapter **pippalyadi gana**.

3. Madanaadi Nighantu (10-11 A.D) :- This book is a glossary in Sanskrit and is written by **Chandranandana**. It is otherwise known as ‘Guna Nighantu’. In this Nighantu Ajamoda is explained in chapter 25th **panchavimsha guna**.

4. Dhanvantari Nighantu (10-13 AD.) The original name of this book is Dravyavali Saamuchchaya. The author of this nighantu is **Mahendra Bhogik**. Ajamoda is explained in **shatapushpaadi varga** of Dhanvantari Nighantu .

5. Shabdachandrika (11th Century A.D):- Shabdachandrika has been recorded as one of the works of Chakrapaanidatta. In Chapter 1, **vrikshaadi varga**, Ajamoda has been explained.

6. Nighantu Sesha(11th -12 A.D.):- This is a botanical supplement of Abhidhana Ratnamala of Hemachandra. This book contains 389 shlokas which give the synonyms of plants and description of herbs.

In Nighantu sesha Ajamoda is explained in 2nd chapter **Gulma khanda**.

7. Sodhala Nighantu (12 AD): Ajamoda is mentioned under **shatapushpaadi varga**.

8. Abhidaana Ratnamaala:-(12th or 13th century A.D.) The subject matter of Abhidhanaratnamaala is arranged in six skandhas according to six rasa therefore it is also called as **Sadrassa Nighantu**. Ajamoda is explained in 5th chapter **katuskanda**.

9. Siddamantra (Kala-13 AD): It was written by **Vaidyacharya Keshava**, In this ajamoda is explained in 5th chapter **Kaphavataghna varga**.

10. Hridaya Deepaka Nighantu(13th A.D): The author of this book is **Bopadeva**. The subject matter of Hridayadeepika has been divided into 8 vargas. In 4th chapter, **Ekapaada varga**, Ajamoda has mentioned.

11. Madanapala Nighantu (Kala-14 AD): This text was written by **king Madana pala** of ‘Tika’ dynasty. In this nighantu Ajamoda is mentioned under **Suntyaadi Varga**.

12. Kaideva Nighantu (Kala-15 AD): Ajamoda is mentioned under **Aushadhi varga**.

13. Bhavaprakasha Nighantu(16 AD): In the first chapter of **poorvakhanda -Mishra varga** in the context of bhesaja grahana sanketa Ajamoda is explained.

It is mainly explained in **Haritakyaadi varga** where Paryaya, Guna and karma as been explained.

14. Amarakosha: In this dwitiya khanda chapter 1, **Vanoushadhi varga**, Ajamoda is mentioned.

15. Saraswathi Nighantu: In chapter 5, **Chandanaadi varga**, Ajamoda has explained.

16. Raja Nighantu (17 A.D.): It was written by **pandit Narahari**. Ajamoda is explained here in 6th chapter **pippalyaadi varga**.

17. Shaligram Nighantu (1896): It is said to be the last in the galaxy of Nighantus of the Adhunik Kala. He has mentioned synonyms and Guna-Karmas of Ajamoda. Here he followed and mentioned the Bhavaprakasha Nighantu, Raja Nighantu and Nighantu Ratnakara while explaining Guna-karma.

[D] ADHUNIKA KALA

1. Priya Nighantu (19 AD): Priya Nighantu is written by **Acharya Priyavrat Sharma**. He has mentioned drug Ajamoda in **shatapushpaadi varga**.

2. Materia Medica of Ayurveda (2000):- Vaidya Bhagvandas has given 2 types of Ajamoda. Ajamoda and yavaani. Ajamoda comes under **krishnadi Gana, Vatsakadi Gana**.

3. Indian Medicinal Plantas (Kirtikar & Basu) (1918): The Family - **Umbelliferae**, Genus –**Apium** and characters of species - **Graveolens** and morphology of the plant, vernacular names have been described elaborately, along with its uses, distribution and therapeutic applications.

4. The Aurvedic Pharmacopoeia of India:- Description of Ajamoda, macroscopic and microscopic characters, Identity, purity and strength has been mentioned.

5. Dravyakosha vol -1: Along with its usual description the author has mentioned about the **method of propagation, colourful images** has been given, **Research profile and folklore usages** also mentioned.

6. Vanaushadhi Chandrodaya: Along with usual description author as mentioned about the **drug usage** according to other system of medicine like unani, formulations has been mentioned.

7. Classical uses of medicinal Plant (Dr. P.V. Sharma): In this book author has mentioned about the **classical uses of ajamoda in various disorders**, part used, and dose has been mentioned.

8. Dravyaguna Vignyaana (Dr.dr.J.L.N.Shastry): The author described about the **classical categorization**, introduction along with its usual description, he also mentioned about recent researches about each drugs.

9. Ayurvedic Pharmacology and Therapeutic Uses of Medicinal Plant (Vaidya V.M. Gogte): In this book author has mentioned about gana, kula, family features, latin name, Sanskrit name, Botanical description, Habitat, Properties, External uses and internal uses, part used, dosage, formulations and **srotogamitva** has been mentioned clearly.

10. Encyclopedia of Indian Medicine, Vol IV (Dr. S.R. Sudarshan): It compiles the information of Ajamoda regarding synonyms, morphology, medicinal action and therapeutic hints.

11.Vanaushadhi Nidarshika (Prof. Ram Sushil Sinh): Along with usual information it compiles the information about **shudda ashudda pareeksha, pratinidhi dravya**, sangraha evam samrakshana, veerya kaalavadi has been explained.

CLASSIFICATION

Table 1.1: Classification according to Gana in Samhitas.

Name of Text	Gana
Charaka samhita	Shoola prashamana, Deepaniya Gana
Sushruta Samhita	Pippalyaadi Gana
Astanga Hridaya	Pippalyaadi Gana
Astanga sangraha	Shoola prashamana, Deepaniya gana

Table 1.2: Classification According To Varga.

Name of texts	Varga
Dhanvantari Nighantu	Shatapushpaadi Varga
Sodhala Nighantu	Shatapushpaadi Varga
Abhidhana Ratnamala	Katu skanda

Saraswati Nighantu	Chandanadi varga
Siddha Mantra	Kaphaghna Varga
Hridaya Dipaka Nighantu	Ekapaada varga
Madanapala Nighantu	Suntyaadi Varga
Kaiyadeva Nighantu	Aushadhi Varga
Bhavaprakasha Nighantu	Haritakyaadi Varga
Raja Nighantu	Pippalyaadi Varga
Amarakosha	Vanoushadhi varga
Shaligrama Nighantu	Haritakyaaadi varga
Priya Nighantu	Shatapushpaadi varga
Shabda chandrika	Vrikshaadi varga
Soushrutha Nighantu	Pippalyaadi gana

SYNONYMS

Table 1.3: Synonyms of Ajamoda.

Sr.	Synonyms	D.N	So.N	A.R.	M.P.N	K.N	B.N	R.N	M.N	Sha.N	N.S	A.N	S.C	S.N
1.	Ajamoda	+	+	+		+	+	+	+	+	+	+	+	+
2.	Bastamoda	+			+	+		+	+			+		
3.	Deepyaka	+	+	+		+	+		+	+	+		+	+
4.	Lochamarkati					+					+			
5.	Kharahva	+	+	+	+	+	+	+		+	+	+		
6.	Kaaravi	+	+		+	+	+			+	+			
7.	Valli	+	+		+	+					+			
8.	Moda	+	+		+	+		+	+					
9.	Hastimayuraka	+	+		+	+			+		+			
10.	Brahmakhusa		+				+			+				
11.	Uragandha		+			+		+	+				+	
12.	Hridyagandha		+			+		+	+					
13.	Yavaani					+					+		+	+
14.	Kriminaashani					+								
15.	Mayura						+			+	+			
16.	Gandadhala							+						
17.	Hastikaaravi							+						
18.	Gandhapatrika							+						
19.	Maayuri							+						
20.	Shikhimoda							+						
21.	Modaadya							+						
22.	Vanhideepika							+						
23.	Brahmakoshi							+						
24.	Vishaali							+						
25.	Modani							+						
26.	Phalamukhya							+						
27.	Markati		+		+			+				+		+
28.	Lochakarkata	+												
29.	Rasamangini												+	
30.	Yavanika			+					+				+	+
31.	Bastagandha										+			

32.	Brahmadarba										+		+	
33.	Teekshna mayuraka													
34.	Yava dhanyaka													+
35.	Lochamastaka						+			+				
36.	Bhutika												+	
37.	Deepya												+	+
38.	Deepani													+

TYPES

According to Priya Nighantu and Materia medica of Ayurveda, Ajamoda is of 2 types

- 1) Ajamoda
- 2) Yavani

RASA PANCHAKA

Table 1.4: Rasa Panchaka of Ajamoda.

Sl.no	Name of texts	Rasa	Guna	Veerya	Vipaka
1.	Bha.Ni	Katu	Teeksna, ushna, laghu	Ushna	-
2.	Dha.Ni	Tikta	Ushna	Ushna	-
3.	Ra.Ni	Katu	Ushna, ruksha	Ushna	
4.	Kai.Ni	Katu,tikta	Ruksha, ushna, laghu	Ushna	Katu
5.	M.Ni	Katu	-	Ushna	Katu
6.	M.P.Ni	Katu	Teekshna, ushna, vidahini, laghu	Ushna	-
7.	Pri.Ni	Katu,tikta	Teekshna, ushna, laghu	Ushna	-
8.	Saa.Ni	Katu	Teekshna, ushna, vidahini, laghu	Ushna	-
9.	Vanoushadhi Nidarshika	Katu,tikta	Laghu, ruksha, teekshna	Ushna	Katu
10.	Vanoushadhi Chandrodaya	Katu,tikta	Laghu, ruksha	Ushna	Katu
11.	A.P.I	Katu, tikta	Laghu, ruksha	Ushna	Katu
12.	J.L.N.Shastry	Katu, tikta	Laghu, ruksha	ushna	Katu
13.	D.S.Leucas	Katu, tikta	Laghu, ruksha	Ushna	katu
14.	P.V.Sharma	Katu, tikta	Laghu, ruksha, teekshna	Ushna	katu

PANCHABHAUTIKA CONSTITUTION¹

Table 1.5: Panchabhautika constitution of Ajamoda.

RASA	CONSTITUTION
Rasa	
Katu	Vayu + Agni
Tikta	Vayu + Akasha
Guna	
Laghu	Agni + vayu
Ruksha	Agni + vayu
Teekshna	Agni + vayu
Virya	

Ushna	Agni
Vipaka	
Katu	Vayu + Agni + Akasha

This table shows that according to the rasadi, and according to all the Brihatrayees, Katu rasa is a combination of Vayu and Agni Mahabhoota, where as Nagarjuna told it as Agni and vaayu. Similarly tikta rasa is combination of vayu and Akasha mahabhuta according to all the three Brihatrayees, where as Nagarjuna said it is Akasha and Vaayu.

Almost all Nighantukaaraas have mentioned that Ajamoda is Kapha – vata shamaka, even Charaka also mentioned this as kapha vataghni. Ajamoda churna pacifies vata dosha and reduces Kapha dosha.

KARMA

Karma of Ajamoda can be inferred after administration of the drug and they are tabulated as per opinion of various texts.

Table – 1.6 Karma of Ajamoda mentioned in various Texts.

Sr.	Karma	Dh.Ni.	So.Ni.	M.Ni.	K.Ni.	Raj.Ni.	Sha.Ni.	M.P.Ni	API	Bha.Ni
1.	Shoolaghni	+		+		+			+	
2.	Deepani	+	+	+	+		+	+	+	+
3.	Pachani			+	+					
4.	Bhedana		+							
5.	Hridya				+		+	+		+
6.	Vrushya				+		+	+		+
7.	Balakari						+			+
8.	Krimighna	+		+	+			+	+	
9.	Arochaka Nashini					+	+			
10.	Jataramay Nashini					+	+			
11.	Ruchya				+	+	+		+	
12.	Vidaahi				+				+	+

ROGAGHNATA

Ajamoda is a wonder drug, which is effective in many diseases. Rogagnata of this drug which is mentioned by various Acharyas is tabulated below.

Table 1.7 Rogagnata of Ajamoda mentioned in various Texts.

Sl. No.	Rogagnata	D.Ni	So.Ni	M.Ni	M.P.Ni	K.Ni	R.Ni	Sha.Ni	B.Ni
1.	Shoola	+	+	+			+	+	
2.	Krimi	+		+	+				
3.	Agnimaandya	+	+	+					
4.	Hikka	+			+	+		+	+
5.	Adhmaana	+				+	+	+	
6.	Aruchi	+				+	+	+	
7.	Bastiroga		+		+	+		+	+
8.	Netraamaya				+	+		+	+
9.	Chardi				+	+		+	+
10.	Jataraamaya						+	+	

EFFECT OF DRUG ON DOSHA

Ajamoda is kapha-vata shamaka, Because of its ushna -teekshna guna, it act as Kapha-vata shaamaka and pitta vardaka.

EFFECT ON DHATUS / UPADHATUS AND AGNI

Ajamoda generally acts on all Dhātu, On Rakta it acts as Hridayattojaka, On Garbhashaya and sukra Dhātu act as kastartavanashaka and Klaibhya nashaka(vrushya). It acts on tvak external application as vedanastaapana.

It acts on agni as deepana, pachana, vaatanulomana, krimighna, shoola prashamana

EFFECT ON MALA

It acts on urinary system as mutrala and Bastishoolahara.

THERAUPETIC USES

1. Joint swelling in osteoarthritis :- oil of Ajamoda is applied to affected area.
 2. Skin diseases – oil is applied to affected skin.
 3. Abdominal pain :- Ajamoda seeds with rock salt is beneficial.
 4. Respiratory problems- Ajamoda leaves juice with honey is useful to treat cough and common cold.
 5. Arshas :- seka is given by using pottali made from it.
 6. Udarshoola :- Its fruits are used in cases of udara roga & udara shoola.
- 1) **EXTERNAL USES:** Analgesic. It is applied locally in bodyache. The juice of leaves or oil is used in arthritis.

2) INTERNAL USES^[2]

- a) Digestive system : Carminative, appetizer, analgesic, and anthelmintic. It is used in emesis, loss of appetite, hiccoughs, flatulence, stomach ache and helminthiasis.
- b) Circulatory system : It acts as cardiac stimulant in cardiac disorders.
- c) Respiratory system : Due to its Kaphagna property, it is used in cough, asthma, hiccough in the form of churna and also in form of smoke(DHOOMAPANA). Its smoke gives quick relief in cough, hiccough and asthma.
- d) Nervous system : The decoction of roots nourishes the brain and gives strength to nerves.
- e) Urinary system : It is used when there is pain in urinary bladder, renal calculi and urinary obstruction. It acts as diuretic.
- f) Reproductive system : It is a uterine stimulant as well as an aphrodisiac. Therefore it is used in amenorrhoea, dysmenorrhoea, and infertility. Though friendly to females should not given in pregnancy.

FOLKLORE USAGES^[3,4]

- 1) The seeds are given in cases of diarrhea.
- 2) To strengthen uterus after delivery its seeds are used.
- 3) The decoction of seeds is used for washing wounds.
- 4) Along with jaggery it is used in urticaria.
- 5) Choorna of seeds is used in dysmenorrhea.
- 6) About 10g ajamoda in 100ml buttermilk is good for relieving difficulties faced during dried phlegm.
- 7) Smoke of seeds if inhaled cure migraine.
- 8) Seed powder and jaggery is given in fever.
- 9) In malaria, ajamoda seed powder (1tsp) with karela fruit juice is advised.
- 10) For controlling nocturnal emission, ajamoda powder and leaf juice of barley is given everyday.
- 11) In diabetes, Ajamoda seeds, leaves of ratti and Mehandi powder are mixed and given to the patient.

MODERN SCIENCE

In modern science, the drug *Apium graveolens*. is taken as Ajamoda. However other varieties are also taken as Ajamoda.

TAXONOMIC POSITION (Banthem and Hooker – 1862-1883)^[5]

- **Kingdom** : Plantae
- **Subkingdom** : Tracheobionta
- **Superdivision** : spermatophyte
- **Division** : Magnoliophyta
- **Class** : Magnoliopsida
- **Subclass** : Rosidae
- **Natural Order** : Apiales
- **Family** : Apiaceae – carrot family
- **Genus** : Apium L.
- **Species** : Apium graveolens L.

- **VERNACULAR NAMES^[6,7]**

- Sanskrit – Ajamoda, Andhapatrika, Brahmakoshi,
- English – celery, cultivated celery, Marsh parsley, smallage, wild celery.
- Assam – Bonjamani, Bonajain, Yamani, Ajowan.
- Punjab – Bhutjata, Vajawain, Ajmod
- Bengal – Chanu, Randhuni, Banyamani.
- Hindi – Ajmud, Boriajmod, Karafs.
- Gujarathi – Bodi Ajamo, Ajamo
- Kannada- oma, Ajavana, Omkaal
- Marathi – Ajamoda, oova
- Ori – Banajuani
- Tamil – omam
- Telugu – Nuranji vamu

- **FAMILY CHARACTER^[7]**

- **Family–Apiaceae/Umbellifere:** Herbs(rarely shrubs or trees).
- **Leaves:** usually alternate, simple or compound, exstipulate; petiole generally sheathing at the base.
- **Flowers:** usually bisexual often slightly irregular, in simple or compound umbels, rarely in heads or whorls; umbels and umbellules each furnished with an involucre of bracts or one or both naked.

- Calyx: tube adnate to the ovary; teeth 5 or 0.
- Petals: 5, epigynous distinct, sometimes unequal, often bifid, with an inflexed apex and an impressed midrib, imbricate in bud.
- Stamens: 5, epigynous, alternating with the petals.
- Ovary: inferior, 2-celled, crowned by a large epigynous usually 2-lobed disk; ovule solitary in each cell. Pendulous; styles 2, often dilated at the base into stylopods which crown the ovary; stigma minute, capitate.
- Fruit: Bicarpellary of 2 indehiscent dorsally or laterally compressed separable carpels, separated by a commissure and attached to and often pendulous from a slender central axis.
- Mericarps: are usually marked by 5 longitudinal lines, 1 dorsal, 2 marginal and 2 intermediate, and often with 4 more (secondary ridges) alternating with the primary ones;
- pericarp: often traversed by oil-canals (vittae). Seed 1 in each carpel, pendulous from the point of the attachment to the carpophores; testa thin; albumen cartilaginous; embryo minute, straight, near the apex of the seed; radical superior- Genera 200. Species 2,700.
- **DESCRIPTION OF AJAMODA^[6]**
- **a) Macroscopic:** 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 edges; at the summit curved stylopodium, 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:** 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 wall drawn into papillae; stomata, anomocytic type upto 35 micron in diameter; mesocarp consists of polygonal parenchyma with thickened and lignified cells, measuring 30-62-95 micron in diameter with oval to round pits, measuring 52-118-176 by 13-30-

44micro,large secondary vittae towards endosperm measures upto 123micron in width and towards periphery the smallest vittae measuring 184 micron 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 mirrosette crystals of Calcium oxalate.

- **Table 1.8: Botanical Description of *Apium graveolens*.**

Part	Description
Leaves	Shiny pinnate, toothed leaflet
Flowers	White
Petals	Small and entire
Fruits	Small and slightly compressed
Stems	Branched,angular,green
Seeds	Small
Flowering period	June to august
Root	Suuculent,well developed

- **HABITAT AND DISTRIBUTION**

- **Table 1.9 Habitat and Distribution according to various texts.**

Sr.	Name of Text	Habitat and Distribution
1.	Ayurvedic pharmacology and Theraupetic uses of medicinal plants by Gogte	All over India but more in Maharashtra.
2.	Indian Medicinal Plants, Kirtikar & Basu	Europe and China, Foot of the N.W Himalya and outlying hills in Punjab- Afghanistan , w. Asia, Europe , N.Africa , Abyssinia.
3.	The API	Cultivated in Andhra Pradesh, Gujarath, Madyapradesh, and Karnataka.
4.	Vanaushadhi nidarshika	Cultivated in south India and Bangladesh.
5.	Cultivation of medicinal and aromatic crops.	The native habitat of celery is lowland of Italy from where it spread to Swedan,Egypt, Algeria and Ethiopia,and in Asia, to India, the Caucasus and Baluchistan.
6.	Ayurvedic medicinal plants of India . Vol-1	Cultivated in North western Himalyas,And in hills of Uttarpradesh,Himachal Pradesh and south-India.
7.	Pharmacognosy	It is said to be native of Egypt and is cultivated in Iraq,Iran,Afghanistan,Pakistan and India.In India it is extensively cultivated in Madhyapradesh,Uttarpradesh, Gujarath, Rajasthan, Maharashtra, Bihar.
8.	Dravyaguna vijana by K.Nisteshwar and	It is cultivated in Punjab, Himachal Pradesh, Jammu and Kashmir and Uttarpradesh. Under the name of celery it is

	Hemadri.	widely cultivated both in old world(Europe, Asia, Africa etc.)and new world countries.
9.	Dravya kosha Vol-1	.Hills of punjab and foot of North-West Himalayas;cultivated in sub-Himalayan and outlying hills.Cultivated throughout India,specially in Maharashtra and other regions.
10.	Medicinal plant cultivation. scientific approach	The plant is native of Europe, now cultivated in Northwest Himalayas and in hills of U.P,Himachal Pradesh and S.India.It is widely cultivated in U.K.It is native of Southern Europe.
11.	Materia medica and Herbal pharmacology	Europe

- **PHYTOCHEMICAL CONSTITUENTS:**^[5] Seeds contain volatile oil; essential oil several active substances a-limonene, terpinene, dipentene, d-linalool, dopiperinone, thymoquinol, thymol and a crystalline ketonic acid, Anthole, Camphene, Carvacrole, Carvone, Cymene, Cineol, Chavicol.(Dravyakosah vol 1).
- The constituents of the celery include glycosides, steroids, and different types of phenolic including furanocoumarins, flavones, and trace elements (sodium, potassium, calcium and iron). There is variability of the constituents in the different parts of the plants. The main chemical constituents present in each part of the plant are as follows:
 - **Roots**
 - The roots contains falcarinol, falcarindiol, panaxidol, and polyacetylene 8-O-methylfalcarindiol.
 - **Stems**
 - The stem contains pectic polysaccharide (apiuman) containing d-galacturonic acid, 1-rhamnose, 1-arabinose, and d-galactose.
 - **Leaves**
 - Twenty-eight components are obtained from gas chromatography-mass spectrometry study of the volatile oil obtained from the leaf. The important compounds are 1-dodecanol, 9-octadecen-12-ynoic acid, methyl ester, and tetradecene-1-ol acetate.
 - **Fruits/seed**
 - Caffeic acid, chlorogenic acid, apiin, apigenin, rutaretin, ocimene, bergapten, and isopimpinellin are reported to be found in celery seed. The other substances such as seslin, isoimperatorin, osthonol, and gravebioside A and B were also found in the seeds.

Literature also showed that seslin, isoimperatorin, osthenol, gravebioside A and B, umbelliferone are present in the seeds of the plants.

- The seed oil is composed of palmitic acid, stearic acid, oleic acid, linoleic acid, petroselinic acid, d-limonene, selinene, terpineol, and santolol. The aroma of the oil is due to the presence of sedanonic anhydride and sedanolide in the seed oil. The maximum concentration of the oil was found in 5-week-old fruits.
- Photochemistry tests of celery seeds approve the presence of flavonoid apigenin (as main component), and vitamins A and C. A total of 16 combinations of seed extract have been identified in celery which make up 98.7% of the whole extract whose main components are D. limonene and myrcene.²⁷ (Table 1.9).

PARTS USED:^[3] seeds/phala

DOSAGE:^[3] Seed powder – 1-3 g.

Arka – 0.25 – 0.5 ml

DISCUSSION

Ajamoda is an ayurvedic drug used extensively in ayurvedic formulations, kitchen as well as trade and commerce. In ayurveda various drugs as been mentioned under Krimighna dravyas. It also has been shown in modern studies to possess significant antibacterial effects. The main bio-active constituents responsible are thymol, terpinene, cymene and limonine.

CONCLUSION

Ajamoda (*Apium Graveolens*) is one among the valuable medicinal drug from treasure of ayurveda, known for its krimighna, Deepana and pachana properties. The kashaya or essential oil of seeds can be effectively used in various bacterial infection as well as gastrointestinal disorders. Experimental findings have demonstrated inhibitory effects of Ajamoda extracts against *Staphylococcus aureus*, *Escherichia coli* and *Salmonella typhi*. The traditional medicinal uses of Ajamoda in krimi, atisara, ajeerna and grahani described in samhitas and Nighantus aligns well with its proven antibacterial action. Ayurveda describes its Katu-tikta rasa, Laghu-ruksha guna, Ushna veerya and as katu vipaka beneficial for eliminating pathogenic microorganisms and toxins. This literary review has attempted to encompass both ancient and modern perspective of Ajamoda so that it may serve as reference for future experimental studies, as well as to highlight its potential as a natural antibacterial agent.

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