

A TRADITIONAL THERAPEUTIC REVIEW OF PIPPALI (PIPER LONGUM) AND ITS ROOT IN CLASSICAL AYURVEDIC TEXTS

Dr. Shalu Sharma*

Assistant Professor, Department of Dravyaguna Vigyana, Gaur Brahman Ayurvedic College and Hospital, Brahmanwas, Rohtak.

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*Corresponding Author

Dr. Shalu Sharma

Assistant Professor,
Department of Dravyaguna
Vigyana, Gaur Brahman
Ayurvedic College and
Hospital, Brahmanwas,
Rohtak.

ABSTRACT

Acharya Charaka described it frequently in *Dipaniya Mahakashaya*, *Kanthaya Mahakashaya*, *Sula prashaman Mahakashaya*, *Kasahara Mahakashaya*, *Hikkanigrahan Mahakashaya*. *Charaka* used *Pippali* in various *Rasayana* formulations and seeing its importance used single herb as a formulation such as *Pippali Rasayana* and *Vardhmana Pippali Rasayana*. *Charaka* restricted the excessive use of *Pippali*. According to *Charaka Pippalimula* is the drug of choice or best for *Aganimandya* and *Aanaha*. Thus it is seen that *Pippalimula* is recommended especially in disorders due to *Agnimandya* as *Arsha*, *Udara*, *Gulma*, *Shool* etc. According to *Charaka Pippali* is having *Katu Rasa* and *ushna Virya*. *Acharya Sushruta* quote *Pippali Dvaya* as *Pippali* and *Gaja Pippali* and stated that it is *Pitta Virodhini*. He

included *Pippali* in *Virechana Dravya*. *Panchkola* is the famous compounds of *Pippali Phala* and *Moola* described by *Vagbhatta* in *Ashtanga Hridaya*. *Vagbhatta* in *Ashtanga Hridaya* did not mention *Pippali* in classification, he also quote *Pippali Dvaya* as *Pippali* and *Gaja Pippali*. In this review article an attempt has been done to described classical categorization, morphology, *Raspanchaka*, synonyms, *Karma*, indications and Therapeutic importance of *Pippali* in *Ayurveda*.

INTRODUCTION

Description of *Pippali* in *Charaka Samhita*Table 1: Showing Review of *Pippali* in *Charaka Samhita*.

Adhyaya & Shaloka	Used as ingredient of:
<i>Sutrasthana</i>^[1]	
4 – 9/6	<i>Dipaniya Mahakashya</i>
4 – 10/9	<i>Kanthya Mahakashya</i>
4 – 11/11	<i>Truptighana Mahakashya</i>
4 – 13/25	<i>Aasthapnopaga Mahakashya</i>
4 – 13/27	<i>Shirovirechanopaga Mahakashya</i>
4 – 14/30	<i>Hikkanighrahanan Mahakashya</i>
4 – 16/36	<i>Kasahara Mahakashya</i>
4 – 17/42	<i>Sitaprashmanana Mahakashya</i>
4 – 17/45	<i>Sulaprashmanan Mahakashya</i>
27 – 297	Properties of <i>Ardra</i> and <i>Suska Pippali</i>
<i>Vimana Sthana</i>^[2]	
1 – 15	Contraindication of <i>Pippali</i> in excess use
1 – 16	Description of alone uses of <i>Pippali</i> for long time
1 – 17	<i>Asthapana Basti</i> – for <i>Apkarshana</i>
8- 135	<i>Vamnarth Dravyas</i>
8 – 142	<i>Katu – Skandha</i>
8 – 151	<i>Sirovirechana Dravya</i>
<i>Sharirasthana</i>^[3]	
8 – 34	One of the drugs which are advised to kept in <i>Sutika Griha</i> .
8 – 41	One of the ingredients of <i>Kwath</i> indicated for <i>Apara patina</i>
8 – 48	One of the drug for management of <i>Sutika</i>
<i>Chikitsasthana</i>^[4]	
1 – 76	<i>Pancham Haritaki Yoga</i>
1/3 – 3	<i>Aamalakayasa Brahmarasayana</i>
1/3 – 36	<i>Pippali Vardhmana Rasayana</i>
2/1 – 27	<i>Brihmani Gutika</i>
2/1 – 37	<i>Vajikarana Ghrita</i>
3 – 223	<i>Vasa Ghrita</i>
3 – 228	<i>Vamana Dravya For Jwara Shanti</i>
5 – 156	<i>Danti Haritaki</i>
6 – 42	<i>Madvasava</i>
7 – 171	<i>Lepa in Switra</i>
8 – 91	<i>Nasya In Rajyakshama</i>
8 – 108	<i>Duralabhadya Ghrita</i>
12 – 62	<i>Pathya in Shotha Roga</i>
13 – 78	<i>Pippali in Plihodara</i>
14 – 52	<i>Pippaliyadi Pralepa in Arsh</i>
14 – 131	<i>Pippaliyadi Anuvasana Basti</i>
15 – 154	<i>Duralabhasava</i>
16 – 94	<i>Punarnavamandura</i>
17 – 111	In <i>Utkarika</i> in <i>Pittanubandi Shwasa</i>
17 – 135	With <i>Aamalki Swarasa</i> in <i>Hikka</i>

18 – 36	<i>Pippaliyadi Ghrita</i>
18 – 77	<i>Peya in Kasa</i>
18 – 81	<i>PitaKasanashaka Avleha</i>
18 – 88	<i>PitaKasanashaka Avleha</i>
18 – 89	<i>PitaKasanashaka Avleha</i>
18 – 91	<i>PitaKasanashaka Avleha</i>
18 – 94	<i>PitaKasanashaka Avleha</i>
18 – 104	<i>Gutika for Kasa</i>
18 – 109	<i>Annapana in Kaphajaa Kasa</i>
18 – 118	<i>Churna indicated in Vatanubhandi Kasa</i>
18 – 119	<i>Kaphajaa Kasanasaka Leha</i>
18 – 120	<i>Kaphajaa Kasanasaka Leha</i>
18 – 121	<i>Kaphajaa Kasanasaka Leha</i>
18 – 122	<i>VataKaphajaanya Kasa</i>
18-135	<i>Kshat Kasa Chikitsa</i>
18-169	<i>Padmakadi Leha</i>
27 – 28	<i>Use of Pippali in Urustambha</i>
29-99	<i>Sukumaraka Taila</i>
30 – 66	<i>Brihata Shatavari Ghrita</i>
Kalpasthan^[5]	
7 – 15	<i>In a Yoga out of Nisotha's 18 Yoga</i>
7 – 29	<i>Virechana Dravya – Kaphajaa Roga</i>
7 – 36	<i>Vairechanika Modaka</i>
7 – 37	<i>Trivrita Modhaka</i>
7 – 40	<i>Kalyanakaguda</i>
7 – 52	<i>Trivritadi Modhaka</i>
7 – 56	<i>Varshakalika Virechana Yoga</i>
7 – 70	<i>Trivrita Arista</i>
12 – 5	<i>Lepa of Pippali and Yastimadhu on root of Danti and Dravanti</i>
12 – 27	<i>Modaka – in Danti Dravanti Kalpa</i>
12 – 32	<i>Aristha Prayoga</i>
Siddhi Sthana^[6]	
3 – 14	<i>Bilvadi Niruha Basti</i>
7 – 17	<i>Pippalyadi kwatha</i>
8 – 10	<i>Sapta Prasrutika Basti</i>
9 – 58	<i>Pippalyadi Varti</i>
10 – 24	<i>Kaphanashaka Basti</i>
11 – 23	<i>In Samanya Basti's Dravya</i>
12 – 16/6	<i>Niruha Basti</i>
12 – 19/1	<i>Chatuhasneha Anuvāsana Basti</i>

Description of *Pippali* in *Sushruta Samhita*

Table 2: Showing Review of *Pippali* in *Sushruta Samhita*.

Adhyaya & Shaloka	Used as ingredient of:
<i>Sutrastasthana</i>^[7]	
20 – 13	<i>Samyoga Virudha, Kakmachi Virudha</i> with <i>Pippali</i> and <i>Maricha</i>
37 – 8	Contraindication of use of fresh <i>Pippali</i>
38 – 58	Description of <i>Trikatu</i>
38 – 60	<i>Amlakyadi Gana</i>
39 – 3	<i>Vamana Dravya</i>
44 – 46	<i>Virechaniya Danti Dravanti Ghrit</i>
44 – 52	<i>Virechaka Modaka</i>
46 – 223	Properties of both <i>Shusks</i> and <i>Ardra Pippali</i>
<i>Sharira Sthana</i>^[8]	
10 – 18	<i>Sutika Chikitsa</i>
10 – 19	<i>Pippalyadi kwath</i> indicated for management of <i>Sutika</i>
10 – 23	In <i>Pippalyadi Churna</i> drink with <i>Madhya</i> For <i>Apara Patana</i>
<i>Chikitsasthana</i>^[9]	
4 – 32	<i>Kalyanaka Lavana</i>
5 – 12	<i>Vardhmana Pippali</i>
6 – 12	<i>Lepa</i> in <i>Arsha</i>
9-9	<i>Tiktaka Ghrita</i>
9 – 10	<i>Lepa</i> in <i>Kushtha</i>
10 – 12	<i>Ayaskriti Aushada</i>
14 – 10	<i>Vardhmana Pippali</i> in <i>Udara Roga</i>
14 – 13	<i>Plihodara treatment</i>
14-14	<i>Satapalaka Ghrita</i>
38 – 61	<i>Aasthapana Basti</i>
38 – 93	<i>Utkleshana Basti</i>
<i>Kalpa Sthana</i>^[10]	
1 – 85	<i>Vamana Yoga</i> used after <i>Vishbhakshan</i>
2 – 51	<i>Dusivishariagada</i>
7 – 17	<i>Chhuchhundara Visha treatment</i>
8 – 45	In <i>Vatadi Vishhara Sweda Dravya</i>
<i>Uttara Tantra</i>^[11]	
14 – 5	In <i>Pratisarana Dravya</i> in <i>Lagan Roga</i>
17 – 20	In <i>Anjana</i> in <i>Ratryandhya</i>
18 – 15	<i>Bhadrodaya Anjana</i>
39 – 131	<i>Yavagu</i> in <i>Jwara</i>
40 – 26	<i>Vamaka Dravya</i> in <i>Amatisara</i> with <i>Shooladhmana</i>
40 – 49	<i>Churna</i> in <i>Amatisara</i>
42 – 18	<i>Pippalyadi Ghritapana</i> in <i>Sleshmgulma</i>
43-13	<i>Vataja Hridya raga</i>
58-66	<i>Mahabala Ghrita</i>

Description of *Pippali* in *Nighantus*

1. *Dhanvantri Nighantu* (10th A.D.)

In *Dhanvantari Nighantu*, *Pippali* has been described under *Shatpushpadi Varga*.

Paryaya^[12]

पिप्पली.....तथोषणा ॥७५॥

Pippali, Magadhi, Krishna, Chapala, Tikshnatandula, Upakulya, Kana, Shyama, Kola, Shaundi and Ushana are synonyms.

Guna-Karma^[13]

पिप्पली.....च रसायनी ॥७६॥

Pippali has *Katu* and *Madhura Rasa*; *Sheeta Virya*; *Snigdha Guna*. It pacifies all the three *Doshas*. It is useful in *Trishna, Jwara, Udararoga, Krimi, Amadoshas* and as *Rasayana*.

2. Shodhala Nighantu (12th A.D.)

Acharya Sodhala kept *Pippali* under *Shatpushpadi Varga*.

Paryaya (Nama Sangraha)^[14]

पिप्पली मागधी कृष्णा.....कृतमङ्गला ॥३३३-३३४॥

Pippali, Magadhi, Krishna, Chapala, Tikshnatandula, Upakulya, Kana, Shyama, Kola, Shaundi, Ushna, Karni, Krisnaphala, Vrisya, Katukandarasa, Vaidehi, Bahubeeja, Kali, Kritmangla are synonyms.

Guna-Karma (Guna Sangraha)^[15]

सा शुष्का.....यकृत्प्लीहोदरापहत् ॥३००-३०१॥

Shushka Pippali is *Katu, Snigdha* and *Ushna*. It is *Vrishya, Deepan* and *Sara*. It is *Madhura* in *Vipaka*. It is *Laghu*; it is *Pittavirodhini*. It mitigates *Vata Dosha* and *Kapha Dosha*. It cures *Shwasa, Kasa, Yakrtplihavridhi* and *Udara Roga*.

3. Madanpala Nighantu (14th A.D.)

This *Nighantu* is also known as " *Madana Vinoda*". *Madanpala* has kept this drug in *Shunthyadi Varga*.

Paryaya^[16] & Guna-Karma^[17]

पिप्पली चपला.....मधुरा गुरुः ॥१२-१४॥

Pippali, Chapala, Krishna, Magadhi, Magadha, Kana (kani), Vishva, Upakulya, Vaidehi, Shaundi and Tikshnatandula are synonyms. *Pippali* is said to be *Deepan, Vrishya, Madhura*

Vipaka, Rasayana, Atiushana, Katu Rasa; Snigdha, Lagu Guna; Kapha Vatahar, Pittavardhaka and Rechana in nature. It is indicated in *Shwasa, Kasa, Udararoga, Jwara, Kushtha, Prameha, Gulma, Arsha, Shula* and *Amavata*.

4. Kaiyadeva Nighantu (14th A.D.)

It is also known as “*Pathyapathyavibodhaka*” written by *Acharya Kaiyadeva*. *Pippali* has been described under *Aushadhi Varga*.

Paryaya^[18]

पिप्पली मागधी तीक्ष्णतण्डुला ॥११६५॥

Pippali, Maagadhi, Shaundi, Vaidehi, Chapala, Kana, Krishna, Upakulya, Magadhi, Shyamahvy and *Tikshnatandula* are synonyms.

Guna-Karma^[19]

शुष्का लघुस्व : वातस्यात्यनुलोमनी ॥११६६-११६९॥

Dry *Pippali* has *Katu Rasa; Laghu, Snigdha, Ushna, Tikshna* and *Sara Guna; Madhura Vipaka*. It is *Kaphavatanashaka, Ruchikaraka, Saarak, Shukrajanaka, Rasayana, Deepana, Pachana, Hridya, Pittavardhak*. It is indicated in *Shwasa, Kasa, Kapha Roga, Gulma, Arsha, Prameha, Pleea, Jwara* and *Udararoga*. It is *Kaphanashaka* and *Deepana* due to having *Tikshna* and *Ushna Guna; Pittashamaka* due to having *Sheeta Guna* and *Madhura Rasa; Vatanulomana* due to having *Ushna, Sara Guna* and *Madhura Vipaka*.

5. Bhavaprakasha Nighantu (16th A.D.)

Acharya Bhavamishra described *Pippali* in *Haritakyadi Varga*.

Paryaya^[20]

पिप्पली मागधी स्यात्तीक्ष्णतण्डुला ॥५४॥

Pippali, Maagadhi, Krishna, Vaidehi, Chapala, Kana, Upakulya, Ushana, Shaundi, Kola, Tikshnatandula are synonyms.

Guna-Karma^[21]

पिप्पली शूलाममारुतान् ॥५५-५६॥

Pippali is *Deepana, Vrishya, Rasayana, Kaphahara*. It has *Katu Rasa; Snigdha* and *Laghu Guna; Madhura Vipaka, Anushna Virya*. It is indicated in *Shwasa, Kasa, Udara, Kushtha, Prameha, Gulma, Arsha, Pleea Roga, Shoola* and *Vataroga*.

6. Raj Nighantu (17th A.D.)

It is also known by the names of “Nighantu Raja” and “Abhidhana Chudamani”. Narhari Pandit described *Pippali* under *Pippalyadi Varga*.

Paryaya^[22]

पिप्पली.....तीक्ष्णतण्डुला ॥११-१२॥

Pippali, *Krikara*, *Shaundi*, *Chapala*, *Maagadhi*, *Kana*, *Katubeeja*, *Korangi*, *Vaidehi*, *Tiktatandula*, *Shyama*, *Dantaphala*, *Krishna*, *Kola*, *Magadhodbhava*, *Ushana*, *Upakulya*, *Smratyahva* and *Tikshnatandula* are synonyms.

Guna-Karma^[23]

पिप्पली ज्वरहरा.....कासश्लेष्मक्षयापहा ॥१३॥

Pippali has *Snigdha*, *Ushna Guna*; *Katu* and *Tikta Rasa*; It is *Jwarahara*, *Vrishya*, *Deepani*, *Vatahara* and *Kaphahara*. It is indicated in *Shwasa*, *Kasa* and *Kshaya Roga*.

Synonyms of *Pippali*

The synonyms suggest the different morphological features along with the therapeutic properties of the plant as enlisted in classical texts are mentioned:

Table 3: Showing *Paryaya* (Synonyms) of *Pippali*.

<i>Paryaya</i>	<i>D.N.</i> ^[24]	<i>S.N.</i> ^[25]	<i>M.P.N.</i> ^[26]	<i>K.N.</i> ^[27]	<i>Bh.N.</i> ^[28]	<i>R.N.</i> ^[29]
<i>Pippali</i>	+	+	+	+	+	+
<i>Magadhi</i>	-	-	-	+	-	-
<i>Magadha</i>	-	-	+	-	-	-
<i>Maagadhi</i>	+	+	+	+	+	+
<i>Krishna</i>	+	+	+	+	+	+
<i>Chapala</i>	+	+	+	+	+	+
<i>Tikshnatandula</i>	+	+	+	+	+	+
<i>Upakulya</i>	+	+	+	+	+	+
<i>Kana</i>	+	+	+	+	+	+
<i>Shyama</i>	+	+	-	-	-	+
<i>Kola</i>	+	+	-	-	+	+
<i>Shaundi</i>	+	+	+	+	+	+
<i>Ushana</i>	+	+	-	-	+	+
<i>Katukandarasa</i>	-	+	-	-	-	-
<i>Vishva</i>	-	-	+	-	-	-
<i>Vaidehi</i>	-	+	+	+	+	+
<i>Dantaphala</i>	-	-	-	-	-	+
<i>Krikara</i>	-	-	-	-	-	+
<i>Katubeeja</i>	-	-	-	-	-	+

<i>Karni</i>	-	+	-	-	-	-
<i>Krisnaphala</i>	-	+	-	-	-	-
<i>Vrisya</i>	-	+	-	-	-	-
<i>Bahubeeja</i>	-	+	-	-	-	-
<i>Kali</i>	-	+	-	-	-	-
<i>Kritmangla</i>	-	+	-	-	-	-
<i>Shyamahvya</i>	-	-	-	+	-	-
<i>Korangi</i>	-	-	-	-	-	+
<i>Tiktatandula</i>	-	-	-	-	-	+
<i>Magadhodbhava</i>	-	-	-	-	-	+
<i>Smratyahva</i>	-	-	-	-	-	+

Interpretation and etymology of synonyms^[30]

- **मागधी-** 'मगधभवत्वान्मागधी' (क्षी., नि.शे.टी) ।

It is a product of Magadha desha.

- **कृष्णा-** कर्षति कृष्णा श्यामलत्वाद्वा (क्षी.) ।

'कर्षति कफं कृष्णा तैक्षण्यात्, श्यामत्वाद्वा ' (नि.शे.टी) ।

It removes kapha dosha. It is black in colour.

- **वैदेही-** विदेहदेशे भवा वैदेही (क्षी., नि.शे.टी) ।

It is produced in Videha desha.

- **चपला-** 'चपति चपला' (क्षी.) ।

चपति सान्त्वने 'चपति चपला (नि.शे.टी) ।

It specifies the dosas and protect from the diseases.

कणा-कणाः सन्त्यस्या कणा (क्षी.) ।

Fruits are small berries.

- **उपकुल्या-** 'उपकोलति संस्त्यायत्युपकुल्या(क्षी.)

'कुल्यामुपसमीपे जायते' ।

Grows along water stream.

- **ऊष्णा-** 'तीक्ष्ण तण्डूलत्वात्' (क्षी.) ।

'ऊषत्यूष्णा, ऊष रुजायाम् ।

'ऊष्णापि उष दाहे '।

It causes burning sensation due to its strong pungent taste.

▪ **शौण्डी** -शौण्डी शक्तत्वात् (क्षी.) ।

It is powerful in action.

'हस्तिशुण्डाकारफलत्वात् शौण्डी' ।

Its spikes resemble the trunk of an elephant.

▪ **कोला** -'कुल, संस्त्याने' (क्षी.) ।

The small particles of the fruit appear as if accumulated on it.

'कणा संस्तायिताः इव फले दृश्यन्ते' ।

▪ **तीक्ष्णतण्डुला** -'तीक्ष्णा तण्डुला अस्या'

Its particles are strongly pungent in taste and have penetrating action.

Vernacular names^[31]

Sanskrit : Kana, Magadhi, Magadha, Krisna, saundi.

Assamese : *Pippali*

Bengali : Pipul

English : Long Pepper

Gujrati : Lindi Peeper, Pipali

Hindi : Pipar

Kannada : Hippali

Malayalam : *Pippali*

Marathi : Pimpali, Lendi Pimpali

Oriya : Pipali, *Pippali*

Punjabi : Magh, Magh Pipali

Tamil : Arisi Tippali, Thippili

Telugu : Pippalu

Urdu : Filfil Daraz

Rasapanchaka of Pippali**Table 4: Showing the Rasapanchaka of Pippali.**

Rasapanchaka	D.N.^[32]	S.N.^[33]	M.P.N.^[34]	K.N.^[35]	Bh.N.^[36]	R.N.^[37]
<i>Mdhura Rasa</i>	+	-	-	-	-	-
<i>Katu Rasa</i>	+	+	+	+	+	+
<i>Tikta Rasa</i>	-	-	-	-	-	+
<i>Snigdha Guna</i>	+	+	+	+	+	+
<i>Sara Guna</i>	-	+	-	+	-	-
<i>Laghu Guna</i>	-	+	+	+	+	-
<i>Sheeta Guna</i>	-	-	-	+	-	-
<i>Ushna Guna</i>	-	+	-	+	-	+
<i>Sheeta Virya</i>	+	-	-	-	-	-
<i>Anushna Virya</i>	-	-	-	+	+	-
<i>Natiushna Virya</i>	-	-	-	-	-	-
<i>Atyushna Virya</i>	-	-	+	-	-	-
<i>Madhura Vipaka</i>	-	+	+	+	+	-

Karma of Pippali**Table 5. Showing the Karma of Pippali.**

Karma	D.N.^[38]	S.N.^[39]	M.P.N.^[40]	K.N.^[41]	Bh.N.^[42]	R.N.^[43]
<i>Amadoshanashka</i>	+	-	-	-	+	-
<i>Deepana</i>	-	+	+	+	+	+
<i>Hridya</i>	-	-	-	+	-	-
<i>Krimighna</i>	+	-	-	-	-	-
<i>Kasahar</i>	-	+	+	+	+	+
<i>Shwasahar</i>	-	+	+	-	-	+
<i>Pachana</i>	-	-	-	+	-	-
<i>Rasayana</i>	+	-	+	+	+	-
<i>Rechana</i>	-	-	+	-	+	-
<i>Ruchikaraka</i>	-	-	-	+	-	-
<i>Vrishya</i>	-	+	+	+	+	+
<i>Kaphahara</i>	-	+	-	+	+	+
<i>Vatahara</i>	-	+	-	+	+	+
<i>Pittanashaka</i>	-	+	-	+	-	-
<i>Udararoganashak</i>	+	+	+	+	-	-
<i>Trishnashamaka</i>	+	-	-	-	-	-
<i>Jwarahara</i>	+	-	+	+	+	+
<i>Gulmanashaka</i>	-	-	+	+	+	-
<i>Pramehanashaka</i>	-	-	+	+	+	-
<i>Kushthanashaka</i>	-	-	+	-	+	-

Botanical Classification

Kingdom : Plantae
Order : Piperales
Family : Piperaceae

Genus : *Piper*
Species : *P.longum*

Morphology^[44]

Root: Rootstock erect, thick, jointed, branched.

Stem: Stems numerous, 0.6 - 0.9 m., ascending or prostrate (not climbing) much branched, stout, cylindrical, thickened above nodes, finely pubescent.

Leaves: Leaves numerous, 6.3 – 9 cm., lower ones broadly ovate, very cordate with broad rounded lobes at base, upper ones oblong-oval, cordate at base, all subacute, entire, glabrous, thin bullate with reticulate venation sunk above and raised beneath, dark green and shining above, pale and full beneath; petiole of lower leaves 5-7.5 cm., stout, of upper leaves very short or none; stipules above 1.3 cm., membranous, lanceolate, obtuse, soon falling.

Flowers: Flowers are unisexual, minute, sessile, bracteate without perianth very densely packed in spicate inflorescences. The male and female spikes are on separate plants. The female spikes vary from 15-25 mm in length and about 7mm in thickness. The male spikes are longer 2.5 to 7.5 cm and slender.

Fruit: Spikes solitary, pedunculate, male slender, bracts narrow, female 1.3- 2.5 cm., bracts circular, flat, peltate; stamens 2; stigmas 3or 4, short, spreading, persistent. Fruit very small, ovoid, completely sunk in solid fleshy spike which is 2.5 - 3.8 cm. ovoid-oblong, erect, blunt, blackish green, shining.

Seed: Adherent to the endocarp, globose, ovoid or oblong, testa thin. Albuminous: Albumen floury. Number of cotyledons: Two (Dicotyledonous). Nature of Embryo: Embryo in a cavity remote from the hilum; radical superior. Nature of Cotyledons: Minute or absolute.

Chemical composition

Piperine, piperidine, a pungent resion-chavicine, starch and fatty oil.^[45] The essential oil contains n-hexadecane-0.7, terpinolene-1.3, zingiberene-7.0etc and two new monocyclic sesquiterpenes.^[46,47] Sesamin dihydrostigasterol & piplasterol are present. Alkaloid A- closely related to pellitorine produces marked numbness, salivation and a tingling sensation of mucous membranes of the mouth.^[48]

Pharmacological Action

Mast cell stabiliser property, Bronchodilator;^[49] Anti-histaminic^[50], Anti-tubercular^[51], Appetiser^[52], Antimicrobial activity^[53,54], Antiasthmatic activity^[55,56], Anti-inflammatory activity^[57], Immunomodulatory activity^[58,59], Anti-cancer activity^[60,61], Antidiabetic

activity^[62], Antiulcer activity^[63,64], Hepatoprotective activity^[65,66], Antiamoebic activity^[67], Insecticidal activity^[68], Antifungal activity^[69, 70], Anti-depressant activity.^[71, 72]

Actions and Therapeutic uses

Pippali is used in treating *Kasa, Shwasa, Hikka, Aruchi, Agnimandhya, Ajeerna, Vibandha, Gulma, Udara, Arshas, Yakrit vikara, Pleea vridhhi, Krimi, Pandu, Amavata, Kshaya, Rajayakshma, Rajorodha, Kushta, Jwara.*

Part used^[73]: Fruit and root.

MATERIALS AND METHODS

Charaka Samhita, Sushruta Samhita, Vagbhatta, Dhanwantari Nighantu, Shodhala Nighantu, Madanapala Nighantu, Kaiyadeva Nighantu, Bhavaprakasha Nighantu, Raj Nighantu, Modern medical databases (PubMed, Scirus, Science Direct and Scopus).

CONCLUSION

From all the above discussed portion we can conclude that *Pippali* is very useful in upper Respiratory disorders, Gastro-intestinal Disorders and Mental Disorders and many other Systemic Disorders according to *Ayurveda* and we have seen that recent modern reserches also proven the same as our Samhitas already have told us in Ancient time, so we can say *Ayurveda* is *Shaswat Gyaan*, it just needed to research again and again about its principles to enhance our practical and clinical knowledge.

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