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EVALUATION OF POWDER MICROSCOPY AND PHYSIOCHEMICAL STUDIES ON THE FRUIT OF PIPPALI (*Piper longum* Linn.)

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Abstract: *Medicinal plant have shown large potential for the development of the new drugs molecule against various disease. The present work deals with the Physiochemical and Powder microscopy and studies on the fruit of Pippali (Piper longum Linn.), Piperaceae family. Pippali is considered to be one of the best drugs in ayurveda it means which nourishes all dhatus of body and maintains health. It is also known as long pepper. Pippali should not be used in excess or for a very long period of time. If used in excess without precaution pippali aggravated tridosh. Pippali has been used as therapeutic agent in the treatment of various disease like Anaha, Agnimanda, Udarshoola, Kasa, Shwasa etc and it have Rasayana, Deepan, Pachana, Vatahara and Kaphahgana karma etc.*
Keywords: *Pippali, Piper longum, Powder microscopy, Ayurveda.*

Introduction: Pippali is one such drug which is commonly used as spice and also having great therapeutic importance but when used improperly it aggravates kapha dosha by its guru and kleda property, aggravates pitta due to its ushna guna, aggravates vata dosha due to its yogavahi property [1]. In samhita period, pippali is mentioned in various contexts. Acharya Charaka and Sushruta have extensively quoted among the dashemani mahakashaya and ganas respectively like in Deepaniya, Hikkanigrahana, Shirovirechanopaga, Shoolaprashamana, Triptighana mahakashaya and Pippaliyadi gana. Charaka mentioned that pippali should not be used in excessive quantities or regularly. Pippali also having rasayana property. According to Ayurvedic classics two types of Pippali are mentioned-1. Gajapippali (*Piper chaba*) 2. Pippali (*Piper longum*). Raja nighantu mention four types of pippali i.e. 1.Pippali, 2.Gaja Pippali, 3. Simhala Pippali (*Piper retrofractum*), 4.Vana Pippali (*Piper sylvacticum*/*P. Peepuloides*). In market two types of pippali available-(1). Small and (2). Big. Jala pippali in Abhidana Ratnamala is equated with plant *Phyla nodiflora*, however this is not used as Pippali. Fruit and Root is useful part of pippali but mainly fruits are useful in the preparation of drugs. Fruits are obtained by immature berries or dried unripe fruits or fruiting spikes dried in the sun, the roots and the thicker parts of stem are cut and dried and also used as an important drug in Ayurveda and Unani. Piper longum possesses bioavailability enhancing properties. Piperine was shown to enhance the bioavailability of antitubercular drugs rifampicin [2], pyrazinamide, isoniazid and ethambutol [2,3] and also the antileprotic drug dapsone [4]. The essential oil fruit showed antibacterial, antifungul [5,6] and antihelmentic [7] activity.

Botanical Description: Plant of *Piper longum* is a slender climber distributed in warmer region of the country. Inflorescence is spike. Fruits small, ovoid, sunken structures embedded in a fleshy spike, which is 2.5 to 4.0 cm long, ovoid, oblong, light green when immature, and blackish-green and shinning on ripening, broken surface shows a central axis and 6-12 fruitlets arranged around an axis, Leaves are simple, alternate, stipulate and petiolate or nearly sessile according to their position on the plant. Taste pungent producing numbness on the tongue; odour, aromatic [8]. The habit of this species is unique. This is the only piper species which does not show typical climbing habit. Erect fruiting spikes are another important character for easy identification.

Ayurvedic Properties [9,10]

Rasa	-	*Katu, Tikta, Madhura.*
Guna	-	*Laghu, Snigdha.*
Virya	-	*Anushna.*
Vipaka	-	*Madhura*.
Dosakarma	-	*Kaphavatashamaka*.

Materials and Methods

Pippali (*Piper longum* Linn.), had been identified by Prof. V.K. Joshi, Department of Dravyaguna, B.H.U. The mature fruit of pippali had collected from the Ayurvedic dravyaguna garden, B.H.U. Fruit had pulverized in the mechanical grinder to a moderate fine powder to carry out powder microscopic studies and had stored in a well closed airtight vessel for further analysis and crude powder of pippali had taken for hydroalcolalic extraction.

Figure-1:Plant with fresh Fruit of Pippali

Figure-2: Dried Fruit of Pippali

Figure-3: Fruit Powder of Pippali

Powder Microscopy of Fruit Powder of Pippali

Figure-4: Fragment of thin walled cell

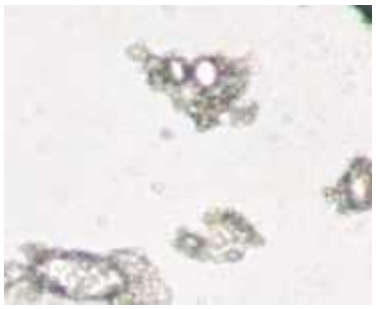

Figure-5: Starch grains

Physico-Chemical Analysis of Fruit of Pippali

Name of tests	Result
Description	Dark brown
Foreign matter	Nill
Total ash value	3.64%w/w
Acid insoluble ash value	0.46%w/w
Water soluble extract	48.21%w/w

Discussion and Conclusion

The fruits of *Piper longum* Linn were collected and analysed the various standardisation parameters. In the present work we have made an attempt to congregate the botanical, physicochemical, powder microscopy information on pippali, a medicinal herb used in Ayurveda. Powder microscopy results showed the presence of fragment of thin walled cell, Starch grains. Physio-chemical parameters of the fruits of *Piper longum* Linn are tabulated .Total ash value of plant material indicated the amount of minerals and earthy materials attached to the plant material and results showed total ash value content was 3.64 %w/w. This review will definitely help for the researchers as well as practitioners in future.

References

1. Tripathi Brahmanand. (1994). *Caraka Samhia, of Agnivesa*, elaborated by Caraka and Dridhabala, Edited with 'Caraka-Candrika' Hindi commentary along with special deliberation, Chaukambha Surbharati Prakashan, Varanasi, 3rd Edition.
2. Zutshi, R.K., Singh, R., Zutshi, U., Johri, R.K., Atal, C.K. (1985). Influence of piperine on rifampicin blood levels in patients of pulmonary tuberculosis. *J Assoc Phys India*, 33: 223-224.
3. Kapil, R.S., Zutshi, U., Bedi, K.L. et al. (1995). Regional Research Laboratory, assignee,Process for preparation of pharmaceutical composition with enhanced activity for treatment of tuberculosis and leprosy, US Patent 5: 439,891.
4. Singh, A., Sharma, S.C., Zutshi, U., Bedi, K.L. (1997). Improved bioavailability of dapsone in

the presence of piperine in rat. *Pharm Sci*, 3: 189-191.

5. Bhargava, A.K., Chauhan, C.S. (1968). Antibacterial activity of some essential oil. *Indian J Pharm*, 30: 150-151.
6. Rao, C.S.C., Nigam, S.S. (1976). Antibacterial activity of some Indian essential oil. Indian Drugs, 14: 62-63.
7. D Cruz, J.L., Nimbkar, A.Y., Kokate, C.K. (1980). Evaluation of fruits of Piper longum Linn. and leaves of Adhantoda vasica Nees for anthelmintic activity. *Indian Drugs*, 17: 99-101.
8. Chandra Shailaja. (2004). Ayurvedic Pharmacopoeia of India, Secrertary of 'Ministry of Health and Family welfare' Govt. of India , Part I ,Volume I , First edison.
9. Pandey Gangasahaya. (1999). *Bhavaprakasha Nighanatu of Bhavamishra*, Commentary by Krishnachandra Chunekar (Ed), Chaukambha Bharati Academy, Varanasi.
10. Sharma, P.V. (2003). *Dravya Guna Vigyana*, Vol. II, Chaukhambha Bharati Academy, Varanasi.