MAASHA (VIGNA MUNGO (L.) HEPPER) - FOSTERING AND FUNCTIONAL WITH INTRICACIES – A CRITICAL REVIEW

Sai Vijaya Priya M[1], Shobha A Khilari[2*], Ninad Nangare[3], S. Raneesh[4]

[1] Research Scholar, Dept. of Dravyaguna, Bharati Vidyapeeth Deemed University, Pune, India.
[2] Associate Professor, Dept. of Dravyaguna, Bharati Vidyapeeth Deemed University, Pune, India.
[3] Associate Professor, Dept. of Dravyaguna, Bharati Vidyapeeth Deemed University, Pune, India.
[4] Assistant Medical Officer, Government Ayurveda Dispensary, Thirupatisaram, Kanyakumari District, India.
*Corresponding author Email: shobha.khilari@bharatividyapeeth.edu

Article History: **Received:** 18.04.2023 **Revised:** 07.05.2023 **Accepted:** 16.06.2023

Abstract: *Vigna mungo (L.) Hepper (Black Gram) is one of the important legume crops extensively cultivated in India in both the Kharif and Rabi seasons. It belongs to the family Papilionaceae. Vigna mungo (L.) Hepper is known as Maasha in Ayurveda. It is very effective in treating diseases of Vata dosha predominance from gudakila, ardita, shwasa, paktishula (parinaamashula), vata vyadhi, karsya, dourbalya, sukradourbalya, aruchi, nadidourbalya, sandhivata, and pakshaghatam. It is a proteinaceous food that increases the bulk weight of the body. Gruel prepared from maasha, cow's ghee and milk is an excellent Vaajikara (Aphrodisiac) preparation. The Pharmacological actions of Maasha are aphrodisiac, carminative, diuretic, laxative, galactogogue, emmenagogue, nervine tonic etc. It is a very common food in our day-to-day life. A few antagonistic actions are found when this Black gram is mixed and administered. Maasha along with milk or mixed with milk is virudha (incompatible) because of Virya Viruddha. Hence, food combinations with milk and maasha stays incompatible. Soup of black gram and radish (mulaka) has also been termed incompatible. Hence, the present literary work is a critical review of all relevant information from all the Ayurvedic texts regarding the medicinal uses of Vigna mungo (L.) Hepper, to know its qualities and to highlight the importance of its usage and functional values with intricacies.*

Keywords: *Maasha; Vigna mungo (L.) Hepper; Black gram; Virudha; Antagonism; Incompatible; Intricacies.*

DOI: 10.48047/ecb/2023.12.Si8.578

INTRODUCTION

Vigna mungo (L.) Hepper known as Maasha in Ayurveda is sold as a black lentil (Black gram). Its origin is from South Asia and was later found to be cultivated in various parts of the world.[1] It belongs to the family Papilionaceae. The term 'Maasha' is derived from 'mashati hinasti vaayum gudakilaamscha rogaaniti' which means it kills or destroys vata roga, piles, etc. [2] Usually the whole bean is called a black lentil, whereas the split bean (the interior being white) is called white lentil.[3] Black gram (Vigna mungo (L.) Hepper) is an erect, fast-growing annual, herbaceous legume reaching 30-100 cm in height. Vigna mungo (L.) Hepper, Black gram is also known as urad bean, mash kalai, uzhunnuparippu, ulunduparuppu, minapapappu, Uddina Kaalu, Udad Dhal, Uddu or black matpe in various regions and is a bean grown in South Asia.[4]

Vigna mungo originated in South Asia but cultivated from ancient times in India has become the most highly-priced pulse of India. It is very widely used in Indian cuisine. In India, Black gram is one of the important pulses grown in both the Kharif and Rabi seasons.

This crop is extensively grown in the southern part of India, the northern part of Bangladesh, and Nepal. In medieval India, this bean was used in a technique to facilitate making crucibles impermeable. Maasha plays an important role in the feast as it satisfies the person's hunger. Vigna mungo (L.) Hepper also popular in Northern India, is largely used to make Dal from the whole or split, de-husked seeds. The bean is boiled and eaten whole or after splitting, made into Dal. In North Indian cuisine, it is used as an ingredient of Dal makhani, which is a modern restaurant-style adaptation of the traditional Sabut Urad Dal of Northern India.

It is also extensively used in South Indian culinary preparations. Black gram is one of the key ingredients in making Idli and Dosa batter (south Indian food), in which one part of black gram is mixed with three or four parts of idli rice to make the batter. Medu Vada or udid vada also contain black gram and are made from soaked batter and deep-fried in cooking oil. The dough is also used in making papadam, in which white lentils are usually used.[5]

Black gram is very commonly used as food and also for medicinal purposes .Maasha flour can be mixed with honey and consumed as such. Drinking water in which maasha is soaked relieves burning micturition. Maasha boiled water when consumed relieves the abdominal pain. The root of the maasha plant is applied as Kalka (paste) over the sopha (inflamed) region.[6]

Important formulations with maasha are Maashabaladi yoga, maashatmaguptadhi yoga, maashadhi kwatha, etc which are administered in Pakshagata (paralysis), Manyasthambha (stiffness of the neck). Many Ayurvedic diets and preparations with maasha are mentioned as aphrodisiacs (Vaajikarana). Gruel prepared from maasha, ghee, and milk will be an excellent Vaajikarana (Aphrodisiac) preparation. In Shiro Roga (disease of ENT) caused by Vata dosha, one has to consume maasha, mudga (green gram), kulattha (horse gram) with ghee or oil or paste of tila (sesame seed) with milk.[7]

As per Ayurveda black gram has antagonistic activity when mixed with milk, radish, etc. Thus, Maasha does not go well with milk as milk is sita (cold) in potency whereas maasha is ushna (hot) in potency. Hence, it is considered incompatible due to a combination of opposite potency and is called Virya Viruddha (incompatible due to potency). Hence, food combinations with milk and maasha stays incompatible. A common example of this is consuming Medu vada with tea, coffee, or milk. Soup of black gram and radish (Mulaka) is also termed as incompatible.[8]

MATERIALS AND METHODS

Reference Materials related to Maasha were collected from Charaka Samhita, Sushrutha Samhita, Ashtanga Sangraha, Ashtanga Hrudaya, All Nighantus, and its commentaries. Various articles, and websites on the salient topics were referred.

Botanical Description of Vigna mungo (L.) Hepper

Black gram (Vigna mungo (L.) Hepper) is an erect, fast-growing annual, herbaceous legume reaching 30-100 cm in height. It has a well-developed tap root and its stems are diffusely branched from the base. Occasionally it has a twining habit and it is generally pubescent. The leaves are trifoliate with ovate leaflets, 4-10 cm long and 2-7 cm wide. The inflorescence is borne at the extremity of a long (up to 18 cm) peduncle and bears yellow, small, papilionaceous flowers. The fruit is a cylindrical, erect pod, 4-7 cm long x 0.5 cm broad. The pod is hairy and has a short-hooked beak. It contains 4-10 ellipsoid black or mottled seeds.[9]

Ayurvedic Review

The etymology of the term Maasha in the Ayurveda System of Medicine

The term ‘Maasha’ is derived from ‘mashati hinasti vaayum gudakilaamscha rogaaniti’ which means it kills or destroys vata roga, Arshas (Piles) etc. [10]

Maasha is considered to be Shami dhanya Vishesha (type of pulses group). The other names of Maasha are kuruvinda which means it helps in the growth of hair or tissues, pithru bhojana which means it is used in the ritual ceremony after the demise of parents according to Hindu tradition. Maasha, which means it cures the diseases of vata dosha, gudakila, (piles) etc., and vrishankura, which means its seeds are aphrodisiac.

Harihi, bijavaraha, sati, vrishya, vrishakari, jirnakara, dhari, dhavala, rajamaashakaha, dhaanya vara, which means a potent Dhanya dravya, mamsala (muscle building), balaadhya (Nourishing), pittapa (Increases pitta owing to its ushna guna), pithrujottama are the other synonyms.[11]

Qualities and Actions

As per Acharya Charaka, Maasha is considered to be the most unwholesome among the Shami dhanya varga and considered to be Shleshma pitta janana [12] and as per Ashtanga Hridaya, maasha is not to be consumed habitually [13]. As per Kaiyyadeva Nighantu it undergoes amla vipaka, brmhana, tarpana, sara, abhishyandhi, enhances stanya (breast milk), bala, medho mamsa dhatu, pitta and kapha dosha [14]. It is guru (heavy to digest), ushna (hot in potency), snigdha (unctuousness), undergoes svaadhupaka, brimhana. [15] Maasha is rochana, shoshana, raktapitta prakopakam, bahumalakara,[16] tejahetu (Promotes complexion), draavakartaa (causing the flow of semen).[17] It is a proteinaceous food that increases the bulk weight of the body. Since it increases the quantity of the faeces, it helps in the discharge of urine and faeces frequently in large quantities. Hence the people who are fasting frequently will not consume maasha-prepared dishes. Further, the Guna (qualities) of a Black gram (Maasha) depends upon the environment and the soil in which it grows. The maasha which is grown along with paddy fields is light to digest and that which is grown in the dry land is heavy to digest. [18]

S.No	Synonyms	SKD	CS	SS	AS	AH	A.Ma	DN	BPN	MPN	RN	KN
1	Kuruvinda	+						+			+	
2	Dhaanya Vira										+	
3	Vrshaankura							+			+	
4	Maamsala							+			+	
5	Baladhya							+			+	
6	Pitryaasha							+			+	
7	Pitrujottama							+			+	
8	Mahamudga						+					
9	Dhaanya Maasha						+	+				
10	Manishinaha						+					
11	Kukkundam						+					
12	Vryshyam						+					+
13	Mudgakhyam						+					
14	VataBhehsajam						+					
15	Maasha	+	+	+	+	+	+	+	+	+	+	+
16	Harihi											+
17	Bijavara											+
18	Sati											+
19	Vrushakari											+
20	Jirnakara									+		
21	Dhaari									+		
22	Dhavala									+		
23	Raaja Maasha									+		
24	Pithru Bhojana	+										
25	Pittapa										+	

SKD – Shabda Kalpa Druma, CS – Caraka Samhita, SS -Susruta Samhita, AH – Ashtanga Hridaya, A.Ma– Abhidhaana Manjari,DN – Dhanwanthara Nighantu, BPN – Bhavaprakasha Nighantu, MPN – Madanapala Nighantu, RN – Raja Nighantu, KN – Kaiyadeva Nighantu.

External Uses

It is applied externally as a paste after boiling or steaming in nervous and muscle debility. It is applied in the dryness of the muscles, blood vessels, and joints which ultimately leads to the relaxation and reduction of pain in the joints and in the muscles. Mahamasha tailam, Maasha tailam, are prominent oil preparations

prepared with maasha generally prescribed in clinical management of the diseases under vata vyadhi group. Paste is used to hold medicated ghee in case of netra tarpana and oil in case of kati vasti,shiro vasti etc. It is also used in muscle wasting like Navara kizhi or Sastika pinda sweda.

Used in Conditions Specific to Women

Maasha imparts strength and growth to the uterus. Hence, it is used in females whose uterus has not attained proper growth and in whom regular proper menstruation does not occur. It is beneficial in female infertility and who have painful menstrual periods. Gruel prepared from rice and maasha, paniyaaram (A special preparation in Tamilnadu) prepared from maasha, and tila tailam(sesame oil) is very beneficial. Females desirous of progeny and to increase lactation should consume maasha in abundant quantity.

Contraindications

Since Maasha increases Kapha dosha, it is to be avoided much by children, those who suffer from chest congestion, phlegm in their chest, have weak digestive capacity and are constipated.[18]

Maasha preparations like Idli, Dosa, and Vada (south Indian foods) are abundantly administered to almost all sick patients and for children with respiratory diseases as a diet from the good olden days, which is to be avoided as it is heavy to digest, and Abhisyandi.

Indications / Pharmacological Actions

According to Ayurveda

It is very effective in treating Vata predominant conditions from gudakila (Arshas), Ardita (facial palsy), shwasa (dyspnoea), vata vyadhi, karsya (emaciation), dourbalya (weakness), sukradourbalya (seminal disorders), aruchi (loss of taste), nadidourbalya (Nervous disorders), sandhi vata (joint pain), paktishula and pakshaghatam (paralysis).

According to Modern Science

Aphrodisiac and nervine tonic.[19] Anti-inflammatory, analgesic, ulcerogenic, hypoglycemic, hepatoprotective, immunostimulatory, anticonvulsant, antioxidant, and narcotic activity.[20]

Various Research works

Patel et al., (2015) reported that Vigna mungo hydroalcoholic extract (VMHA) improved arthritic condition significantly by reducing pain and inflammation. Improvement in pain behaviour could result from the inhibition of prostaglandins by flavonoids present in VMHA and/or maybe through central pathways of analgesia.[21] Usman and Barhate, (2011) suggested that leaves of Vigna mungo L. possess anti-inflammatory, analgesic, and ulcerogenic activities mediated through sequential inhibition of the enzymes responsible for prostaglandin synthesis from arachidonic acid.[22]

Ahmed et al., (2015) reported that methanolic extract of boiled Vigna mungo seeds is effective in alleviating pain.[23]

Ali et al., (2014) reported anti-inflammatory and antinociceptive activities of untreated, germinated, and fermented mung bean aqueous extract.[24]Vigna mungo has been reported pharmacologically to possess anti-inflammatory activity.[25] Anti-inflammatory activity is due to ethanol extracts mainly polyphenols.[26] The seeds of nearly all species of Vigna have antioxidant properties and are used to treat different diseases like rheumatism, liver diseases, etc.[27] The proteins, polypeptides, polysaccharides, and polyphenols from the seeds, sprouts, and hulls of mung beans all show potential antioxidant activity,[28][29][30]Vigna mungo has been shown to possess antimicrobial activities.[31]

Nutritional Review

When raw it contains high levels of protein (25g/100g), potassium (983 mg/100g), calcium (138 mg/100g), iron (7.57 mg/100g), niacin (1.447 mg/100g), Thiamine (0.273 mg/100g), and riboflavin (0.254 mg/100g). Black gram complements the essential amino acids provided in most cereals and plays an important role in

the diets of the people of Nepal and India. Black gram is also very high in folate (628 µg/100g raw, 216 µg/100g cooked).[32]
The total carbohydrate, total protein, crude fibre, ash and moisture content of the seed coat were found to be 27.52±2.71%, 10.07±0.92%, 48.67±1.96%, 4.87±0.29% and 11.03±0.49% respectively. The content of total phenolics and flavonoids were significantly higher in 80% EE than other extracts. The mineral composition showed that seed coat was rich in calcium, sodium, potassium, magnesium, iron, copper, zinc and manganese. The higher antioxidant potential was shown by 80% EE in DPPH and SOD assay whereas AE shows more scavenging activity in H2O2 assay. So, it can be used as nutraceuticals in food supplements.[33]

Fostering and Functional
Vigna mungo (black gram) is the richest source of protein for human and animal nutrition. The claimed benefits of consuming black lentils are the high fibre, and low glycaemic index properties of this food are supposedly able to modulate lipid homeostasis in people with a high-saturated-fat diet. The high fibre, low glycaemic index properties of this food reputedly help to maintain blood glucose control in people with diabetes mellitus. Reputedly, diets high in black lentils have some benefits in controlling body weight since they are claimed to have satiety effects, thus limiting overall food consumption. Black lentils inhibit α-amylase. α-Amylases are known to delay carbohydrate absorption and to reduce peak postprandial plasma glucose concentration.[34]

DISCUSSION

The description of Maasha with its properties, indications, contraindications, and formulations are given in detail in Ayurveda.
Even though maasha is pustikara (nourishing), balyakara (strengthening), it is not to be advocated all the time as it is guru guna by nature. Only for those who have good digestive activity and do hard strenuous work, maasha stays beneficial, increasing the sturdity, strength, enthusiasm, and lubrication in the body. Since it has abundant picchila (sliminess) and snigdha guna (unctuousness) it has to be much avoided.[35] Otherwise, its ajirna (indigestion) causes grave disorders affecting rasa dhatu to sukra dhatu, increase of ama, and various diseases. Maasha and milk combinations are incompatible due to Virya Viruddha
The present-day lifestyle of combining Black gram preparations like udid vada etc with milk, coffee, tea, etc causes Viruddha or incompatibility and sows the seed for many diseases with intricacies.
For people who have less fibre and a more starch diet, the large intestine gets dried, and the faeces are passed in small quantities with pain and froth. In such conditions, intake of maasha-prepared foods reduces dryness, and pain and increases the bulk quantity of faeces. [36] Here the fascinating one is maasha when administered in dryness of the large intestine acts as an inhibiting agent of vata dosha.

CONCLUSION

Though maasha has high nutritional, functional, fostering value, it should be consumed with care. Maasha which is heavy to digest should be consumed by those who have a good appetite, and good digestive capacity, and who perform regular physical exercise. Hence while using the maasha in a regular diet, one should follow the guidelines given in Ayurveda regarding its indications, contraindications etc

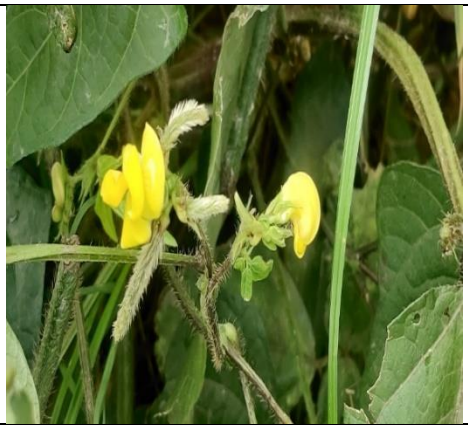
REFERENCES

1. Chaitieng et al. Development of a black gram [Vigna mungo (L.) Hepper] linkage map and its comparison with an azuki bean [Vigna angularis (Willd.) Ohwi and Ohashi] linkage map. Theor Appl Genet. 2006; 113(7):1261-1269.
2. Jatavallabha Lakshmi Naarayana Shastri. Ayurvedokta Aushadha Niruktamala. 1st ed. Varanasi: ChaukambhaOrientalia; 2001Page.85

3. Https://Www.Hsph.Harvard.Edu/Nutritionsource/Legumes-Pulses/, www.nuragro.com/ black-matpe.aspx. Accessed 2 June 2023.
4. "Black Gram." EOL, eol.org/pages/654940/articles. Accessed 2 July 2023.
5. "Black Gram." EOL, eol.org/pages/654940/articles. Accessed 2 July 2023.
6. Mahadevan L, Chidambaram K. Aahara Chintamani. 1st ed. Kanyakumari: Sharadha Mahadeva Iyer Ayurveda Education and Trust; 2015. Page No 17
7. Prakash L Hegde, Harini. A text Book of DravyagunaVigyanam. 1st ed. New Delhi: Chaukambha Publications; 2016, Vol 3 Page No 471-472
8. Vagbhata. Ashtanga Samgraha. Srikanta Murthy KR, editor. 9th ed. Varanasi: Chaukambha Orientalia; 2005, Reprint Edition 2017.Page No; 198
9. Retrieved from: Vigna mungo -www. Feedipedia.org [Accessed on: 10/04/2023]
10. Jatavallabha Lakshmi Naarayana Shastri. Ayurvedokta Aushadha Niruktamala. 1st ed. Varanasi: Chaukambha Orientalia; 2001 Page.85
11. Jatavallabha Lakshmi Naarayana Shastri. Ayurvedokta Aushadha Niruktamala. 1st ed. Varanasi:Chaukambha Orientalia; 2001 Page No.85
12. Charaka. Charaka Samhita. R.K. Sharma, Bhagwan Dash, editor. 1st ed. Varanasi: Chaukambha Orientalia; Reprint, 2021 Page No.424 & 425
13. Vaghbhata. Ashtanga Hridaya, Bhishakacharya Hari ShaastryParaadakara Vaidya, Editor. 10th ed.Varanasi: Chaukambha Orientalia; Reprint,2014, Page No. 157
14. Sharma PV, Guruprasadh Sharma. Kaiyadeva Nighantu. 6 th Edition, Varanasi;Chaukambha Orientalia; 2006. Page No311
15. Rama Prasadh. Madanaphala Nighantu (Nrupa Madanapala virachita). 1st ed.Varanasi: Chaukambha Orientalia;2010, Reprint Edition: 2017. Page No. 785
16. Shri Narahari Pandit. Raja Nighantu. Satish Chandra Sankhyadhar, Deepika Sankhyadhar, editor. 1st ed. Varanasi: Chaukambha Orientalia; 2017. 871
17. Lolimbaraja. Vaidyavatamsah. Uttama Vaidya Pammi Satya Narayana Shastry, editor. 1st ed.Varanasi: Chowkambha Sanskrit Series Office; 2006 Page No 59
18. Mahadevan L, Chidambaram K. Aahara Chintamani. 1st ed. Kanyakumari: Sharadha Mahadeva Iyer Ayurveda Education and Trust; 2015. Page No 15
19. Prakash L Hegde, Harini. A text Book of DravyagunaVigyanam.1st ed New Delhi: Chaukambha Publications; 2016, Page No. 471
20. Rajeev Kumar Varma, Vipin K Garg, Lubhan Singh, Dinesh Kumar. Pharmacognosticevaluation and phytochemical analysis of seeds of Vigna mungo (L.) Hepper. Journal of Phytotherapy & Pharmacognosy, 2013;1(1):1-9.
21. Patel DV, Sawant MG, Kaur G. Evaluation of anti-osteoarthritic activity of Vigna mungo in papain induced osteoarthritis model. Indian J Pharmacol. 2015;47(1):59-65.
22. Usman MRM, Barhate SD. Anti-Inflammatory, Analgesic and Ulcerogenic activity of Vigna Mungo Linn. leaves. Int J Phytopharm. 2011;1(2):55-60.
23. Ahmed MR, Mou SJ, Ahmed H, Bashar ABMA, Rahmatullah M. Analgesic Activity of boiled and non-boiled Vigna mungoseeds. World J Pharm Pharm Sci. 2015;4(10):267-273.
24. Ali NM, Yusof HM, Yeap S, Ho W, Beh B, Long K, et al. Anti-Inflammatory and Antinociceptive Activities of Untreated, Germinated and Fermented Mung Bean Aqueous Extract. Evidence-Based Complement Altern Med. 2014;1-6.
25. Patel DV, Sawant MG, Kaur G. Evaluation of anti-osteoarthritic activity of Vigna mungo in papain induced osteoarthritis model. Indian J Pharmacol. 2015;47(1):59-65.
26. Usman MRM, Barhate SD. Anti-Inflammatory, Analgesic and Ulcerogenic activity of Vigna Mungo Linn. leaves. Int J Phytopharm. 2011;1(2):55-60.
27. Pandey S. Review on medicinal importance of Vigna genus. Plant Sci Today. 2019; 6(4):450-456.
28. Zia-ul-haq M, Ahmad S, Bukhari SA, Amarowicz R, Ercisli S, Jaafar HZ. Compositional studies and biological activities of some mash bean (Vigna mungo (L.) Hepper) cultivars commonly consumed in Pakistan. Biol Res. 2014;47(23):1-14.

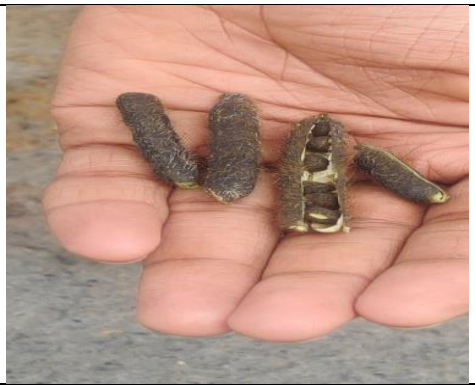
29. Zaheer M, Ahmed S, Hassan MM. A review of medicinal uses, phytochemistry, and pharmacology of Vigna mungo (L.) Hepper. J PharmacognPhytochem. 2020;9(1):1307-1309.
30. Ahmed MR, Mou SJ, Ahmed H, Bashar ABMA, Rahmatullah M. Analgesic Activity of Boiled and Non-boiled Vigna Mungo Seeds. World J Pharm Pharm Sci. 2015;4(10):267-273.
31. Zaheer M, Ahmed S, Hassan MM. A review of medicinal uses, phytochemistry and pharmacology of Vigna mungo (L.) Hepper. J PharmacognPhytochem. 2020;9(1):1307-1309.
32. Retrieved from: www.wikipedia.org [Accessed on: 10/04/2023]
33. Pushpam Marie Arockianathan, Kumar Rajalakshmi, Priya Nagappan.Proximate composition, phytochemicals, minerals and antioxidant activities of Vigna mungo L.seed coat. Bioinformation. 2019;15(8):579–585.
34. Rhian B. Cope, Nutraceuticals for weight loss, 2nd Edition 2021, Research Gate
35. Mahadevan L, Chidambaram K. Aahara Chintamani. 1st ed. Kanyakumari: Sharadha Mahadeva Iyer Ayurveda Education and Trust; 2015. Page No 15

Whole plant



Flower

Fruits



Seeds

Figure 1: Morphology of Maasha (Vigna mungo (L).Hepper)