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A Concise Review on Fashra (*Bryonia laciniosa* Linn): A Forgotten Unani Drug



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Keywords: Fashra, *Bryonia laciniosa* Linn, Lollipop climber, Unani medicinal plant, phytochemical constituent.

ABSTRACT

Background: The popularity of herbal medicines has risen worldwide due to its cultural acceptability and better compatibility with the human body and minimal side effects. Fashra (*Bryonia laciniosa* Linn) is an important medicinal plant in the Unani system of medicine (USM) due to its numerous therapeutic properties. **Objectives:** Present review is aimed to explore the existing data of the drug on its conventional uses especially in USM, its phytochemical constituents and pharmacological actions. **Materials and Methods:** Different authentic data base including classical text, journals have been reviewed. **Observations and results:** The plant is known to treat different systemic ailments due to the presence of alkaloids, carbohydrates, phytosterols, glycosides, phenolics, tannins, fixed oils, fatty acid saponins and flavonoids. In USM, the pharmacological actions of Fashra are Muraqqiq (Diluent), Mufattih-e-suddah (Deobstruent), Mulattif (Demulcent), Haliq-e-shaa'ar (Hair remover), Jali (Detergent), Mujafiff (Desiccant), Musakhkhin (Calorific), Munaffis-e-balgham (Expectorant), Muhallil (Resolvent), Muqawwi (Tonic), Mudir-e-boul, (Diuretic), Mushil (Laxative) etc. Fashra is reported for its analgesic, anti-inflammatory, anti-asthmatic, anti-convulsant, anti-tumour, anti-oxidant, anti-hyperglycemic, anti-microbial, androgenic effect and some other properties. **Conclusion:** Present study explores the pharmacological, phytochemical and therapeutic properties of Fashra. Many pharmacological activity mentioned in Unani medicine is validated and many activity needs further exploration owing to immense therapeutic scope in this drug.

INTRODUCTION:

There exists a plethora of knowledge and information and benefits of herbal drugs in our ancient literature of Ayurvedic and Unani medicine.¹ According to the WHO survey 80% of the populations living in the developing countries rely almost exclusively on traditional medicine for their primary health care needs. Plants continue to serve as possible sources for new drugs and chemicals derived from various parts of plants.² As per WHO, 'any plant or its components containing substance that can be used conventionally or can be used for pharmaceutical synthesis is classified as a drug'³. One of the medicinally important plant used for the purposes of obtaining drugs is *Fashra*. *Fashra* (*Bryonia laciniosa* Linn) is a highly valuable medicinal cucurbit known as lollipop climber belong to the family cucurbitacea.⁴ It is a glabrous, climbing herb, occurring throughout India,^{5,6} on edges and bushes up to 1200m elevation and is naturally propagated (by seeds) ⁶. In India, also known by the name of "Shivlingi" as the upper surface of the seeds has a marking and morphology, which resembles 'shivling' icon of Lord shiva in India⁴. Since ancient time physicians used this plant to treat various ailments. It has been used in Vedic times to frighten away evil spirits^{11'12'13}. According to Dioscorides, fruits are used to remove hairs over the skin. According to Jalinoos the another name of this plant is Haliq-i-shar and it possessed Muraqqiq (Diluent), Mufattih-e-suddah (Deobstruent), Mulattif (Demulcent), Haliq-e-shaa'ar (Hair remover), Jali (Detergent), Mujafiff (Desiccant), Musakhkhin (Calorific), Munaffis-e-balgham (Expectorant), Muhalli (Resolvent), Muqawwi (Tonic), Mudir-e-boul, (Diuretic), Mushil(Laxative)etc. Leather makers used its fruits to tanned Leather.^{7'8'9'10} Whole plant is used to treat adenopathy, ague, asthma, bronchitis, carbuncles, cholera, colic, consumption, convulsions, cough, delirium, fertility, headache, splenomegaly, paralysis, phthisis, snake bite.¹⁴

MATERIAL AND METHODS

Present review has been prepared to analyze the existing data about the drug *Fashra* (*Bryonia laciniosa* Linn) through detailed information on conventional uses especially in USM, with its phytochemical constituents and reported pharmacological actions. Various authentic databases including classical text, journals have been reviewed.

Observations

Ethnobotany: The plants hold a vital part in tribal society and customs further more utilized as a part of numerous natural restorative hone. It is ordinarily known as “shivlingi” and “Gargumaru” in India, a yearly climber with splendid red organic products and is accountant for to be exceedingly therapeutic. Locally in India its seeds are being utilize for advancing origination in women^{15'16}. Gond and Bharia tribes of Patakot valley venerate this plant. As per them, this herb is aid for the childless folks. They also claim that the seeds of the plant have a stimulating agent to enhance sperm quality and sexual desire. Additionally, it acts as a tonic to improve physical and psychological health and enhances youthfulness in advancing age. The home grown healers (Bhumkas) set up certain mix of herb and recommend it to the required individual. Interestingly, Bhumkas in Harra-Ka-Chhar town in Patakot recommend the seeds of this herb for imagining male children. In Gaildubba, customary healers make a mix of Shivlingi seeds with Tulsi (*Ocimumbasilicum*) leaves and blend it in Jaggery (the conventional grungy sugar utilized as a part of India) what's more, offer it to the woman who is not imagining infant because of any reason. Shivlingi is a twiner and can be very much recognized by its bloom/natural products/seeds. The foul what's more, simply diverse kind of smell of the plant is likewise a method for distinguishing it ^{15'17}.

Scientific Classification ^{18'19'20'21'22}

Domain: Eukaryot

Kingdom: plantae

Subkingdom: Viridaeplantae

Phylum: Tracheophyta

Subphylum: Euphyllophytina

Infraphylum: Radiatopses

Class: Magnoliopsida

Subclass: Dilleniidae

Super order: Violanae

Order: Cucurbitales

Family: Cucurbitaceae

Subfamily: Cucurbitoideae

Tribe: Benincase

Genus: Bryonia

Species: *laciniosa*- L

Botanical name: *Brayonia laciniosa* Linn^{18'19'20'21'22}

Botanical Synonyms⁵:

Diplocyclos palamatus; *Bryonopsis laciniosa* Linn

Other species¹⁶:

Bryonia alba L

Bryoniadiocia L

Bryonia aspera Steven ex Ledeb

Bryonia cretica L

Bryonia melanocarpa N



Vernacular Names: Latin: *Bryonia laciniosa* Linn, Arabic: Hazaarchashan, karmatulbaiza, Haliq-i-shar, Anabuljin Unani : Fashra, Asalusloni, Persian : Hazarkashan, Hazarfishan, Siyadaru, karamdashti, English: Bryony, Lollipopclimber , Ayurvedic: Linguini, Shivalingi, Chitrphalaa, Siddha/Tami l: Iyaveli, Iyaviraal Gujarat : Shivalingani, Bengali : Shivalingani, Mala, Hindi: Gargumaru, Isvaralingi, Shivalingi, Kannada : Lingatondi, Malayalam: Neyyunni, Neohma, Tamil: Sivalingakkay, Aiviralkkoval, Telugu: Lingada, Lingadonda, Llinga-dauda, Sanskrit: Baja ,Liagini ,Pastambni, Bakapuspha , Shiva Mallikaa , Bahupatra.^{5,7 '8'10'19'21'23'}

Geographical Distribution: The plant is distributed in countries like Nepal, Pakistan, Thailand, South Japan, Sri Lanka, Philippines, Indonesia, Tropical Africa, Australia, Bhutan, China and Philippine islands. In India, it is found in the states of Bihar, Jharkhand, Andhra Pradesh, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya

Pradesh, Chhattisgarh, Maharashtra, Manipur, Rajasthan, Tamil Nadu, Tripura and Uttar Pradesh¹¹.

Botanical Description: **Fashra** (*Bryonia laciniosa* Linn) is a climbing plant with a smooth stem common in hedges. **Stems:** angular, slender, usually glabrous²⁰. **Leaves:** are palmately 5-lobed, more or less deeply divided, segments oblong, lanceolate, acuminate, serrated; petiole often longer than the blade, sometimes muricate near the apex. Upper surface of the leaf thickly studded with white, jointed, calcareous hairs, rising from a calcareous areola; **Tendrils:** bifid, arising at the node in the axil of the leaf²⁴. **Flowers:** male and female flowers, in the same axils, the peduncles of the male flowers, which are numerous, remaining until the fruit ripens; flowers small, pale yellow. **Fruit:** nearly sessile often 2-3 together, fruit round, smooth, marked with white vertical stripes, the size of a marble, red when ripe, with the exception of the stripes, which remain of a dead white. Fruit $\frac{3}{4}$ in diameter, green with white vertical stripes seeds $\frac{1}{4}$ inches. **Seeds:** ovoid with a thickened corrugate margin often with large protuberances on the faces²⁰. It is yellowish brown, and resemble with that of *Shivlinga* (Phallus of Lord Shiva in Hindu mythology)⁶. taste and odour is characteristic. Aril is pale green, bitter and highly pulpy, forming a bag like covering around the whole seed. The whole plant is very bitter²⁵. **Root:** somewhat cylindrical and rarely branched longitudinally striated, few, small, thin, wiry lateral rootlets around the whole surface of the root.²⁴



Fig 1: Twig of *Bryonia laciniosa* L²³. (Sud K, Sud S.2017)



Fig 2: Fruite of *Bryonia lacinosa L*²³.(Sud K, Sud S.2017)

Description of Fashra (*Bryonia lacinosa L*) in Unani:

According to Dioscorides, it is a plant which is very similar to Vine, the branches, leaves and tendrils of this plant similar to the branches, leaves and tendrils of Vine but this plant has more tendrils that is thorny and with the help of tendrils it spreads over the surrounding trees. All the branches arise from a single root. Fruits present in bunches, turn red when ripe and used to remove hairs over the skin⁹ Fruits has 6 seeds. In the winter, the leaves fall off, but the vine does not wither. The taste of plant is pungent⁸. According to Jalinoos the another name of this plant is Haliq-i-shar and it *possessed* Muraqqiq (Diluent), Mufattih-e- suddah (Deobstruent), Mulattif (Demulcent), Haliq-e-shaa'ar (Hair remover), Jali (Detergent), Mujaffif (Desiccant), Musakhkhin (Calorific), Munaffis-e-balgham (Expectorant), Muhalli (Resolvent), Muqawwi (Tonic), Mudir-e-boul, (Diuretic), Mushil (Laxative)etc. Leather makers used its fruits to tanned Leather.^{7'8'9'10}

Parts used (*Hissamustamela*): Whole dry and fresh plant. Strongest part of this plant is fruit then root then leaf.⁸

Mizaj(Temperament) **Leaf:** hot³ dry². Har in third degree and yabis in second degree(or) hot³dry³. Har in third degree and yabis in third degree. **Fruit:** hot³ dry², Har in third degree and yabis in second degree (or) hot³ dry³, Har in third degree and yabis in third degree. **Root:** hot³ dry², Har in third degree and yabis in second degree.^{7'8'9'10}

Afa'al (Pharmacological actions mentioned in Unani Medicine):

Leaf:Muraqqiq (Diluent) Mufattih-e-suddah (Deobstruent) Mulattif (Demulcent)^{7'8'9'10}

Fruit:Muraqqiq (Diluent) Mufattih-e-suddah (Deobstruent) Mulatiff (Demulcent) Haliqshar (Hair remover)^{7'8'9'10}

Root: Jali (Detergent), Mujaffif (Desiccant), Mulattif (Demulcent), Musakhkhin (Calorific), Munaffis-e-balgham (Expectorant), Muhallil (Resolvent), Muqawwi (Tonic), Mudir-e-boul (Diuretic), Mushil (Laxative).^{7,8,9,10}

Therapeutic uses (Uses as per Unani Literature)

Whole plant is used to treat Adenopathy, Ague, Asthma, Bronchitis, Carbuncles, Cholera, Colic, Cough, Delirium, Fertility, Headache, Splenomegaly, Paralysis, phthisis, Snake bite. (Gupta, 2003). Plants is also used in venereal diseases.¹⁹ The whole plant of *Bryonia lacinosais* recommended traditionally for inflammation, inducing diuresis and as tonic¹⁶. Chloroform extract showed anti-inflammatory activity.²⁶ The plant is fetid, depurative, tonic and is useful in cough, flatulence, skin disease, inflammation and general debility and useful in psoriasis. Plant used as a bitter tonic and febrifuge.^{16,27} **Leaves:** The leaves of the plant are used as an ingredient along with Bengal gram flour in a special dietary preparation of the tribal Chhattisgarh as a tonic²⁵. **Stem:** stem of Fashra work as Stomach tonic (muqawwi-e-maeda). The newly formed stem along with branches are very effective as Diuretic (mudir-e-boul) and Laxative (mushil). The stem is also help ful as Galactagogue (mudir-e-laban) and in spermatogenesis if we used this along with AabGandam **Root:**Tila of root along with sirka is effective in skin diseases such as jarb, Psoriasis (Taqashshur-e-jild) The root of fashra can be used for treatment both internally and externally in the form of zimad and tila. The extract of beekhFashra is very helpful in treating splenic diseases such as Splenitis (warm-e-tihal), salabt-e-tihal. Joshanda of beekh can be given for musqit-e-janin, mukhrij-i-janin, mukhrij-i-janin wo mashima & munaq-i-rahem. zimad of root Fashra along with salt is effective for qurroh-e-qabeesa and qurroh-e-khaironia and along with Roghan-e-zaitoon, it is effective for piles, fistula and even in fractured. zimad made from beekh Fashra and sharab is also gives for strength to mustarkhiaaza. Tila made from beekhFashra with Arad karasna and Hulba (Trigonella) used as skin cleanser. Application of tila made from beekh Fashra gives beauty to face for whole day. Root is also used as tiryaaq (antidote). Roots are used for treatment of Asthma. **Fruit:** Fruit of Fashra also used both internally and externally in many skin diseases such as jarb, Psoriasis (Taqashshur-e-jild). zimad of fruit is used as hair remover(haliq-e-shaa'ar).^{7,8} **Seeds:** Used for vaginal dysfunction, as a fertility promoting drug^{5,12}. The seeds are used for increasing sperm count also as an Aphrodisiac. (Parag et al., 2013)

Muzir (Side effect): Jigar (liver) or Tihaal (spleen)^{7,8}

Musleh (corrective): Revandchini (*Rheum emodi*) or kateera (*Cochlospermum gossypium Dc*)

7⁸

Badal (substitute): Daroonjaqrabi (*Doronicum hookeri*) jautari (*Myristica fragrance*)^{7⁸}

Miqdar-e-khurak (dose)

Leaf- 7gms; Fruit- 7gms; Root- 4gms.^{7⁸}

Photochemical constituents:

The different parts of the *Bryonia laciniosa* L. have same chemical constituents. The whole plant contains *punicic acid*, Goniotalamin, the fiber Glucomannan. The main chemical constituent present in the plant is bitter component Bryonin²⁴. The leaves, stem, fruit, seed, and root contain alkaloids, carbohydrates, phytosterols (Goniotalamin), glycosides, phenolics, tannins, fixed oils and fatty acid (*punicic acid*). But the root showed the absence of saponins and flavonoids^{22²⁸29}. The polysaccharides (Glucomannan) and fatty acids (*punicic acid*) were isolated from the pulp part of the plant ³⁰. However, detailed studies on the phytochemical screening of the plant is not reported yet.

Glucomannan: Extraction of defatted and decolorized seeds of *Bryonia laciniosa* with 1% aqueous acetic acid yielded a polysaccharide material, having D-glucose and D-mannose in the molar ratio of 1.00:1.01. Hydrolysis of the fully methylated seed gum furnished 2,3,4,6-tetra-Omethyl-D-glucose and 2,3-di-O-methyl-D-mannose in equimolar ratio. Partial hydrolysis of the polysaccharide furnished three oligosaccharides namely; epigentiobiose, mannobiose, and mannotriose along with the component monosaccharides.³¹

Goniotalamin: Goniotalamin, a natural occurring styryl-lactone is a novel compound present in the whole plant of *Bryonia laciniosa* with putative anticancer activities. Ashik Mosaddik M et al., reported the presence of goniotalamin in *Bryonia laciniosa*. They extracted the whole plant powder (750 g) with methanol in a Soxhlet apparatus. The MeOH extract was subjected to fractionation with petroleum ether (50 ml), chloroform (50 ml) and ethyl acetate (40 ml) successively. From the ethyl acetate fraction goniotalamin (58 mg) was isolated by washing with diethyl ether followed by recrystallization.^{31³²}

Arabino glucomannan: It is a polysaccharide material, having d-glucose, d-mannose and larabinose in the molar ratio of. 5.00:3.01:4.00. It is yielded from the extraction of the pulp of ripe berries of *Bryonia laciniosa* with 1% aqueous acetic acid. Singh et al.,(2009) evaluated the

polysaccharide *Arabino glucomannan* for the microbial activity and was found to be active against *Escherichia coli* with a minimum dose of 6.25 mg/mL³¹.

Reported Pharmacological activities of Fashra (*Bryonia laciniosa* Linn) From various reported studies, it was found that the *Bryonia laciniosa* L plant is associated with various therapeutic and pharmacological properties. Some of the studies are described below.

Antimicrobial: The ethanolic extract of the leaf, stem, seed and fruit of *B. laciniosa* L plant was examined for antimicrobial activity against different pathogenic microorganisms by the agar well diffusion method. From this study, it was concluded that *B. laciniosa* plant has been used as an antimicrobial agent³³. The aqueous extract of the polysaccharides component isolated from the *B. laciniosa* leaf was examined for the antibacterial activity against *Staphylococcus aureus*, *S. pyogenes*, *E. coli* and *K. aerogenes*. The extract showed antibacterial activity against *E. coli* at a minimum dosage of 6.25 mg/ml³⁴.

Analgesic: The alcoholic extract of the dried aerial parts of *B. laciniosa* was examined for analgesic activity in the mice model using Eddy's hot plate analgesio meter. Results showed a significant analgesic activity after 30 to 60 minutes when compared with the standard drug.³⁵

Antidiabetic: The ethanolic extract and the saponin fraction of the *B. laciniosa* seeds were evaluated for the antidiabetic activity in neonatally streptozotocin-induced diabetic rats for 10 weeks. Results showed a significant reduction in the glucose level, cholesterol, triglycerides, low-density lipoprotein, high-density lipoprotein, serum creatinine, serum urea and decline in the aspartate transaminase and alanine transaminase activities was also observed. Also a significant increase in catalase, superoxide and levels of glutathione was noticed in n-STZ diabetic rats³⁶.

Anti-asthmatic: The alcoholic extract of the plant was evaluated for the anti-asthmatic activity by mesenteric mast cell count by the Atopic allergy method in rats. The number of intact and disrupted mast cells, in ten randomly selected fields for each tissue, was counted. Results showed an increase in granulation percentage in *B. laciniosa* treated samples compared to the control group of samples³⁷.

Antioxidant: The chloroform extract of the *B. laciniosa* fruits was examined to evaluate in vitro antioxidant activity using DPPH (1.1-diphenyl-2-picryl-hydrazil, ABTS, hydrogen peroxide and FRAP assay. Results showed a degree of reduction of absorbance which was

recorded using UV-Vis spectrophotometer at 517 nm where ascorbic acid (AA), 95% ethanol and DPPH solution were used as standard and control samples respectively^{38, 39}.

Androgenic: The ethanolic extract of *B. laciniosa* seeds was examined for the androgenic activity against the male albino rat model. The groups of male albino rats were orally administered with the plant extract at a dosage of 50, 100 and 150 mg/kg body weight per day for 28 days. Results showed an increase in body weight, prostate, seminal vesicle, epididymis and weight of testis. A significant increase in sperm count, fructose level, serum testosterone, luteinizing hormone levels and spermatogenesis was also observed.⁴⁰

Anticancer or Cytotoxic activity: Alpana S Mogheet al.,(2011) evaluated the water, methanol and chloroform extracts of *B.laciniosa* leaves were tested on human cancer and normal cell lines using three in vitro cytotoxicity assays i.e cell viability, SRB and clonogenic potential. The effect was compared with that of standard anticancer drugs doxorubicin and vincristine. The results thus show that aqueous extract of *B. laciniosa* leaves possess cytotoxicity to cancer cells and are able to kill all cancer cells without leaving residual population.⁴¹

Antipyretic activity: Sivakumar T et al., (2004) evaluated methanol extract of the leaves of *Bryonia laciniosa* (MEBL) for anti-pyretic activity. MEBL was evaluated for anti-pyretic activity by normal body temperature and yeast-induced hyperpyrexia. The results of this study suggest that the MEBL has significant antipyretic activity.⁴²

Anti-inflammatory activity: The chloroform extracts of the *B. laciniosa* leaves were evaluated for anti-inflammatory activity against carrageenan, dextran, serotonin and histamine-induced rat paw oedema and cotton pellet induced granuloma (chronic) models in rats. The oral administration of the plant extract in the mice model was performed by carrageenan peritonitis test. Results showed significant anti-inflammatory activity of the plant extract against the mice model at a dosage of 50,100 and 200 mg/kg in a dose-dependent manner. The extract showed maximum inhibitory effect (52.4%) at a dosage of 200 mg/kg after 3 hr. of drug treatment in the animal model while the standard drug showed 62.1% of inhibition. In the case of dextran-induced paw oedema, the chloroform extract exhibits significant inhibition (34.4, 43.2, 52.1%) in a dose-dependent manner as compared to the control group. In histamine and serotonin-induced paw oedema, 54.9 and 52.3% of inhibition was exhibited by the chloroform extract at a dosage of 200 mg/kg whereas 59.8 and 59.5% of inhibition were shown by indomethacin. In the cotton pellet-induced granuloma (chronic

model), the decreased rate of granuloma tissue was exhibited by CEBL (chloroform extract of *B. laciniosa*) (200 mg/kg) at 50.1 and 57.3% respectively. The inhibition of peritoneal leukocyte migration at a dosage of 50, 100 and 200 mg/kg was also inhibited by CEBL.²¹

Anti-Epileptic Activity Jayarama Reddy, et al. evaluated the 70% alcoholic extract of whole plant of *Bryonia laciniosa* on anticonvulsant activity by delaying the onset of MES induced seizures and protecting treated mice from mortality induced by seizures. The results suggest that % reduction of extensor phase was less (39.27) in *B. laciniosa* treated group when compared to the group treated with Carbamazepine (95.58) which reveals that there was significant increase in anticonvulsant activity in the case of *B. laciniosa* treated group.³⁵

DISCUSSION:

It is an attempt of updating the recent phyto-pharmacological profile of the drug and revealing the medicinal literature mentioned in Unani classical text about fashra. Detailed review on Fashra suggests that, based upon the capable pharmacological activity of the drug its indication has been detailed in the classical texts of USM. Several other pharmacological actions mentioned in Unani text have been validated. Reported Pharmacological activity on Fashra are analgesic, anti-inflammatory, anti-asthmatic, anti-convulsant, anti-tumour, anti-oxidant, anti-hyperglycemic, anti-microbial, androgenic effect. These validations of classical claim and reported pharmacological activity suggest that Fashra is a very potent pharmacologically active plant and future research work should be directed in analyzing these properties by in vivo/in vitro experiments and clinically in a structured scientific method.

CONCLUSION:

The present review reveals that the drug *Fashra (Bryonia laciniosa Linn)* is an effective in treatments of various ailments and recommend that further phytochemical, clinical and advance research should be done on this very promising traditional medicinal plant for the benefit of mankind.

REFERENCES

1. Meenal S, kubde S, Khadabadi S, Farooqui IA, Deore SL. Report and Opinion. 2010; 2(12):24-31.
2. Srivastav S, Singh P, Mishra G, Jha KK, Khosa RL. *Achyranthes aspera*-An important medicinal plant: A review. J Nat Prod Plant Resour. 2011;1(1):1-4.
3. Kumari S, Shukla G, Rao AS. The present status of medicinal plants-Aspects and prospects. International Journal of Research in pharmaceutical and Biomedical sciences. 2011;2(1):19-23.
4. Panda H. Handbook on herbal medicines. Asia Pacific Business Press Inc.;2004.

5. Wallis TE (1967). Text Book of Pharmacognosy 5th Edition, London. J and A. Churchill Ltd. pp. 680-698.
6. Hooker.J.D, Flora of British India;vol 2,623.
7. Azam KM,Muheet-e-Azam(urduTransalation),vol III.NewDelhi,CCrum Ministry Of Health and Family Welfare.2014,260-263.
8. Ghani MN. Khazain-ul-advia; Idara kitab us shifa; India: 2008 P.964-965.
9. IBN-al-Baytar Z, Abdullanh DBA. Al-JamilimufadatAladviyawalAghziyaVol.III (Urdu translation) Central Council of Research in India, New Delhi, pp. 349-350.
10. Ibn Sina.Alqanoon Fit Tib (Urdu translation by Kantoori GH), Ejaz publication house, New Delhi; 2010. p.180-181.
11. Dymock W, Warden CJ, Hooper D. Pharmacographia Indica: A history of the principal drugs of vegetable origin, met with in British India. K. Paul, Trench, Trübner& Company, Id; 1893.;vol 2;92- 93.
12. Nadkarni K, Nadkarni AK. Indian Materia Medica, Popular Prakashan Pvt. Ltd., Bombay. 1976;1:799
13. Chopra RN. Glossary of Indian medicinal plants.India:NISC;1996 p42.
14. Ehsan B, Vital A, Bipinraj N. Antimicrobial activity of the ethanolic extract of Bryonopsislaciniosa leaf, stem, fruit and seed. African Journal of Biotechnology. 2009;8(15).3565.
15. Vsingh,TulikaMalviya.Carbohydrate polymers,2006;64(3);48-3.
16. Kirtikar KR, Basu BD. Indian Medicinal Plants, The Indian Press, Allahabad, 1988; 2: 1158-61.
17. Deepak Acharya, Shivlingi: A Common but Important Twine in Patalkot. Ame Chronicle, Dec 18: 2006.
18. Alekhya M, Prathiba G, Nazmi A, Sultana R, Dayala D. Journal of Scientific Research in Pharmacy Research Article.
19. khare cp, plants IM (An illustrated dictionary) herbals,New Delhi p103.
20. Rasagna, et al. Int J Pharm 2012; 2(3): 542-54.
21. Sud K, Sud S. A Scientific Review on Shivlingi Beej (*Bryonia laciniosa*): A Mystical Ethno-Medicine for Infertility. European Journal of Biomedical. 2017;4(8):1098-2.
22. Patil SV, Naik JB, Ghotane RB, Patil PB. Isolation, phytochemical investigation and pharmacological screening for seed extract of *Bryonia lacinosalinn* belonging to family cucurbitaceaE.Volume 11, Issue 12, 1652-1668.
23. LH. B. The standard cyclopedia of horticulture. Vol. I. New York: The Mac Millan Company; 1950.453-83.
24. Shashikala M AND Mamata Shah pharmacognostical and phytochemical analysisofdifferentpartsof*Bryonia lacinosal*.departmentofpharmacognosy, gokararjurangaraju college of pharmacy, hyderabad, india. 2department of pharmacognosy, l. m. college of pharmacy, ahmedabad,india.p:148-155.
25. Pankaj Oudhia et al; Research note on the traditional healers of Gulgul village, Chhattisgarh, 200).
26. Pullaiah T. Encyclopaedia of world medicinalplants; India: Regency publications; VOLUME 2 P NO :807.
27. Sheth A. the herbs of Ayurveda, published by Alankar, 1157. Bhavnagar, Gujarath. 2005:470.
28. Singh V, Malviya T. A non-ionic glucomannan from the seeds of an indigenous medicinal plant: Bryonialaciniosa. Carbohydrate polymers. 2006 May 30; 64(3):481-3.
29. Shah MB. High resolution-mass spectrometry (HR-MS) analysis of *Bryonia laciniosa* L. Indian Journal of Natural Products and Resources (IJNPR)[Formerly Natural Product Radiance (NPR)]. 2022 Feb 22;12(4):617-24.
30. Paul V, Hem Raj KK. Chemical investigation of Bryonopsislaciniosa fruit oil. Proceedings of the National Academy of Sciences of the USA. 1960; 29(Pt 3):218-21.
31. Rasagna, et al. Int J Pharm 2012; 2(3): 542-54.
32. Mosaddik MA, Haque ME. Cytotoxicity and antimicrobial activity of goniotalamin isolated from Bryonopsislaciniosa. Phytotherapy Research: An International Journal Devoted to Pharmacological and Toxicological Evaluation of Natural Product Derivatives. 2003Dec;17(10):1155-7.
33. Ehsan B, Vital A, Bipinraj N. Antimicrobial activity of the ethanolic extract of Bryonopsislaciniosa leaf, stem, fruit and seed. African Journal of Biotechnology. 2009; 8(15):3565-3565.
34. Colston MJ, Cox RA. Mycobacteria, molecular biology and virulence. Mycobacterial Growth Dormancy. 1999; 1:198-219.
35. Reddy J, Gnanasekaran D, Vijay D, Ranganathan TV. In vitro studies on anti asthmatic, analgesic and anti convulsant activities of the medicinal plant *Bryonia laciniosa*. Linn. International Journal of drug discovery. 2010; 2(2):01-10.

36. Patel SB, Santani D, Patel V, Shah M. Anti-diabetic effects of ethanol extract of *Bryonia laciniosa* seeds and its saponins rich fraction in neonatally streptozotocin-induced diabetic rats. *Pharmacognosy Research*. 2015 Jan; 7(1):92-99.
37. Aseena R, Zaidi SZ, Rasheed N, Mohammad AS. Anti-Asthmatic, Analgesic and Anti-Convulsant activities of the medicinal plant *Bryonia laciniosa*. *Linn. Contributors. Asian Journal of Pharmaceutical Research*. 2017 Dec 1;7(4).
38. Sanjeevkumar CB, Londonkar RL, Kattagouda UM, Tukappa NA. Screening of in vitro antioxidant activity of chloroform extracts of *Bryonopsis laciniosa* fruits. *International Journal of Current Microbiology and Applied Sciences*. 2016;5(3):590-7.
39. Sanjeevkumar CB, Londonkar RL, Kattagouda UM. In vitro antioxidant anti-inflammatory and cytotoxicity activities from Hexane extract of *Bryonopsis laciniosa* fruits. *International Journal of Phytomedicine*. 2018 Apr 30;10(1):23-9.
40. Chaudhari VM, Avlaskar AD. Role of shivlingi in infertility. *J Homeopath Ayurv Med*. 2013.
41. Alpana S Moghe, Sudha G Gangal, priya R Shilkar. *Ind J Nat Products and Resources*, 2011; 2(3): 322-9.
42. Sivakumar T, et al. *Am J Chinese Med*. 2004; 32(4): 531-9.

