

National Journal of Research in Ayurved Science

Analytical study of Dāruharidrā (Berberis aristata,DC) with special reference to Hepatitis (Bahupittakāmalā).

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Abstract : Dāruharidrā(Berberis aristata,DC) has been described by various ācārya. It is used in kāmalā and various other diseases. Dāruharidrā(Berberis aristata,DC) has tikta rasa ,vipāka katu ,rukṣya guna ,uṣṇavîrya and lèkhana karma which is why its plays a major role in bahupittakāmalā (Hepatitis). The literature review of Dāruharidrā is explained in this article.

Keywords: Bahupittakāmalā (khoṣṭhaśākhāshrîtakāmalā) , Dāruharidrā, , Hepatitis.

Introduction:

“त्रिफलाया गुडुच्या वा दाव्या निम्बस्य वा रसम् ।

शीतं मधुयुतं प्रातः कमलार्तः पिबेन्नरः ॥ ”

(च.चि १६/६३)

Carakācārya explain Dāruharidrā (Berberis aristata,DC) in bahupittakāmalā (khoṣṭhaśākhāshrîtakāmalā). It has references in many granthās with

respect to bahupittakāmalā. It is useful in a vast range of diseases. It has properties like cholegogue, astringent, hepato-stimulant and hepato-protective which are useful in treating anorexia, dysentery, hepatitis and liver disorder.

AIM:

Analytical study of Dāruharidrā (Berberis aristata,DC) with special

reference to Hepatitis
(Bahupittakāmalā).

OBJECTIVES

- To review of Dāruharidrā (Berberis aristata, DC) by literature.
- Pharmacognostic, pharmacodynamics and pharmacotherapeutic study of Dāruharidrā (Berberis aristata, DC) .

MATERIAL & METHODS :

Literature review:

Drug Review: By Ayurved

Caraka has included this drug in following Gaṇas, besides he has mentioned it in the treatment of Prameha, Atisār, Arśa, Grahanî.

लेखनीय गण-

मुस्तकुष्ठहरिद्रादारुहरिद्रावचा.....च.सू. ४/१८

अर्शोघ्न गण-

कुटजबिल्वचित्रनागरातिविषाभयाधन्वयासक

दारुहरिद्रावचा.....। च.सू. ४/१८/१२

कण्डुघ्न गण-

चन्दननलदकृतमालनक्तमालनिम्बकुटजसर्षपमधुक

दारुहरिद्रा.....। च.सू. ४/१८/१४

तिक्तस्कन्ध द्रव्य-

.....हरिद्रादारुहरिद्रा...वृश्चीरपुनर्वामहासहाक्षुद्रस्

हाकषायैश्च ॥ च. वि. ८/१३५

.....निम्बतुम्बुरूकुटजहरिद्रादारुहरिद्रामुस्तमूर्वा..

॥ च.वि. ८/१४३

Suśruta

He has mentioned Dāruharidrā in Vrana chikitsā, Sadyovrana, Gandmālā, Kuṣṭha, Ślîpad, Kṣhudra Roga, Sarpdanśa, Vidrhadî, Visarp, Netra-roga and Jwar. Included in following gaṇa.

हरिद्रादि गण-

हरिद्रादारुहरिद्राकलशीकुटजबीजानी मधुकं चेति

॥ सु.सू. ३८/२७

अञ्जनदि गण-

अञ्जनरसाञ्जननागपुष्पप्रियङ्गुनीलोत्पलनलदनलि
नकेशर.....॥ सु.सू. ३८/४१

मुस्तादि गण -

मुस्ताहरिद्रादारुहरिद्राहरीतक्यामलकबिभीतककुष्ठह

ैमवतीवचापाठाकटुकरोहिणीशार्ङ्गैश्चाति

विषाद्राविडीभल्लातकानि चित्रकश्चेति ॥

सु.सू. ३८/५४

लाक्षादि गण-

लाक्षारेवतकुटजाश्वमारकटफलहरिद्राद्वयनिम्बसप्त

च्छदमालत्यस्त्रायमाणा चेति ॥ सु.सू. ३८/६४

NIGHAMTŪ PERIOD

Different Nighamtū have included

Dāruharidrā in different varga as

follows.

1. Bhāvaprākaśa Nighamtū -
Haritakyādi Varga
2. Dhanvantarî Nighamtū -
Guducyādi
3. Rāja Nighamtū -
Pippalyādî Varga
4. Śaligrāma Nighamtū -
Aṣṭavarga
5. Kaiyadev Nighamtū -
Auṣadhiparga
6. Abhinav Nighamtū -
Haritakyādi Varga
7. Priya Nighamtū -
Śatapuṣpādi
8. Madanpāl Nighamtū -
Abhayādi
9. Śodhala Nighamtū -
Guducyādi



10. RājDhanvantarî Nighamtū-
Pippalyādi

11. Ādarśa Nighamtū-
Dāruharidrādi

CLASSIFICATION

Dravya vargikaraṇa - Dāruharidrā

1. Kāryadravya
2. Cetandravya - Ātmacetana
3. Utpattîbheda - Āpya
4. Prayogabheda - Auṣadhidravya
5. Yonibheda - Audbhida
6. Rasabheda - Tikta, Katu
7. Vipākabheda - Katu
8. Vîryabheda - Uṣṇa
9. Doṣakarmabheda - Kaphapittahara
10. Udbhavabheda - Jangal
11. Akrotîbheda - Gulma
12. Vayobheda - Bahuvarṣāyu

RASA VÎRYA VIPAKA OF DĀRUHARIDRĀ ĀYURVEDĪC TEXT

RASA MÎMAMSĀ

RASA	B N	R N	Ś N	D N	K N	AB N	M N	A N	C S	S S	V A G	S N
KATU	✓	✓	✓	-	✓	-	✓	-	✓	✓	-	✓
TIKTA	-	✓	✓	✓	✓	✓	-	✓	✓	✓	-	✓

VÎRYA MÎMAMSĀ

VÎRYA	B N	R N	Ś N	D N	K N	AB N	M N	A N	C S	S S	V A G
UṢṬNA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-

VIPĀKA MÎMAMSĀ

VIPĀKA	R N	D N	Ś N	AB N
KATU	✓	-	✓	✓

GUṆA OF DĀRUHARIDRĀ

GUNA	B N	Ś N	D N	K N	AB N	M N	A N	C S	VA G
LAGHU	-	-	-	✓	-	-	-	-	-
RUKṢA	-	-	✓	-	-	-	-	-	-

ACTION OF DĀRUHARIDRĀ ON DOṢA

DOṢA	B N	R N	Ś N	D N	K N	AB N	M N	P N
VĀTAHARA	-	-	-	-	-	-	-	-
PITTAHARA	-	-	-	-	-	✓	-	✓
KAPHAHARA	-	-	✓	-	-	✓	-	✓

PRAMUKHA KARMA OF DĀRUHARIDRĀ

KARMA	B N	R N	S N	Ś N	D N	K N	AB N	M N	A N	P N
Vraṇa ropaka	-	✓	✓	✓	-	✓	✓	-	-	✓
Kandughna	-	✓	✓	✓	-	-	✓	-	-	-
Rakta prasādana	-	-	-	-	-	-	-	-	-	✓

ROGAGHNAṬĀ OF DĀRUHARIDRĀ

VYĀDHĪ	B N	R N	S N	D N	K N	AB N	P N	Ś N
Prameha	-	✓	✓	✓	-	✓	✓	✓
Karṇaroga	✓	✓	✓	✓	✓	✓	-	✓
Netraroga	✓	✓	✓	✓	✓	✓	-	✓
Mukharoga	-	-	✓	✓	-	✓	-	-
Śoṭha	-	-	✓	-	-	✓	-	-
Kuṣṭha	-	✓	✓	✓	-	✓	✓	✓
Vraṇa	-	✓	-	✓	-	-	-	-
Visarpa	-	✓	-	-	-	-	-	✓
Yakruta roga	-	-	-	-	-	-	✓	-
Viṣa	-	✓	-	-	-	-	-	-

PHARMACODYNAMICS

(RASAPAMCAKA)

The Rasapamcaka of Dāruharidrā stated as follows

Rasa	- Tikta, Katu
Vipāka	- Katu
Vîrya	- Uṣṇa
Guṇa	- Laghu, Rukṣa

ACTION ON DOṢA, DHĀTU, MALA , STROTSA

Action on Doṣa

Kaphahara - By its Tikta, Katu Rasa;
Katu Vipāka, Uṣṇa Vîrya Kapha śāmaka

Pittahara - Pittahara by Tikta rasa,
Laghu, Rukṣa guṇa

Action on Dhātu

Rasa-Rakta - Kuṣthaghna, Kandughna,
Jvaraghna, Visarpahar

Action on mala

Purīṣa - Mruduvirecana,

Action on Strotasa

Medavaha - Pramehaghna.

Śukravaha - Guhyaroghna.

Annavaha - Rocana, Agnivivardhana.

Mūtra - Pramehaghna

Drug Review: By Mondern
N J- R A S

Botanical Aspect :-



Kingdom	Plantae
Division	Phanerogamea
Subdivision	Angiospermea
Class	Dicotyledonae
Sub-Class	Polypetalae
Group	Thalamiflorae
Natural Order	Ranales
Family	Berberidaceae
Genus	<i>Berberis</i>
Species	<i>Aristata</i>

EXTERNAL MORPHOLOGY OR MACROSCOPIC DESCRIPTION

Berberis aristata D.C.

Distribution : In Himalaya, from Chota Bengal to Nepal, upto 6,000-10,500 ft.

Habitat- An erect spiny shrub, ranging between 1.80-3.6 meters in height, stem 20 cm. diameter, wood hard and yellow; bark, yellow to brown-blackish from outside and deep yellow from inside, removable in longitudinal strips by hand; spines (which, in fact, are modified leaves), three-branched and 1.5 cm long.

Leaves- In tufts of 5 to 8, phyllotaxy verticillate, lanceolate, simple spiny, toothed, leathery, sessile, acuminate, with reticulate pinnate venation, 4.9 cm. long, 1.8 cm.

broad, deep green on the dorsal surface and light green on the ventral surface.

Flowers- Stalked, yellow, complete, hermaphrodite, cyclic, actinomorphic, perigynous, the average diameter of a fully opened flower being 12.5 mm;

Fruits- Globose to ovoid usually covered with bloom as in plums, fruit color, aconite violet 937; colors of pulp and juice, plum purple.

Seeds- 2 to 5, varying in color from yellow to pink, each weighing 25 mg and being 29 microlitres in volume.

MICROSCOPIC DESCRIPTION

Stem -Shows rhytidoma with cork consisting of 3-45 rectangular and squarish, yellow coloured, thin-walled cells, arranged radially; sieve elements irregular in shape, thin

walled, a few cells containing yellowish-brown contents; phloem fibres arranged in tangential rows, consisting of 1-4 cells, each fibre short thick-walled, spindle-shaped, lignified having wide lumen; half inner portion of rhytidoma traversed by secondary phloem rays; phloem rays run obliquely consisting of radially elongated parenchymatous cells, almost all phloem ray cells having single prismatic crystals of calcium oxalate, a 34 few cells of rhytidoma also contain prismatic crystals of calcium oxalate; stone cells also found scattered in phloem ray cells in groups, rarely single, mostly elongated, a few rounded, arranged radially, traversed by multi seriate phloem rays; sieve elements arranged in tangential bands and tangentially compressed cells

alternating with single to five rows of phloem fibres, phloem fibres short, lignified, thick-walled having pointed ends; secondary xylem broad consisting of xylem vessels, tracheids, xylem fibres and traversed by multi seriate xylem rays; xylem vessels numerous, small to medium sized, distributed throughout xylem region in groups or in singles, groups of vessels usually arranged radially; Powder - Yellow; shows mostly fragments of cork cells, sieve elements, yellow coloured phloem fibres entire or in pieces, stone cells in singles or in groups, numerous prismatic crystals of calcium oxalate, xylem vessels having spiral thickening, thick-walled, lignified xylem fibres and ray cells.

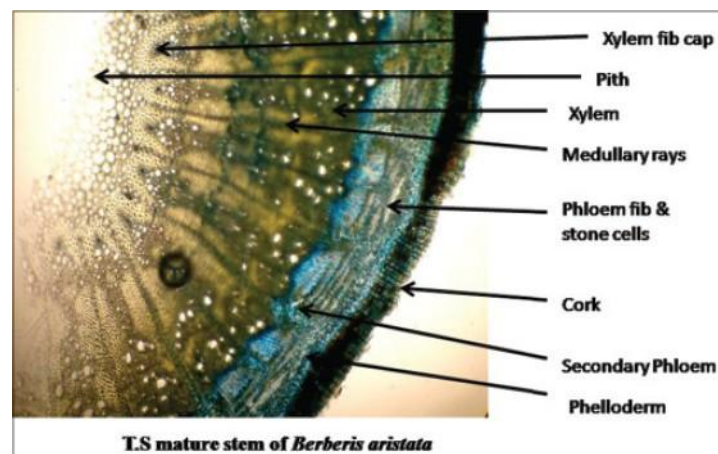


Plate 2: Mature stem

ALKALOIDS PRESENT DARUHARIDRA (BERBERIS ARISTATA, DC).

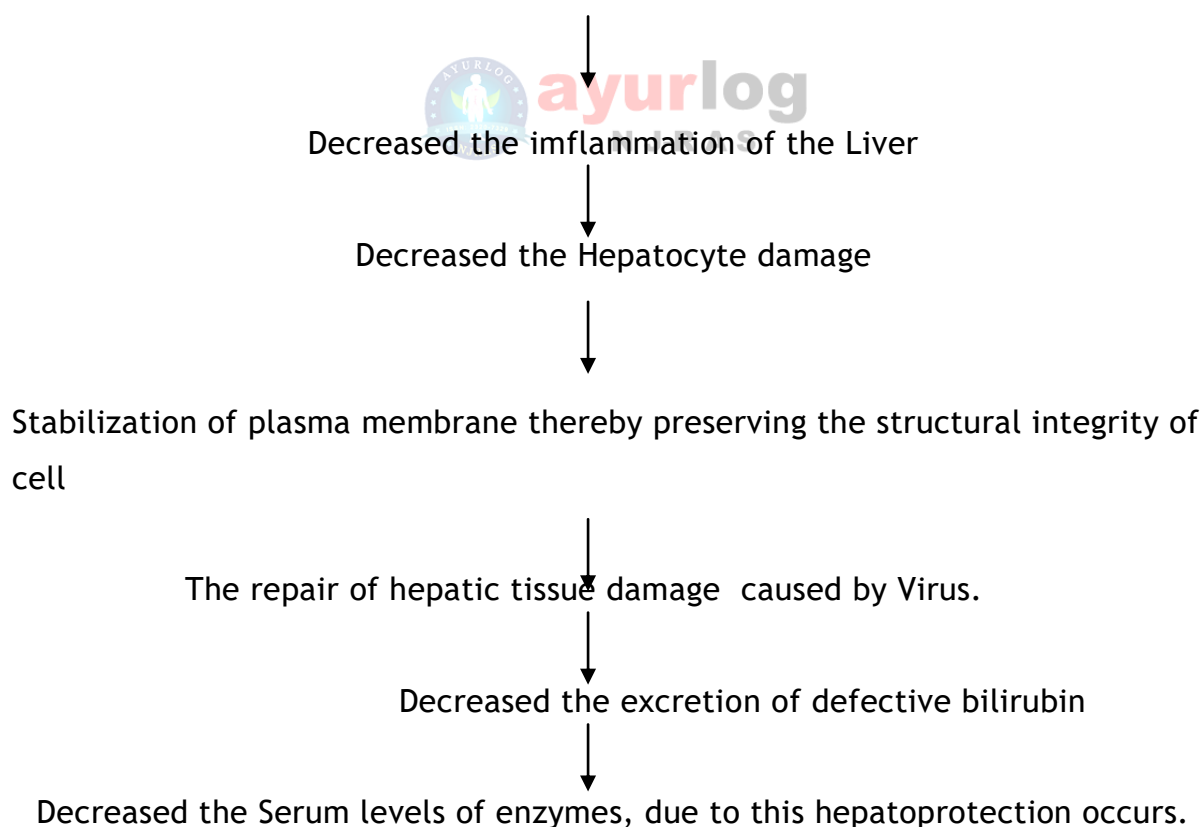
- | | |
|--------------------------|-------------------|
| 1. Berberine, | 2. Berbamine, |
| 3. Aromoline, | 4. Karachine, |
| 5. Palmatine, | 6. Oxycanthine, |
| 7. Jatrorrhizine, | 8. Columebamine, |
| 9. Oxybarberine, | 10. Tetra- |
| hydropalmatine, | 11. Oxycanthine, |
| 12. Taxilamine, | 13. Oxybarberine, |
| 14. Tetra-hydropalmatine | |

PHARMACOLOGICAL ACTIVITIES

Hypoglycemic, Anti-cancer, Gastro-irritant, Anti fatigue, Anticoagulant, Antipyretic, Local-anesthesia, Anti protozal, Antituberculosis, Anti-bacterial, Anti-tumor, Hypotensive, Antiinflammatory, Anti-trachoma, CNS-depressant.

Hepatoprotective activity

Berberine shows Antipyretic, Antiinflammatory, Anti viral, Antibacterial activities, Immunostimulatory effects.



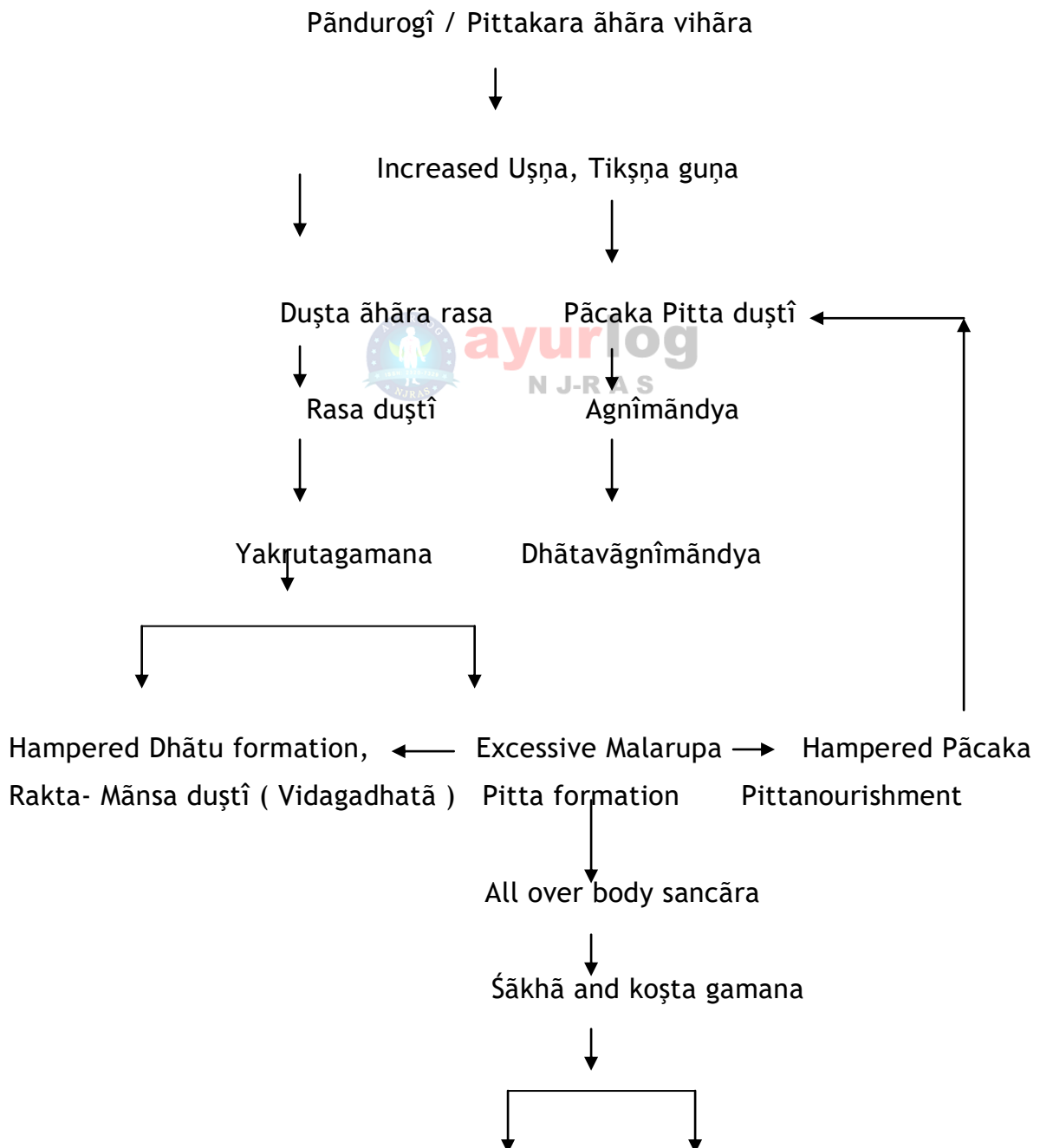
Berberine shows many pharmacological activities like anti

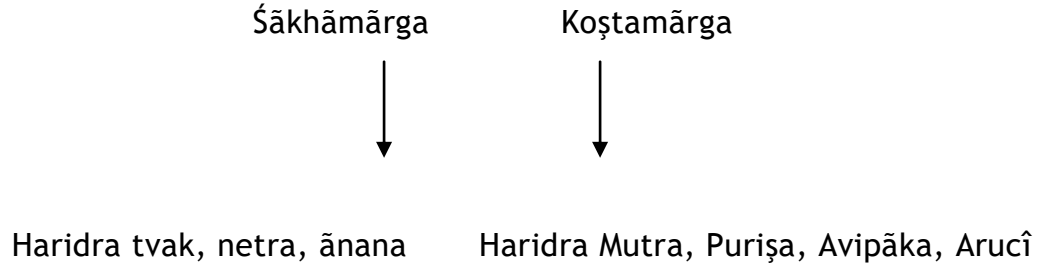
inflammatory, anti pyretic, anti fatigue, anti bacterial, anti protozal

and also shows Immunostimulatory effects. When Dāruharidrā kwāth is rich content of Berberine and given to the patients of Hepatitis it decreased the inflammation of the liver. Due to this Decreased the Hepatocyte damage by stabilization

of plasma membrane thereby preserving the structural integrity of cell. The repair of hepatic tissue damage caused by Virus. Decreased the Serum levels of enzymes shows hepatoprotective activity of Dāruharidrā.

Hepatoprotective activity of Dāruharidrā Samprāpti of Koṣthaśākhāsrīta Kāmalā-

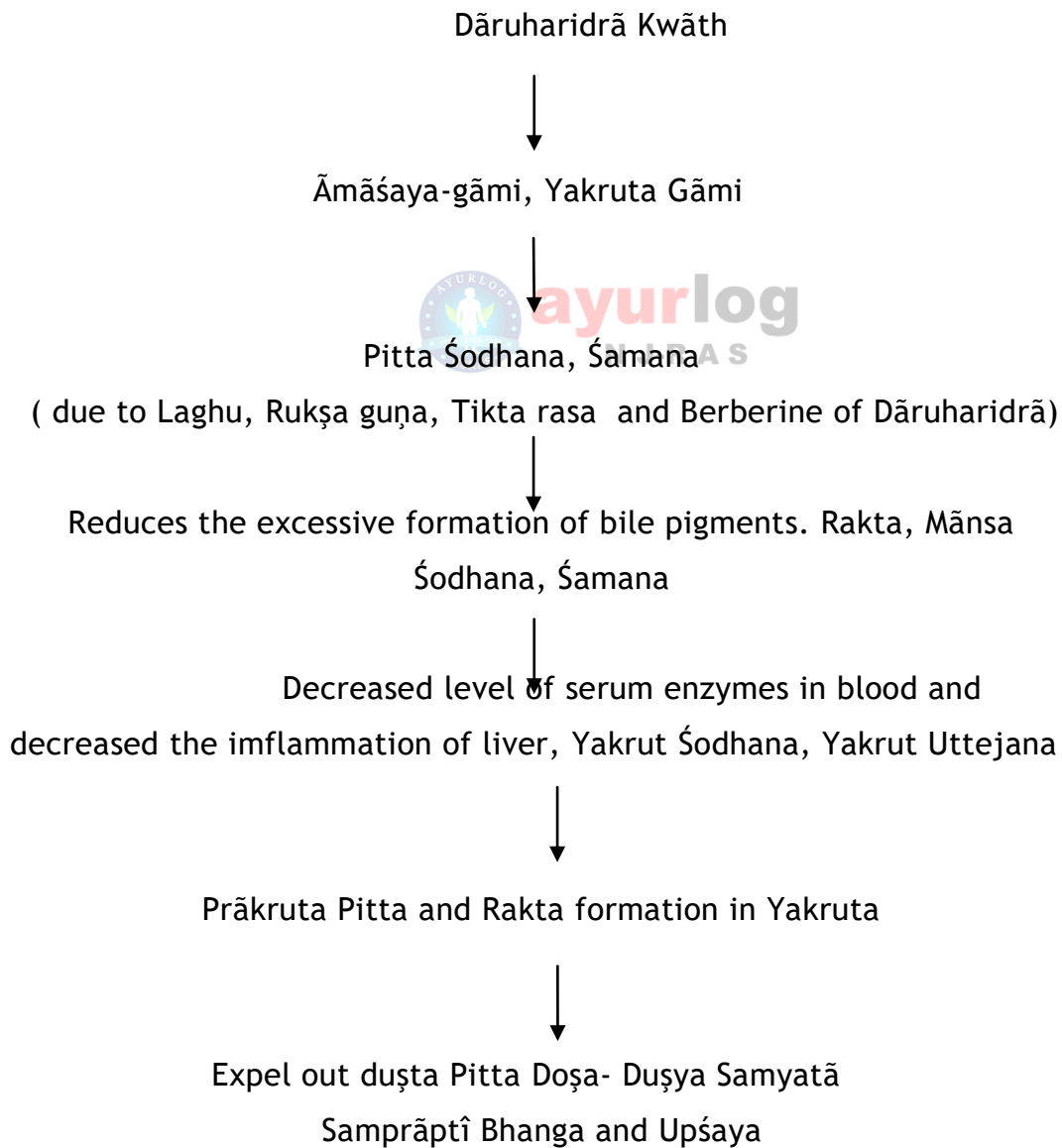




Dāruharidrā is a one of that which shows Hepatoprotective activity.

Samprāpti Bhanga action of Dāruharidrā is illustrated on flow chart given below-

Samprāpti-Bhanga



STANDARDIZATION ACCORDING TO ĀYURVEDIC PRINCIPLE

इदमेवंप्रकृत्येवंगुणमेवंप्रभावमस्मिन् देशे
जातमस्मिन्नृतावेवंगृहीतमेवनिहितमेवमुपस्कृतमन
या च मात्रया युक्तमस्मिन् व्याधावेवविधस्य
पुरुषस्यैतावन्तं दोषमपकर्षत्युपशमयति वा
यदन्यदपि चैवविधं भेषजं भवेत्तच्चाप्यनेन विशेषेण
युक्तमिति ॥ च.वि.८/८७

In Āyurveda, Standardization of drug according to some principle which stated as above. Details of above principle as follows-

इदं एव प्रकृति : (Nature and external feature of the drug)

Taste : bitter and astringent

Odour : No

Colour & appearance :- Decotion is yellowish in colour.

Stem is yellowish in colour and cylindrical in shape

एवं गुण (properties of drug)

Guna

Laghu, Rukṣa, Tikṣṇa

Rasa : Tikta, Katu

Vipāka : Katu

Vîrya : Uṣṇa

एवं प्रभावं : (Specific action of the drug) :None of action Dāruharidrā of is mentioned as Prabhāva.

अस्मिन् देशे जातम् (Habitat):

Dāruharidrā is a plant of Jāṅgal deśa.

अस्मिन् ऋतो एवं गृहितम् : (Season of growth and time of collection): It is a annual plant. It grows abundantly in Himalaya, from Chota Bengal to Nepal which has cold environment.

एवं निहितम् : (Methods of preservation):

Dāruharidrā stem are collected and dried in shade. It is stored away from sunlight.

एवं उपस्कृतम्: (Pharmaceutical

process): For the present study Dāruharidrā Kwāth is used in divided dose of 30ml 2 times in a day

अनया च मात्रया उपयुक्तम्: (Dosage):Dose of Dāruharidrā Kwāth : 30ml 2 times in a day

अस्मिन् व्याधो: (Therapeutic usages):Dāruharidrā is indicated in various diseases like Meha, Vraṇropan, Twak roga, Śoṭha, Pāṇḍu. But in present study it is used for Kāmalā (Hepatitis).

एवं विधस्य पुरुषस्य: (Person to whom it is to be administered):Dāruharidrā is indicated in all type of Prakruti especially in Pitta Kaphapradhān Prakruti.

एतावन्तं दोषपकर्षत्युपशमयति वा च: (Action on doṣa): Dāruharidrā is espeically

indicated in vitiated Kapha and Pitta doṣa

यदन्यदपि चैवविधं भेषजं भवेच्यानेते विशेष
युक्तमिति: Dāruharidrā is Dipan,
Pāchaniya and Grāhi drug.

STANDARDIZATION ACCORDING TO MODERN METHODS

Authentication was done at St. Xaviers college and standardization was done in Shri Dhootpapeshwar Pvt. Ltd. and Anchrome analytical laboratory. Standardization is divided into two-

- Pharmacognostic
- Physiological

Initially drug Berberis aristata D.C was identified and authenticated in St. Xaviers college.

Pharmacognostic

Botanical name : Berberis aristata D.C.

Part used: Stem

Colour: Yellowish

Taste : Bitter

Odour : not specific

External surface: Hard, Rough

ANALYSIS

Name of the sample : Stem of Berberis aristata D.C

Parameters	Result
Description	Stem yellow in colour, cylindrical in shape, decoction yellow in colour.
Content of Ash	9.54%
Acid Insoluble Ash	2.39%
Water Soluble Extractive	16.73%
Alcohol soluble Extractive	11.21%
Elements	
Lead (Pb)	0.7492ppm
Mercury(Hg)	Less than detectable limit.
Cadmium(Cd)	Less than detectable limit.
Arsenic(As)	Less than detectable limit.
TLC	

Sample	Berberis aristata		Dāruharidrā	
Solvent system	Chloroform			
Detection	After spraying anisaldehyde			
	Rf value	Colour	Rf value	Colour
	0.04	Grey	0.04	Grey
	0.29	Light green	0.29	Light green
	0.43	Pruple	0.43	Pruple
	0.55	Light Pruple	0.55	Light Pruple
	0.62	Purple	0.62	Purple
	0.88	Light Purple	0.88	Light Purple

No foreign matter found.

TLC AND HPTLC Finger printing studies

HPTLC of medicinal plants

The composition of the drug varies widely depending upon climate, species, geographical location and growth period, parts used in medicine, storage and preparation of therapeutic medicines.

HPTLC has been found to be very accurate technique for the analysis of herbs and their extracts because

1. Very little sample is required.
2. Preparative work can be easily done.
3. Finger printing of large number components is the presence of the sample matrix is possible.
4. Active ingredients can be qualified.

5. Many components are flurescent.

HPTLC ANALYSIS OF BERBERIS ARISTATA D.C

Procedure:

- 1) Take 200 mg powder of Berberis aristata.
- 2) Add 5 ml of methanol.
- 3) Sonicate it for half an hour after shaking it once.
- 4) Allow it to stand.
- 5) Filter supernatant fluid.
- 6) Load silica plate.
- 7) Berberis aristata : Preparation of mobile phase.
 1. n-Butanol : Ethylacetate:AA:H₂O:: 3: 5:1:1
- 8) Put silica plates in mobile phase.
- 9) Remove plates.
- 10) Dry them.

- 11) Immerse in anisaldehyde for 15 min then dry it.
- 12) Analyse them.

QUANTATIVE STANDARDS OF BERBERIS ARISTATA D.C.

- Foreign matter: Not more than 2 per cent, Appendix 2.2.2.
- Total Ash: Not more than 14 per cent, Appendix 2.2.3.
- Acid-insoluble ash: Not more than 5 per cent, Appendix 2.2.4.
- Alcohol-soluble extractive: Not less than 6 per cent, Appendix 2.2.6.
- Water-soluble extractive :Not less than 8 per cent, Appendix 2.2.7.
- As per Ayurvedic pharmacopeia of India [API- Part 1 -vol. 2]

Discussion:

- Dāruharidrā is Rasa : Tikta, Katu, Guṇa : Laghu, Rukṣa, Vīrya : Uṣṇa Vipāka : Katu and rich content of Berberine. It alleviates kapha and pitta dosas. It possesses light and dry attributes.
- In Āyurveda Dāruharidrā has diaphoretic, rejuvenating, antipyretic properties and is a bitter tonic.

- The properties like cholegogue, hepato-stimulant and astringent are useful in treating anorexia, dysentery, hepatitis and liver disorders.
- Dāruharidrā has Laghu, Rukṣa guṇamatak; Tikta Katu rasa include which helps to drava, kleda and āmshoshana of kapha and pitta doṣa in koṣṭhaśākhāśrīta kāmālā.
- Due to Tikta rasa and Berberine of Dāruharidrā, reduces the excretion of excessive formation of bile pigments.
- Due to this reduces the level of serum enzymes in blood and decreased the inflammation of liver.
- Dāruharidrā is Rakta śodhaka, tavk and mans prasādaka. Its is also yakrut uttejak and yakrut śodhana. Dāruharidrā is uṣṇa vīryātamak, but Rakta śodhaka, tvak and mans prasādaka due to their Tikta rasa.

Conclusion: Dāruharidrā helps in Samprāpti Bhanga of Bahupitta kamala due to its action on duṣṭa doṣa, duṣya and doṣa, duṣya

sammurcanā nāśana and action of Dāruharidrā on yakruta (mulasthāna) and mahāstrotasa (vyādhî udbhava sthāna) by its Tikta, Katu, Laghu, Rukṣa gunapradhān, Pitta-Śodhana and Śamana, Rakta, Mānsa Prasādaka, Yakrutgāmi, Yakrut Uttejaka.

By above review of Dāruharidrā it is conclude that Dāruharidrā is very effective in Bahiupitta Kamala.

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Conflict of Interest: Non

Article Type: Original Article

Source of funding: Nil

Cite this article:

*Analytical study of Dāruharidrā (Berberis aristata, DC) with special reference to
Hepatitis (Bahupittakāmalā).*

Pradnya Gathe –Kukade, Ashok Ramteke

Ayurlog: National Journal of Research in Ayurved Science- 2019; (7) (4): 1-17