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# Evaluation of hepato-protective activity of Dãruharidrã ( Berberis aristata,DC) with special reference to Hepatitis (Bahupittakãmalã).

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## ABSTRACT:

The main causes of hepatitis are health ignorance, increased hot and humid environment, lowering living status, unhygine causing various gastro-instestinal diseases mainly diarrheoa, viral hepatitis and many other diseases. The people are living in congested places in bad sanitation, eating roadside fast food, drinking polluted water etc. Along with hepatitis, alcoholism and alcoholic liver disorder are most leading disease in India. Carakãcãrya explain Dãruharidrã (Berberis aristata, DC)nin bahupittakãmalã (khoşthaśākhãshrîtakãmalã). It has references in many granthãs with respect to bahupittakãmalã. It is useful in a vast range of diseases. It has properties like cholegouge, astringent, hepato-stimulant and hepato-protective which are useful in treating anorexia , dysentery, hepatitis and liver disorder. This study shows Dãruharidrã is very effective in viral hepatitis.

**KEYWORD:** Bahupittakãmalã (khoşthaśākhãshrîtakãmalã) ,Dãruharidrã, , Hepatitis.

## INTRODUTION:

In Ãyurveda, Hepatitis or Jaundice can be correlated with 'Kãmalã'. In modern medical sciences, there is no conventional line of treatment regarding to hepatitis. At this stage Ãyurveda can provide suitable treatment for kãmalã' or hepatitis. With the help of Ãyurveda we can reduce the duration of illness and prevent complications also. Ayurved can be provide the evidence of Hepatitis T/t

"त्रिफलाया गुडुच्या वा दार्व्या निम्बस्य वा रसम् ।

शीतं मधुयुतं प्रातः कामलार्तः पिबेन्नरः ॥ "

( च.चि १६/६३ )

**AIM:**

Analytical study of *Dãruharidrã ( Berberis aristata,DC)* and evaluation of its hepato-protective activity with special reference to Hepatitis (Bahupittakãmalã).

**OBJECTIVES**

- Standardization of Dãruharidrã ( Berberis aristata,DC).
- Pharmacognostic, pharmacodynamics and pharmacotherapeutic study of Dãruharidrã( Berberis aristata.DC) .
- Standardization of form of the drug to be administered.
- To evaluate the hepato-protective activity of Dãruharidrã( Berberis aristata.DC) in Hepatitis (Bahupittakãmalã).

**Material & Methods :**

**DRUG REVIEW**

- Caraka has included this drug in लेखनीय गण,अर्शोघ्न गण,कण्डुघ्न गण,तिक्तस्कन्ध द्रव्य.
- Suśruta has mentioned Dãruharidrã in हरिद्रादि गण, अञ्जनादि गण,मुस्तादि गण, लाक्षादि गण.
- Aştãnga hridya - तिक्तस्कन्ध द्रव्य, शिरोविरेचनोपयोगी द्रव्ये ,असनादि, हरिद्रादि गण, मुस्तादि गण.
- Dãruharidrã has been used in Śiro-virecan, Atisãr, Grahanî, Mutraghãt, Prameha, Vidrhadî, Pãndu rog, Kãmalã, Śotha, Visarpa, Kuştha, Supta-vata, Dadru, Vatarakata, Netra-roga, Timir, Mukh-roga.

**CLASSIFICATION :**

| • **Dravya vargikarańa – Dãruharidrã** | • **<u>Botanical Aspect</u> :-** |
|---|---|
| • Kãryadraya<br>• Cetandraya – Ãtmacetana<br>• Utpattîbheda – Ãpya<br>• Prayogabheda – Auşadhidraya<br>• Yonibheda – Audbhida<br>• Rasabheda – Tikta, Katu<br>• Vipãkabheda – Katu<br>• Vîryabheda – | • **Kingdom-** Plantae<br>• **Division-** Phanerogamea<br>• **Subdivision-** Angiospermea<br>• **Class-** Dicotyledonae<br>• **Sub-Class-** Polypetalae<br>• **Group-** Thalamiflorae<br>• **NaturalOrder-** Ranales |

| | |
|---|---|
| Uṣṇa<br>• Doṣakarmabheda – Kaphapittahara<br>• Udbhavabheda – Jangal<br>• Akrutîbheda – Gulma<br>• Vayobheda – Bahuvarşãyu | • **Family-** Berberidaceae<br>• **Genus-** *Berberis*<br>• **Species-** *Aristata* |

**PHYTOCHEMISTRY**:

- Chief active alkaloid is Berberine : **BERBERINE C20H19O4N**
- **ALKALOIDS PRESENT BERBERIS ARISTATA**.
- Berberine, 2.Berbamine, 3.Aromoline, 4.Karachine, 5.Palmatine, 6.Oxycanthine, 7.Jatrorrhizine, 8.Columebamine, 9.Oxybarberine, 10.Tetra-hydropalmatine, 11.Oxycanthine, 12.Taxilamine.
- **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.

**PHARMACODYNAMICS (RASAPAMCAKA):**

- Rasa- Tikta, Katu . Vipãka – Katu. Vîrya - Uṣṇa.
- Guṇa - Laghu,Rukşa
- **Action on Doşa :**
- Kaphahara – By its Tikta, Katu Rasa; Katu Vipãka, Uṣṇa Vîrya Kapha śãmaka
- Pittahara – Pittahara by Tikta rasa, Laghu, Rukşa guṇa
- **Action on Dhãtu :**
- Rasa-Rakta – Kuşthaghna, Kandughna, Jvaraghna, Visarpahar
- **Action on mala :** Purîşa – Mruduvirecana,
- **Action on Strotasa :**
- Medavaha – Pramehghna.
- Śukravaha – Guhyaroghna.
- Annavaha – Rocana, Agnivivardhana.
- Mũtra – Pramehaghna.

**Hepatoprotective activity of Dãruharidrã:**

| | |
|---|---|
| • Berberine shows Antipyretic, Antiinflammatory, Anti viral, Antibacterial activites, Immunostimulatory effects<br>• Decreased the imflammation of the Liver<br>• Decreased the Hepatocyte damage<br>• Stabilization of plasma membrane thereby preserving the structural integrity of cell<br>• The repair of | • Dãruharidrã Kwãth<br>⇩<br>• Ãmãśaya-gãmi, Yakruta Gãmi<br>• Pitta Śodhana, Śamana<br>⇩<br>• Decreased level of serum enzymes in blood and decreased the imflammation of liver, Yakrut Śodhana, Yakrut Uttejana<br>⇩ |

| | |
|---|---|
| hepatic tissue damage caused by Virus.<br>• Decreased the excretion of defective bilirubin<br>• Decreased the Serum levels of enzymes, due to this hepatoprotection occurs. | • Prãkruta Pitta and Rakta formation in Yakruta<br>⇩<br>• Expel out duşta Pitta<br>⇩<br>• Doşa- Duşya Samyatã |

**STUDY DESIGN**

**CRITERIA FOR SELECTION OF PATIENTS:**

| • **INCLUSIVE CRITERIA :** | • **EXCLUSIVE CRITERIA :** |
|---|---|
| • Either sex.<br>• Any cast.<br>• Age between 18-60years.<br>• Hyperbilirubinaemia having raised serum bilirubin(>3mg/dl).<br>• Having signs and symptoms of Hepatitis (bahupittakãmalã)<br>• OPD/IPD cases.<br>• Drug induced hepatitis.<br>• Hepatocellular jaundice.<br>• Alcoholic hepatitis. | • Age less than 18 years and more than 60 years.<br>• Pregnant women and lactating mother.<br>• Heamolytic jaundice.<br>• Congenital hyperbilirubinemia.<br>• Obstructive jaundice.<br>• HIV-AIDS<br>• Patient having malignancy.<br>• Intoxication hepatic encephalopathy.<br>• Serum bilirubin more than 15 mg/dl.<br>• Chronic renal failure, Diabetics mellitus.<br>• Liver abscess,Liver cirrhosis,Hepatic failure.<br>• Infective hepatitis . |

• Known cases of Hepatitis (bahupittakãmalã) was taken.

- Total no of cases : 60
- Patients will be divided in 2 groups as follows :
- Group A : 30 cases- Dãruharidrã with pathyãpathya.
- Group B : 30 cases- Modern treatment of Hepatitis with pathyãpathya.
- Modern treatment:
- 1.Rest
- 2.Nutrition-high calorie
- 3.Intravenous fluid-Dextrose 10% ( sos )
- 4. Multivitamins- Vit. B complex, Vit. C
- 5. Anti-Viral agent (sos) (Ribavirin200mg.)

**STUDY DESIGN:**

| | |
|---|---|
| • **TYPE OF STUDY** : Parallel group, open labelled study.<br>• **DURATION OF STUDY** : 30 Days<br>• **DRUG COLLECTION :** In present study 3 market sample were collected from 3 different distributer, one of them is selected after standrization.<br>• **DRUG SOURCE** : Stem (Kãṇda) of Dãruharidrã( Berberis aristata,DC) .<br>• **FORMULATION** : Decoction of Dãruharidrã( Berberis aristata,DC) .<br>• **MODE OF ADMINISTRATION** : Oral .<br>• **DOSE** : 30 ml.<br>• **KÃL** : Twice a day. | • **ANUPÃN** : Koşṇodaka<br>• **DIET :**<br>• Pathya:<br>• Annavarga – Purãnśãli, Yava, Godhuma.<br>• Śãka- Patola, Kuşmãnda, Jîvantî, Taṇduliyaka.<br>• Śamî- Mudga, Masura, Kruśarã, Ikşu rasa.<br>• Dugdhavarg- Godugdha, Takra<br>• Krutãnna- Şaşthîsãlî Tandula,Yuşa, Pèyã, Vilepi.<br>• Apathya:<br>• Annavarga – Navanna.<br>• Śãka- Amla, Ambãdi, Methî.<br>• Śamî- Kulattha, Mãşa, Turi, Niśapãva. |

**FOLLOW UP**: Clinical follow-up was advised as for OPD patients

- 10 days after first visit
- 20 days after first visit
- 30 days after first visit
- ( 10-20-30 days)
- IPD Patients daily follow–up.
- Patients were selected on random basis.
- Written informed consent was taken from patients.
- All the patients were examined clinically and all bio-Medical parameters was recorded in the pre-formatted case record form.
- Consultation of physician was taken as per requirement.

**PATHOLOGICAL ASSESSMENT OF THE PATIENT:**

- All routine investigations like CBC, ESR, Urine examination, Australia Antigen, LFT, BSL, HIV, X ray of

abdomen were performed at the beginning of the studies. LFT, Urine examination were repeated on every 10 day for assessment of progess of the disease and response to the treatment of 30 days.

- **STATISTICAL TEST**
- Paired T-Test was applied to objective parameters.

Subjective improvement was shown in percentage.

**OBSERVATION AND RESULTS OF CLINICAL STUDY**

| SYMPTOMS | GROUP A (%) | GROUP B (%) |
|---|---|---|
| Haridrã Netra | 84.49 | 76.81 |
| Pîta Tvak | 81.96 | 81.31 |
| Pîta Mutra | 85.93 | 79.10 |
| Hrullãsa | 64.44 | 87.18 |
| Kandu | 54.99 | 61.54 |
| Aruchî | 84 | 69.81 |
| Sadana | 47.98 | 72.55 |
| Chharadî | 81.23 | 83.33 |
| Jvara | 40 | 91.67 |
| Udarśũla | 72.69 | 70.91 |
| Daurbalya | 78.35 | 66.67 |
| Dãha | 79.77 | 65.52 |
| Yakrutavruddhî | 73.78 | 63.64 |

**OBJECTIVE ASSESSMENT:**

**GROUP A (Dãruharidrã kwãth with pathyãpathya):**

| | BT | AT | X | SD | SE | T value |
|---|---|---|---|---|---|---|
| SGOT | 21897 | 1507 | 679.66 | 777.56 | 141.96 | 4.78 |
| SGPT | 28035.3 | 2053.2 | 866.07 | 861.37 | 157.26 | 5.5 |
| TOTAL BILIRUBIN | 194.11 | 56.13 | 4.599 | 4.36 | 0.79 | 5.77 |
| DIRECT BILIRUBIN | 143.02 | 42.3 | 3.357 | 3.48 | 0.636 | 5.27 |
| INDIRECT BILIRUBIN | 64.62 | 33.3 | 1.044 | 1.305 | o.238 | 4.38 |
| ALKALINE PHOSPHATE | 6732.28 | 4791 | 64.71 | 77.1 | 14.076 | 4.59 |

**Result : Thus statistical test in group A is found to be highly significant at 1% level of significance.i.e. p<0.01**

**GROUP B (Modern treatment of Hepatitis with pathyãpathya)**

| | BT | AT | X | SD | SE | T value |
|---|---|---|---|---|---|---|
| SGOT | 12330 | 1764 | 365.53 | 590.57 | 107.82 | 3.39 |
| SGPT | 12631.7 | 1700.1 | 381.72 | 601.11 | 109.74 | 3.47 |
| TOTAL BILIRUBIN | 131.81 | 43.84 | 2.932 | 2.577 | 0.47 | 6.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| DIRECT BILIRUBIN | 94.29 | 35.26 | 1.967 | 2.27 | 0.414 | 4.74 |
| INDIRECT BILIRUBIN | 53.29 | 30.28 | 0.767 | 1.55 | 0.283 | 2.709 |
| ALKALINE PHOSPHATE | 65588 | 3824 | 92.133 | 126.80 | 23.15 | 3.97 |

**Result: Thus statistical test in group B is found to be highly significant at 1% level of significance i.e. p<0.01.**

**DISCUSSION**

- Study was open labeled controlled study. They were screened by doing blood tests like CBC, ESR, LFT, HbsAg, HIV.
- Patients with Hepatitis by simple ramdom sampling method were taken.
- Total no. of cases : 60
- They were divied into two groups-
- Group A : 30 cases- Dãruharidrã with pathyãpathya.
- 
- Group B : 30 cases- Modern treatment of Hepatitis with pathyãpathya
- For Objective parameters, data shows that both groups was comparable i.e showing 1% level of significance. There is slight difference in Tval of group A and group B.
- It shows that Tval of group A is slightly better than group B i.e Dãruharidrã kwãth has given better results in Kãmalã as compared to Modern treatment.
- SGOT, SGPT, Sr. Bilirubin, Alkaline phosphate of group A shows markedly reduced the level of enzymes as compared to group B

**CONCLUSION**

- Conclusion of objective parameters-In both groups, patients having followed of every 10 days. In this data of BT and AT it was observed that Dãruharidrã reduced the levels of SGOT, SGPT, Sr. Bilirubin level very significantly as compared to Modern treatment.
- Effects on other investigation by Dãruharidrã, were insignificant, it shows that drug does not have any toxic effects.
- All the patients in both the groups were markedly improved, but results of Dãruharidrã kwãth that it markedly reduced level of enzymes as compared to modern treatment.
- Also Dãruharidrã kwath shows marked relief in symptoms as compared to modern treatment.
- It shows that, Dãruharidrã acts as a single drug is effective in Bahupitta (Koşthaśãkhãshrita) Kãmalã.

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