

CRITIQUE ON JALODARARI RASA - A MIGHTY HEPATOPROTECTOR

[Ayesha Zama¹](#), [Ravi. R. Chavan²](#)¹Second Year PG Scholar, ²Professor & HOD

Department of Rasashastra and Bhaishajya Kalpana, T.G.A.M.C &H, Ballari, Karnataka, India

Corresponding Author: Ayeshazama786@gmail.com<https://doi.org/10.46607/iamj1809112021>

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ABSTRACT

Ayurveda is the oldest methodical branch of knowledge that speaks its reality in the sketch of philosophy. It comprises most scientific milieu of derivation. As per ancient *Ayurveda* scholars for getting a desirable outcome of any medication, it should be precisely analysed before prescribing to the patient. There are several classical formulations successfully practised by *Ayurveda* physicians for treating various ailments, and also there are few unexplored but potent formulations that need the attention of practitioners to come to light. The present study is based to collaborate various references as well as the Pharmacological importance and mechanism of action of a distinctive hepatoprotection *Jalodarari Rasa*. The most common manifestation of liver dysfunction is ascites, and the most common cause of ascites is liver disease. Ascites is the accumulation of fluid in the peritoneum. Despite advanced medical facilities still, there is no definite treatment that cures a patient of ascites completely. The modern treatments only provide provisional relief with time dependant recurrence but, the fluid gets collected in the abdominal cavity repeatedly. In such cases, *Ayurvedic* treatment gives relief without any side effects and can be correlated with *Jalodara*, mentioned in *Ayurvedic* medical science.

Jalodarari Rasa is a herbomineral preparation that is depicted in *Bhaishajya Ratnavali Udararogaprakarana*, its fundamental constitution being *Jayapala*, *Tamra bhasma*, *pippali*, *maricha* which are all having *lekhana-pachana-bhedana* action and thereby useful to evacuate the excess accumulated fluid which is needed to counteract *Jalodara*. Hence, here an attempt has been made to address the detailed review of *Jalodarari rasa*.

Keywords: Ascites, hepatoprotective, Ayurveda

INTRODUCTION

Udararoga is *swedavaha* and *ambuvaha srotodushti vikara* due to *Jataragnimandhyata*, *pranavayu* and *apanavayu dushti*. Among the *Tridosha*, the *prakupita vata* gets accumulated in *udara* between the *twak* and *mamsa* leading to *shotha*; this is being termed as *Udararoga*.

Due to obstruction of *swedavaha*, *ambuvaha srotas* excessive accumulation of fluid, especially in peritoneal cavity occurs. Along with the aggravated *vata*, *agni* which is *manda* also causes *Udararoga*. Further, it vitiates *Prana*, *Apana* and ultimately causes the accumulation of *Udaka* in the body mainly in *Udara*, which is a cardinal feature of *Jalodara*. *Jalodara* is considered as a disease, instead of a symptom or a sign of another disease. In *Ayurveda*, types of *udara roga* are mentioned and every *udararoga* finally gets converted to *Jalodara*.

Ascites can be considered in *Ayurveda* under the broad spectrum of *Udararoga*. Ascites is a gastroenterological term for the accumulation of fluid in the peritoneal cavity that exceeds 25ml. Ascites occurs when there is a disruption in the pressure forces between intravascular and extravascular fluid spaces, which allows extravascular fluid to accumulate in the anterior peritoneal cavity. Chronic liver diseases are disease process of the liver which involves progressive destruction and regeneration of liver parenchyma leading to functional and structural changes in form of fibrosis and cirrhosis. It consists of a wide range of liver pathologies which includes inflammation, reduction of size, polycystic liver disease and hepatocellular carcinoma. Finally, it decreases the liver function combined with portal hypertension to cause ascites symptoms. Portal hypertension thus can be considered as the main contributor to ascites but the exact mechanism behind this is not completely understood. The rise in portal blood pressure with a decrease in albumin may be the culprit for the formation of pressure gradient resulting in Abdominal ascites. *Ayurveda* is

traditionally skilful and treated liver diseases for centuries and the drug toxicity appears to be less as compared to conventional medicine. *Ayurveda* treatment could be a potentially safe and effective complement in numerous liver diseases, it can be presumed that *Ayurveda* treatment blocks the fibrogenesis of the liver and regenerate hepatocytes. If replicated in a clinical trial then *Ayurveda* medicine could represent a promising tool to postpone the need for liver transplantations, increase in QOL of patients with cirrhosis, and reduce overall treatment costs of ALD patients.

Nityavirechana is the line of treatment in *Udararoga* and hence *virechana aushadas* are the first choice, *virechana* checks improper *jatharagni* and *dhatvagni*. It has laxative action which helps to eliminate toxins out of the body, which is caused due to chronic constipation in *Jalodara*. Here in the present study, *Jalodarari rasa* has been selected which has ingredients that can break down the root pathology of *jalodara*, by serving as *nityavirechana* as well as *lekhaniya* in action, in addition, it does *kleda shoshana* of various excess *snigdha dravyas* present in the body. This formulation is quoted in *Udara roga prakarana* of *Bhaishajya Ratnavali*¹, also in other *rasashastra* classical texts like *Rasendra sara sangraha*, *Rasachandamshu*, *Rasakamadhenu*, *Yogaratanakara*, *Rasarajasundara*, *Bruhatyogatarangini* and *Rasamanjari*, all depicting similar drug design. Ascites is a disease that has been described extensively in *Ayurvedic* literature along with medical treatment and surgical procedures related to the management of this condition. Diet restriction is an important feature of the management of this condition. *Ayurvedic* management with drugs such as provocation of digestion, daily therapeutic purgation, a stimulant for hepatic function and only milk diet that acts on the root of the pathology of ascites and by breaking down of pathogenesis gives good result in ascites.

INGREDIENTS AND PREPARATION OF JALODARARI RASA

Table 1:

Ingredients	Bot. Name	Quantity
<i>Pippali</i>	Piper longum	1 tola
<i>Maricha</i>	Piper Nigrum	1 tola
<i>Tamra</i>	Cuprum	1 tola
<i>Haridra</i>	Curcuma longa	1 tola
<i>Jayapala</i>	Croton tiglium	4 tola
<i>Snuhi</i>	Euphorbia nerifolia	Q. S

Fine powder of the above ingredients is grounded with the latex of *Snuhi* for one day. Then it is made into paste and pills are prepared of *nishka pramana*.

DOSAGE—As mentioned in various classical *rasashastra* textbooks, dosage for *jalodarari ras* is 1 *nishka pramana* i.e 3 gms, which as per recent scholars who write down that 1 *nishka pramana* is not the appropriate dose for present era individuals who possess *avara satva*, so it's recommended to take 1-2 *ratti* dose.

ANUPANA – No specific *anupana* is mentioned for this formulation. But as *Jayapala* is one of the

components, *sheetala jala* can be administered as *anupana*. It's recommended to take one *vati* in the morning and after *rechana* or in case of excess *rechana*, *dadhi anna* is advised for intake, which is considered *hita* for *stambhana*. Also, as the day ends *mudgayusha* is advised as *pathya* for the individuals with *jalodara*.

1.PIPPALI^{2,3} – Species of the genus piper are among the important medicinal plants used in various systems of medicine. Piper longum L. (Piperaceae), commonly known as long pepper.

Table 2: Properties

<i>Rasa</i>	<i>Katu</i>
<i>Guna</i>	<i>Laghu, snigdha, tikshna</i>
<i>Veerya</i>	<i>Anushna sheeta</i>
<i>Vipaka</i>	<i>Madhura</i>
<i>Dosha</i>	<i>Kaphavata shamaka</i>
<i>Rogaghната</i>	<i>Udarashula, gulma, yakritvikara, Pleehavridhi, krimiroga, hrididourbalya etc</i>

The fruit extract improved the regeneration process by restricting fibrosis but offered no protection against acute damage or cirrhotic changes in rodents. It has been reported to possess antiasthmatic, anti-inflammatory, hepatoprotective, hypercholesterolemic and immunomodulatory activities. It contains various alkaloids like piperine, piperlongumine, piperlonguminine etc which helps in the regeneration of hepatocytes. Piperine was found to enhance the bioavailability of structurally and therapeutically diverse drugs, possibly by modulating membrane dynamics due to its easy partitioning and increase in permeability of other drugs. It was suggested that piperine might be inducing alteration

in membrane dynamics and permeation characteristics, along with induction in the synthesis of proteins associated with the cytoskeletal function, increasing the small intestine absorptive surface, thus assisting efficient permeation through the epithelial barrier. Studies also show that piperine enhances serum concentration, the extent of absorption and bioavailability of curcumin with no adverse effects.

2. MARICHA⁴**Table 3: Properties**

<i>Rasa</i>	<i>Katu</i>
<i>Guna</i>	<i>Laghu, ruksha, teekshna</i>
<i>Virya</i>	<i>Ushna</i>
<i>Vipaka</i>	<i>Katu</i>
<i>Doshaghnata</i>	<i>KV hara</i>
<i>Karma</i>	<i>Deepana, Shoolaprashamana, Krimighna</i>

Maricha is considered to have antitoxic properties, as studies have shown that *maricha kashaya* is able to reverse the toxicity which was induced by *Vatsanabha* in an experimental study.

Black pepper has an effect like a water pill or diuretic. Taking black pepper might decrease how well the body gets rid of the lithium.

Black pepper contains volatile compounds, oleoresins and alkaloids which create a powerful plant, particularly for reducing Oxidative stress. Another review of its powerful benefits states that the key alkaloid components of *Piper nigrum* that is, piperine, assist in cognitive brain functioning, boost nutritive absorption and improve gastrointestinal functionality. A 1993 lab study found that *Maricha* protected the liver from damage caused by oxidative substances and helped the liver maintain its level of glutathione (GSH), an important antioxidant that is often depleted by damage to liver function.

It was found that piperine inhibited the increased level of serum GPT and GOT in a dose-dependent manner in a hepato-toxicity model of mice caused by D-galactosamine. Thus, it was concluded that *Piper nigrum* possesses potential hepato-protective activity due to the presence of piperine alkaloids and have great therapeutic potential in the treatment of liver ailments.

Piperine has shown bioavailability enhancing effects on many therapeutically important drugs and nutrients. Piperine increases the absorption of many drugs and nutrients from the gastrointestinal tract by various mechanisms. It alters the membrane dynamics and increases permeability at the site of absorption. Therefore, piperine is known as a bioavailability enhancer and a potent drug's metabolism inhibitor.

3. HARIDRA⁵

Haridra (*Curcuma longa*) is a potent as well as a widely prescribed drug in *Ayurveda* used as an antioxidant and possesses various beneficial properties such as anti-inflammatory, anti-allergic, antiseptic, antidiabetic, blood cleansing etc.

Helps to protect the liver and prevents liver disorders as it maintains the level of liver enzymes, it also protects the liver cells against damage caused by free radicals as it has antioxidant, anti-inflammatory and hepatoprotective activities.

Curcumin and related phenolics have been associated with the inhibition of lipid peroxidation, free radical formation and DNA damage under the role of radical scavengers and/or antioxidants.

Levels of lipid peroxidation, serum biomarker enzymes, liver MDA, hydroxyproline and liver antioxidants were correspondingly modified after curcumin treatment.

Table 4: Properties

<i>Rasa</i>	<i>Tikta, Katu</i>
<i>Guna</i>	<i>Ruksha, Laghu</i>
<i>Virya</i>	<i>Ushna</i>
<i>Vipaka</i>	<i>Katu</i>
<i>Doshaghnata</i>	<i>Tridoshahara</i>
<i>Karma</i>	<i>Pramehahara, vishanut, Pitta rechaka, twakdoshajit, aruchinashini</i>

4. TAMRA BHASMA⁵ –*Tamra bhasma* is obtained by oxidizing and heating the copper metal with different herbal juices including aloe vera gel and lemon juice. *Tamra bhasma* is blessed with several extraordinary healing properties like antacid, expectorant, mild laxative, digestive stimulant, fat burner, it promotes a proper flow of *pitta dosha* due to its cholagogue action. It stimulates the bile secretion from the liver and gall bladder, which is considered the main target site of *tamra bhasma* to act upon. It eases digestion and helps in maintaining healthy skin and body.

Tamra bhasma has a scraping quality and it also acts as a fat burner that aids in controlling obesity. Hence, it's widely used in treating high cholesterol. Ayurveda advocates the use of *tamra bhasma* in *Yakrit-pliha vriddhi*, it gradually reduces the size of the liver and spleen by alleviating inflammation

Tamra bhasma is a mild laxative, it eases bowel movement, stimulates bile salts from the liver and softens hard bowels thereby providing relief in problems related to irregular, hard or inconsistent bowel.

Table 5: Properties

Rasa	Kashaya, madhura, tikta, amla
Guna	Laghu, ruksha, tikshna
Virya	Ushna
Vipaka	Katu
Doshaghnata	KP shamaka
Karma	Lekhana, deepana, medohara

5. JAYAPALA⁶ – *Croton tiglium* Linn. (Euphorbiaceae) commonly known as jamalagota, *jayapala* is an organic irritant herb that is used for treating various ailments. The croton oil is pale yellow, viscid with a nauseous odour and bitter acrid taste. It contains irritant phytoconstituents such as phorbol esters and crotonic acid which may be responsible for its severe purgative action. In Ayurvedic classics, it is explained under the category of *Upavisha*, used in certain formulations recommended for liver diseases.

Croton tiglium is well known for its purgative property; furthermore, phorbol esters and crotonic acid were reported as responsible phytochemicals. It is reported in certain previous studies that *shodana* procedure with *godugdha* reduces the number of

phorbol esters and removes the crotonic acid from the seeds of *C. tiglium*

Studies show that this drug is evident to be able to protect liver tissues from CCl₄ injury. It was understood by a reduction in liver biochemical markers indicating the healing of liver parenchyma and the regeneration of hepatocytes produced by hepatotoxins. An experimental study which was undertaken in the year 2019 concluded that the finding of the liver biochemical markers and histopathological changes in the study reveals that *Croton tiglium* seeds are able to protect the liver from acute damages caused by CCl₄, the preliminary screening thus done may help to understand the scientific basis of use of *Jayapala* in liver disorders and the future development of new drug from the plant.

Table 6: PROPERTIES

Rasa	Katu
Guna	Guru, Ruksha, Teekshna
Virya	Ushna
Vipaka	Katu
Doshaghnata	Kaphapittashamaka
Karma	Deepana, Krimihara, rechaka, Jataramaya shodhana, Garavisha

5. SNUHI KSHEERA⁷- Euphorbia nerifolia belonging to the family Euphorbiaceae is one of the potent and useful drugs in Ayurvedic pharmacopoeia. Based on the synonyms depicted in *Nighantus*, it can be proclaimed that the plant with the straight stem being circular in appearance, full of latex, leaves are shaped like the blade of the sword, with sharp twin spines (*Vyaghranakha*) can be used as identifying characteristic feature for snuhi. The latex of E.

nerifolia is acrid, laxative, pungent and good for abdominal tumours and leucoderma. It is also used as a purgative, rubefacient, alexipharmic, carminative, expectorant, to treat jaundice, renal calculi etc., It is used as a drastic purgative in the enlargement of liver and spleen, general anasarca etc conditions. It is considered as *shreshta teekshna virechaka*, does *sheegra mala bhedana* in *krura koshta*

Table 7: Properties

Rasa	Katu
Guna	Laghu, teekshna
Virya	Ushna
Vipaka	Katu
Doshagnata	KV shamaka
Rogagnata	Shoola, ashteela, adhmana, kaphaja gulma, udara, unmada, kushta, arsha, shotha etc

DISCUSSION

The formulation taken for review is described in *Udara roga parakarana* of *Bhaishajya Ratnavali*, also in other *rasashastra* classical texts like *Rasendra sara sangraha*, *Rasachandamshu*, *Rasakamadhenu*, *Yogaratanakara*, *Rasarajasundara*, *Bruhatyogatarangini* and *Rasamanjari*, all depicting similar drug design.

Chikitsa sutra of *Jalodara* is “*Nitya virechana*”, to break up the *sanga* of all the *doshas* and retain fluid and separate them, *virechana* is necessary. *Yakrit* is the *moola sthana* of *rakta*. *Raktapitta* has *ashraya-ashrayisambandha*, hence for the elimination of *pittadosha*, purgation is the best treatment. *Virechana* also decreases abdominal girth and edema by decreasing fluid in the abdominal cavity. *Jalodarari rasa* maintains liver function and promotes balance as well as a healthy digestive system, its efficacy is also enhanced by the action of two potent purgative ingredients that is *Jayapala* and *Snuhi ksheera*.

- *Jayapala*, its main content, which acts as *Pitta virechana* and acts on *Yakrit*. Because of its attributes, it is liable to have actions to increase the *jatharagni* and *dhatvagni*, it even acts as

*avarana*hara and helps in *srotomukhavishodhana* thus tackling the root pathology of *jalodara*. It contains certain irritant phytoconstituents such as phorbol esters and crotonic acid which may be responsible for its severe purgative action. The plant possesses anticancer, antioxidant activity, smooth muscle relaxant activity, purgative, analgesic, anti-inflammatory and inhibit HIV induced cytopathic effect. From the review, we can say that *Jayapala* can act as Antidermatophytic, Antioxidant, Hepatoprotective, anticonvulsant, antimicrobial, anticancerous drug. Thus, *Jayapala* has immense practical applicability in biomedicine, but more clinical trials should be conducted to support its therapeutic uses.

- The metallic component *Tamra bhasma* is an effective agent for renewing vitality. It acts like nectar, *Thas* powerful antioxidant properties and is used for relieving kidney disorders, liver and other digestive disorders. *Tamra bhasma* one of the ingredients has been proven to be hepatoprotective and also beneficial in *yakrit-pleeha vridhhi* (hepato-spleen enlargement) and is Antihyperlipidemic. Due to its *katu ushna*

guna, it is having actions like *Lekhana* thereby beneficia in fatty liver disease, also by virtue of its *avarana* and scraping quality helps to remove *avarana* in the *ambuvaha* and *raktavaha srotas*. It also stimulates bile secretion from the liver and gall bladder.

- *Pippali* is having *katuushna guna*, *anushna virya* able to tackle *jataraghn* and *dhatvagni mandya*, also have properties like *aruchihara* and is termed as *yakritplehaamayahara* in *charaka samhita*. It enhances the absorption of curcumin and its compounds by the body.
- *Maricha* has *ushna*, *katu* properties, *deepana*, *pachana*, *Mutra rechaka* (Diuretic) properties, enhancing the bioavailability of the drugs.
- *Haridra* is having properties like antiseptic and is able to remove or clear infections if it is the impending cause for the ascites, anti-inflammatory, anti-cancerous in action as well. By the virtue of *tikta-katu rasa*, *ushna veerya*, *katu vipaka* and *laghu ruksha guna*, *haridra* removes the blockage in the liver and restores the haematopoietic functions. It also regularizes the fat metabolism and detoxifies the nutrients passing through it. Thereby rectification of liver functions leads to the destruction of free circulating fats which are responsible for the manifestation of *Prameha*.
- *Snuhi ksheera*, the *bhavana dravya* for *jalodarari rasa* has properties to alleviate *kapha* and *vata*, also has *shoolaghna* and *shothahara* properties by which it gives relief in symptoms like pain and sense of fullness of the *udara*. It also has *visha* and *amahara* properties by which it aids to wash away the toxins from the body, and parallelly maintains the nutrition levels required for the body tissues.

As most of the *ayurvedic* physicians take up conditions of chronic liver disease and ascites and follow the protocol of *nitya virechana* which is authentic and gives miraculous results.

Jalodarari rasa can be effectively employed as an alternative to *Gomutra haritaki*, which is a strong purgative used in ascites, but has unpleasant taste and

odour and needs more convincing to the patient for its excess quantity intake, but in the case of *Jalodarari rasa*, it can be given in very small amount as it is having *rasaoushadis* which work better and quicker in low doses and also there is no issue in relation to palatability as it is in tablet form, ease to instil, pleasant in appearance but has an enormous effect on ascites. Though the new scholars have mentioned the dose for *jalodarari ras* to be taken in 1-2 ratti, incases of *uttama bala* and *uttama satva* dose can be increased on basis of the patient's condition and *yukti* of the physician. Thus, *jalodarari rasa* can be implemented as an effective hepatoprotector and can be instilled in the routine clinical practice, thereby with this aim the entire review was undertaken.

CONCLUSION

Ayurveda has been used to treat several liver ailments, but its efficiency is poorly documented by means of scientific studies. A high number of *Ayurveda* liver tonics has been prescribed for chronic liver disease and GI disorders by all systems of doctors.

The *ayurveda* treatment outcome in Ascites is better compared to the modern system of medicine. It needs integration for a better outcome. So public participation and awareness for *ayurveda* treatment in chronic liver diseases are required along with proper training and skill development of *Ayurveda* physicians. More evidence will create hope for Ascites patients. *Jalodarari rasa* improves overall good health by balancing all three *Dosha*. The drug does not have appreciable toxicological effects on the brain, liver and kidney. This remedy is also known as a natural liver detoxifying and fatty liver remedy. It promotes balance and maintains liver function as well as a healthy digestive system. *Jalodarari rasa* does the *Shoshan* (assimilation) of different excess *Snigdha dravyas* (unctuous substances) present in the body. It also does the *Pachan* (digestion) of *Drava* (liquid) and *Kleda* (clammy) and does the *Raktavardhana* (purifies blood). It reduces *Dravatva*, *Snigdhatva* in *Meda dhatu*. Self-medication of the

drug should be strictly avoided to overcome any untoward effects.

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