A COMPREHENSIVE REVIEW OF WOODFORDIA FLORIBUNDA SALISB.

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ABSTRACT

Indian medicinal plants are the essence of Ayurveda and Ayurvedic treatments. When used judicially and clocking with the basic principles they produce miraculous effects. Fire flamed Bush (Woodfordia floribunda salisb.) commonly called as Dhakati. The generic name of the plant honors E.James Alexander woodford (1771-1837), a botanist and physician who was the first to successfully grow woodfordia to flowers under glass.1 It is mainly emphasized in the ancient Ayurvedic texts as one of the most important fermentation products, hence the names Madyapuspa and Madakara. According to professor Priyavrat Sharma in his Dravyaguna vijnanam the main function of Dhakati is Stambhan.2 Dhakati is widely cultivated as an ornamental shrub. It is cultivated in gardens for its flowers, which are borne during the summer months. The flowers are flame coloured, hence the name is fire flamed Bush, Woodfordia floribunda salisb, Dhakati, Sandhaniya.

INTRODUCTION

Fire flame bush (Woodfordia floribunda salisb.) commonly called as Dhakati. The generic name of the plant honors E.James Alexander woodford (1771-1837), a botanist and physician who was the first to successfully grow woodfordia to flowers under glass.1 It is mainly emphasized in the ancient Ayurvedic texts as one of the most important fermentation products, hence the names Madyapuspa and Madakara. According to professor Priyavrat Sharma in his Dravyaguna vijnanam the main function of Dhakati is Stambhan.2 Dhakati is widely cultivated as an ornamental shrub. It is cultivated in gardens for its flowers, which are borne during the summer months. The flowers are flame coloured, hence the name is fire flamed bush, and yield a red dye used to color fabrics. Flower of Dhakati is Sangrahak, Uttejak (stimulant), Vishnasak (anti poisonous), Raktsravindrodhak, Vranropak (wound healing), Vransodhak. This plant are reported to be used for the treatment of dysentery, diarrhoea, Sangrahani, Raktpadar, leucorrhoea, piles, liver disease, Sarpvish, wound.3 Dried flower are useful in disorders of the mucous membranes, haemorrhoids and derangements of the liver. In the konkan leaves are used in bilious sickness, juice of leaves is applied to the crown of the head, while the patient is made to hold a mouthful of sesamum oil.3

Botanical Origin

Woodfordia floribunda Salisb; Woodfordia fruticosa (L.) kurz.; Lythrum fruticosum Linn.2

Family: Lytharaceae

Table 1: Showing Scientific Classification of Woodfordia floribunda Salisb.

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Plantae</th>
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<tbody>
<tr>
<td>Phylum</td>
<td>Tracheophyta</td>
</tr>
<tr>
<td>Class</td>
<td>Magnoliopsida</td>
</tr>
<tr>
<td>Order</td>
<td>Myrtales</td>
</tr>
<tr>
<td>Family</td>
<td>Lytharaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Woodfordia</td>
</tr>
<tr>
<td>Species</td>
<td>W. Floribunda</td>
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</tbody>
</table>

Vernacular Name:

Table 2: Showing Vernacular Name of Woodfordia floribunda Salisb.

<table>
<thead>
<tr>
<th>Sanskrit</th>
<th>Dhatumushpika, Dhauri, Aqniwala, Kunjara, Tamrapushpi, Madkara, Madniyahuetu, Madyavasini, Subhiksha, Sidhupuspi, Bahupuspika, Guchuspasa, Parvariya</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>Fire flame bush, Shiranj tea</td>
</tr>
<tr>
<td>Hindi</td>
<td>Davi, Tavi, Dhaiphul</td>
</tr>
<tr>
<td>Gujarati</td>
<td>Dhavadi</td>
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<tr>
<td>Marathi</td>
<td>Dhalas</td>
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<tr>
<td>Kannada</td>
<td>Bela, Tamrapuspi</td>
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<tr>
<td>Malayalam</td>
<td>Tatiri, Tatiriupshi</td>
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<tr>
<td>Tamil</td>
<td>Dhattari, Jargi, Velakkai</td>
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<tr>
<td>Telugu</td>
<td>Dhakati, Jargi, Serinji</td>
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<tr>
<td>Oriya</td>
<td>Dhobo</td>
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<tr>
<td>Konkani</td>
<td>Dhauri</td>
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<td>Urdu</td>
<td>Jetiko</td>
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</table>
The plant is commonly known as Dhakati because it provides nourishment to all tissues. Its flower are red in colour (Tamrapushpi). Its flowers are simile to red flames (Agni jivala). Its flower will do Dhatu and Sareera poshan (Dhatupushpika). It bears flower profusely in bunches (Bahupuspika, Gucchuspspa). It grows in hills (Parvatayja). The flowers are used in fermentation of alcoholic beverages (Madkara, Madniyahetu, Madyavasini, Sidhupuspi). As it cures Trisha etc, very effectively (Subhiksha). 8

Botanical Description

It is an evergreen bushy shrub up to 5m tall with diffuse irregular branching. Black spots are found on the surface of new branches, bark smooth, young shoot terete, clothed with fine white pubescence.9

Leaves – Somewhere three leaves are seen in a cluster at a point. 5-9 by 4.3-2.5 cm. opposite breadth, lanceolate or ovate, acuminate simple, serrat margin, 3-sessile, acute, softly velvety above, base rounded or cordate, 16-12 pairs nerves.

Flower – 5 to 75 bright reddish colour, tubular, cymes, pedicel short, glandular pubescent, flowers are grown on the whole parts of branches. They are arised in small clusters. Calyx- 1.6 cm. long striate, covered with glandular dots; petals longer than calyx teeth.

Fruit – 1 cm. small, seeds are brownish bright, irregularly dehiscent, seeds conate-obovoid brown, smooth.

Seed – light brown, very minute, oblong, very numerous entirely glaborous not exhibiting at any period of its development the smallest trace of a papilla (Flowers in Feb – April and fruits in April – June).

The flowers are stimulant and an infusion of the flowers and leaves is used as an herbal tea.10

Habitat

This plant is found throughout India. They are mostly found in the forest of Dehradun at the altitude of 5000’ feet. It is also cultivated in gardens. In the other countries Ceylon, Baluchistan, Tropical Africa, China, Japan, Sumatra and Java.11

Chemical Constituents

Flower – Hecogenin, inositol, kaemperol-3-glucoside, naringenin-7-7 glucoside, tannins (pyrogallol and hydrolysable types), woodferdins A,B,& C, lawsone, betulin etc.12

Dried Flower – Dimeric hydrolysable tannins – woodfordin A,b and eonothin a and b.13

Leaves – Enothsein-b, quercetin-3-0-a-l-arabinose, quercetin-3-0-6”- β- d-galactopyranoside and myrecetin-3-0-arabino pyranoside.14

Stem – Octacosanol and sitosterol15

Classical References

In Brihattrayi, Acharya Charak has mentioned Dhakati under Purisangrahaniya, Mutavrivarjaniya, and Sandhiyana mahakasaya (c.ssu 4/5,31,34)16 while Acharya Sushruta and Vagbha has placed under Priyangyadi and Ambasthadi gana (s.sus 38/45,46)17 (A.h.su. 15/38)18. Acharya Bhavamisra In Bhava prakash nighantu, placed Dhakati in Haritakyadi verg.19 In Dhanwantari nighantu, Dhakati is mentioned in Chandnadi verg.20 Raj nighantu quoted Dhakati in Pipalyadi verg21. Kajadeva nighantu has described Dhakati under Ausadh verg.22 In Saushruta nighantu it is mentioned in Ambasthadi gana.23 In Sodhala nighantu, Dhakati is mentioned in Chandanadi verg.24 According to Yogaratnakara, the flowers of Woodfordia floribunda have been used as a substitute for Glycyrrhiza glabra.25

Pharmacological Activities

Antimicrobial activity: Different extracts of dried flowers of W. Fruticosa have been reported for their significant antibacterial activity against 14 human pathogens. The methanolic extract has been reported to be most active against pseudomonas pseudoalcaligenes and also more effective against gram negative bacteria as compared to gram positive bacteria.26-27

Antiulcer activity: The antiulcer potential of W. fruticosa has been reported in ethanol, hydrochloric acid (HCL) and Non-steroid Anti-inflammatory Drugs NSAIDS (Diclofenac sodium) induced ulcer in stomach of Wister albino rats. The roots were extracted with chloroform and methanol. Both the extracts have found to significant antiulcer activity.28-29

Hepatoprotective activity: Hepatoprotective activity of petroleum ether, chloroform, ethyl alcohol, and aqueous extract of the flower of W. fruticosa has been reported against carbon tetrachloride induced hepatotoxicity.30 And phenotoin induced liver damage in rats.31 The methanolic extract of the flowers of W. Fruticosa has been reported for hepatoprotective activity against acetaminophen induced hepatic injury in rats and declofenac sodium induced hepatic damage in rats.32

Antitumor activity: Woodfordin Ca macro-ring hydrolyzable tannin dimmer from dried flower was reported to posses antitumor activity.34

Wound healing activity: Oral administration of the ethanolic extract of W. fruticosa flower was effective in wound healing.35

Immunomodulatory activity: The ethanolic extract of the flowers of W. fruticosa was found to show 60% increased bone marrow cells proliferation and offer protection towards cyclophosphamide induced myelosuppression which represent the stimulation of bone marrow.36

Anti fertility activity: Anti fertility activity of successive alcoholic, individual aqueous and individual hydroalcoholic extracts was studied in female albino rats. The results revealed that the successive alcoholic extract showed promising abortifacient activity at 100 mg/kg body weight.37

Antibacterial activity: The methanol extract of W. fruticosa was most active against P. Pseudoalcaligenes in comparison to all the microorganism tested. The plant extract are more active against Gram positive bacteria than Gram-negative bacteria.36

Antihyperglycemic activity: The ethanolic extract of W. Fruticosa flowers (250 and 500 mg/kg) significantly reduced fasting blood glucose level and increase insulin level after 21 days treatment in streptozotocin diabetic rats.37

Antiviral activity: Methanolic and aqueous extracts of the flower and leaves inhibited avian myeloblastosis virus reverse transcriptase (RT). No cytotoxicity was observed in the extracts even at concentrations where there was over 90% inhibition of RT activity.

Antipyretic activity: The ethanolic extract of the flower of W. fruticosa was show significant antipretic activity at a dose of 500 mg/kg body weight.

Anergic activity: The present study revealed the positive analgesic activity of extracts of W. fruticosa stem bark in hot plate model and acetic acid induced writhing model. Pain sensation in acetic acid induced writhing methods is elicited by triggering localized inflammatory responses resulting the release of the free arachidonic acid from tissue phospholipids via cyclooxygenase (COX), and prostaglandin biosynthesis.38,39

DNA inhibitory activity: The inhibitory activity of Woodfruticosin (woodfordin C) a new cyclic dimeric hydroxyl-zable tannin isolated from the leaves of Woodfordia fruticosa toward deoxyribonucleic acid (DNA) topoisomerase along with three known flavonol glycosides and three known flavonol glycoside gallates.40

Antioxidant activity: The methanolic extract of Woodfordia fruticosa flowers on thioacetamide induced oxidative stress in rats in 100 and 200 mg/kg dose. Various serum enzymes like aspartate aminotransferase, alkaline phosphatase and lactate dehydrogenase were evaluated. Histopathological changes of liver tissue were also evaluated.41

Antiproliferative activity: The effect of methanolic extract of W. Fruticosa flowers on hepatocellular carcinoma. The effect was tested by following the serum parameters like AFP, ALP, LDH, bilirubin; tissue level of GSH, CAT, MDA, histopathology of liver and immunohistochemical analysis of vascular endothelial growth factor. Antiproliferative effect of the ex was studied in human hepatoma plc/ prf/ 5 cells by MTT assay. The chemotherapeutic drug, 5-flourouracil (5-fu) was used as positive control.41

Anti-leucorrea activity: A clinical study of Majuphala powder & Dhataki pushpa powder to assess the effect in leucorrhea is undertaken on 30 patients, were divided in three groups Group A of 10 patients were received Majuphala churna for 21 days & internally Yonidhavan done with Majuphala Decoction for 10 days. Group B of 10 patients received internally Dhataki pushpa powder externally Yonidhavana with Dhataki pushpa powder for 10 days. Group c of 10 patients (control group) were received wheat flour in above said same manner. -Group A (Majuphala) & B (Dhakati) has shown highly significant results in both cordial & associated symptoms of leucorrea as compared to control group. -In local pathology group A (Majuphala) & Group B (Dhakati) showed significant results in group A (Majuphala) in cervisitis the results were significant. -Group B (Dhakati) showed significant results in Hb% [2].

Ayurvedic Properties And Pharmacological Effect

According to Ayurveda Literature, Dhakati is Kasaya (astringent) in taste (Rasa), light (Laghu), dry (Ruksha) in properties (Guna), pungent (Katu) in metabolism (Vipaka); cold (Sheeta) in potency (Veerya); Kapha- Pitta hara, Madakari in action(Karma). Due to these properties, it pacify Kapha and Pitta dosha while aggravate Vata dosha.12 Flower of Dhakati is highly beneficial in Atisara, Raktaatisara, Jvaratisara, Pravahika, Sangrahani, Raktradrara, Arsha, Liver disorder, Sarvapisha, Vrana. Sushruta mentioned about the properties of Dhataki pushpa as Bhagnasandhankara, Pittahara and Vnraropan (su.su.su.38/45,46).

Medicinal Uses

1. Charaka has indicated the paste should be dusted with the powder of Priyangu, Lodhra and Katphala mixed with Lajialu and Dhakati or of Panchavakalaka mixed with Badari powder or of Dhakati and Lodhra in fracture with wound. By this wounds heal up. (cs.ci.25,66,67)12
2. Charaka has mentioned Lodhra, Dhakati, Indravyava, Karna and Jati-paste of these should be used in Kustha for an ointment and paste. (cs.c1.7.95)43
3. Sushruta, in conjunctivitis caused by Pitta, powder or liquid extract of Dhakati and Candana mixed with breast-milk should be used as collyrium. (ss.u.10.9)44
4. Vaghata, for child, Modaka (sweet bolus) prepared of Dhakati flowers, Sarkara and parched paddy should be given in diarrhoea. (A.H.U.1.39)45
5. One suffering from dysentery should take Dhakati, Badari leaves, Kapittha juice, honey and Lodhbra-all together with curd. (BP.Ci.2.120)46
6. Liquid gruel processed with Dhakati decoction and Sīnthi and added with sour pomegranate seeds is useful in fever, diarrhoea and abdominal pain. (BS.atisara.31B)46
7. Powder of Dhakati or Amalaki 10 gm mixed with profuse honey should be used in Leucorrhoea. (VM.63.4)47
8. For conception, the woman, during season, should take Nilotpala mixed with Dhakati flowers and honey in morning. By this she conceives. (GN.6.5.9)47
10. Vangsen- Dhakatai puspa, Sautha and Dadimbej peya in Jwraitiasar.48
11. According to Sodhal- 1 Tola (11gm) Dhakathi puspa churna with Tandulodak in Svetpradar.48
13. In Prajasthapana ~ Nilotpala and Dhakati are mixed and taken with honey in the morning during the Ritukala (period of ovulation).12
14. In case of Pittahvisyanda, the powder or juice of Dhakati and Candana are mixed with breast milk and applied as Anjana (s.s.u.10).12
15. According to Sharangdhar, Dhakakyadi kwath in Balatisara, contains (Dhakathi puspa, Belgiri, Lodhra, Sugandhabala, Gajipipali decoction with honey).49
16. Dhakakyadi taila for external use in Sutikaroga.50

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17. According to Bapat the fresh leaves are an excellent remedy in cases of snake-bite. The juice is given internally, a few drops poured into each nostril and some rubbed on the part of bitten.  

**Part Used:** Flower, bark, leaves  
**Dosage:** Powder 1-5 g, Pushpacchurna- 3-6 g.

**Important Preparations:** Dhakaqadi taila, Dhakaqadi curna, Pusyanu curna, Brhat Gangadhara curna, Kutajarishta, Pippaliyasava, Kanakasava, Abhayarishta, Ashokarishta, Paarththyadaryishta, Aravindasava.

**CONCLUSION**

This paper is an attempt of the author to give a detail review of this important medicinal plant used in Indian system of medicine Dhatak (Woodfordia floribunda salisb.). In this artilcal, we had discussed about the classical references, phytochemicals, pharmacognostical and pharmacological properties of Woodfordia floribunda salisb. The various phytochemical present in it are glucoside, tannins, alkaloids which act as active biological constituents and are responsible for different pharmacological actions of Woodfordia floribunda salisb. The present Paper also revealed that Woodfordia floribunda salisb. act as antimicrobial, antitumor, antifeztility, antihyperglycemic, analgesic, antiproliferative and hepatoprotective activity.

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43. Ibid; pg-264.


47. Ibid; pg-204.


