



# International Journal of Research in Agronomy

E-ISSN: 2618-0618  
P-ISSN: 2618-060X  
© Agronomy  
www.agronomyjournals.com  
2022; 5(2): 25-28  
Received: 07-05-2022  
Accepted: 12-07-2022

**Waseem Akram Khan**  
Research Scholar, Faculty of  
Agriculture, Mewar University,  
Chittorgarh, Rajasthan, India

**Anzar Ahmed Khoker**  
Lecturer, Department of  
Geography, University of Jammu,  
Jammu & Kashmir, India

## Remedial merit of rhododendron (*Rhododendron arboretum*)

**Waseem Akram Khan and Anzar Ahmed Khoker**

### Abstract

*Rhododendron arboretum* is a woody plant with a gaudy showcase of dazzling red blossoms has a place with Ericaceae typically develops on North Temperate Zone particularly in the sodden corrosive soil of the Himalayas, South East Asia. The plant is tracked down in the Himalayas from Jammu & Kashmir eastwards to Nagaland and generally fills in Bhutan, China, Myanmar, Nepal, Sri Lanka, Pakistan and Thailand. Usually it is utilized in gardens, estates because of its tasteful worth of alluring bloom tree plant. It assumes a significant part in Traditional solutions for various sicknesses because of its phytochemical potential. This audit center around therapeutic properties of various pieces of *Rhododendron arboretum*.

**Keywords:** rhododendron, red flowers, phytochemical constituents, remedial value

### Introduction

Rhododendron, a most popular ornamental plant in the nurseries and as road trees and broadly developed in various regions of the planet for to its tasteful, business and restorative values. *Rhododendron arboretum* is regularly known as Buransh an evergreen tree growing up to 20 m tall, having harsh and pinkish earthy colored bark with elliptical lanceolate and restricted at closes leaves swarmed towards end of branches. Rhododendron is gotten from Greek word: "rhodo" signifies "rose" and "Dendron" signifies "tree." *Rhododendron arboreum* has a place with the family Ericaceae and are essentially occupied in the Himalayas between 1200 and 4000 meters. It has huge, globose, minimal corymbs appealing blossoms have dark red or pink tone. They have capsular, *cylindric*, bended, longitudinally ribbed leafy foods ellipsoid in shape. It is an occasional tree ordinarily flowering and Fruiting will happen on the long stretch of March - April and September - October. The bloom is entitled as the public blossom of Nepal and state bloom of Himachal Pradesh (India) because of the tasteful magnificence of the completely bloomed blossoms in the blooming season. This large number of spots represent over 90% of the world's regular populace of Rhododendrons. Rhododendron is having various restorative properties in the treatment of loose bowels, the runs, detoxification, irritation, fever, blockage, bronchitis and asthma and furthermore utilized as processors in food sector. The Various parts (leaves, blossoms and foundations) of the plant have been accounted for to have a few restorative properties and are utilized in the treatment of customary and current arrangement of medicines 6. This audit fundamentally centers on the restorative properties of the *Rhododendron arboretum*.



**Fig 1:** Rhododendron Flower)



**Fig 2:** Rhododendron Tree

**Corresponding Author:**  
**Waseem Akram Khan**  
Research Scholar, Faculty of  
Agriculture, Mewar University,  
Chittorgarh, Rajasthan, India

**(A) Classification of the plant**

Kingdom	Plantae
Phylum	Magnoliophyta
Class	Angiospermae
Order	Ericales
Family	Ericaceae
Genus	<i>Rhododendron</i>
Species	<i>R. Arboretum</i>

**(B) Jargon names**

Jammu & Kashmir	Khruli, Addhul
Tamil	Billi
Kannada	Pu
Malayalam	Kattupoovarasu
Punjabi	Adrawal
Nepal	Laligurans
Kumaoun	Eras
Garhwal	Burans
Sanskrit	Kurvak

**Circulation in India**

Rhododendrons of India are broadly appropriated in various districts and elevations predominantly in the Himalayas and larger part of them are in the more prominent Himalayas. Other than this, a lot of animal groups are found in northeastern India especially in Naga and Khasi slopes. Just a single animal category happens in Trans-Himalayan locale situated in outrageous north-west of India (counting the virus deserts of Jammu and Kashmir and Himachal Pradesh. One subspecies nilagiricum of *Rhododendron arboreum* happens in Western Ghats. State wise, Arunachal Pradesh harbors the most extreme number of species (67 species) trailed by Sikkim (36 species). 19 species are perceived from Darjeeling region of West Bengal, from Nagaland, from Manipur, from Mizoram and Meghalaya every, 6 species from Uttaranchal and from Himachal Pradesh and Jammu and Kashmir each. Just a single subspecies is tracked down in Tamil Nadu and, Kerala.

**Compound Constituents**

The plant contains huge measure of optional metabolites like alkaloids, flavonoids, glycosides, saponins, tannins, steroids and phlobatannins. The evaluated how much phytoconstituents, for example, rut in, quercetin and coumaric corrosive, - 3-O-galactoside, epicatechin, syringic corrosive terpenoid, anthraquinones, xanthoproteins, hyperin, 3-heptenocacid methyl ester, 5-heptenoic corrosive, methyl ester methyl butanoate, butanoic corrosive, methyl ester and pentanoic corrosive, 4methyl-methyl ester 4-heptenoic corrosive methyl ester, 8nonynoic corrosive methyl of phenols, flavonoids, gallic corrosive unsolid corrosive,  $\beta$ -sitosterol, lupeol Pyrogoll and catechol were present in leaf, bloom, bark of and stem *R. Rhododendron arboreum*. It likewise contains minerals like manganese, iron, zinc, copper, sodium, chromium, cobalt, cadmium, molybdenum, nickel, lead and arsenic. The leaves of *Rhododendron arboreum* were accounted for to contain Quercetin 3-O-beta - D-glucopyranosyl [1->6]-O-alpha - Rhamnopyranoside, pectolarigenin 7-Orutinoside, 7,2'dimethoxy-4',5-methylene dioxyflavanone.

**Customary Practices**

*Rhododendron arboretum's* nectar is fermented to make wine

and is successful in loose bowels and diarrhea. Its Corolla is directed in the event of fishbone trapped in the neck. Snuff produced using the bark of the tree is fantastic cold reliever. Youthful leaves can be handled into glue and applied on the brow to reduce cerebral pains. Activity and Uses Juices of petals is great beverage for summer and heart tonic. It has calming, hostile to nociceptive movement, hepatoprotective action and against diarrhoeal action. The youthful leaves are astringent and poultice. They are made into a glue and afterward applied to the brow in the treatment of migraines. The juice of the bark is utilized in the treatment of hacks, looseness of the bowels and diarrhea. A decoction of the blossoms is utilized to really look at an inclination to upchuck, particularly in the event that there is likewise a deficiency of hunger. The juice of the blossoms is utilized in the treatment of feminine problems. The petals are eaten to help the evacuation of any creature bones that have become stuck in the throat. The petrol ether extricate diminishes the pace of heartbeat and compression in secluded heart of frog. A heavy drinker (half) concentrate of the blossoms brought down pulse in canines and pale skinned person rats.

**Acute poisonousness studies**

In light of harmfulness study Based on OECD rules No. 423 (OECD, 1996) three oral dosages of ethanolic concentrate of *R. Arboretum* 100, 250,500 mg kg<sup>-1</sup> were chosen utilizing intense Poisonous class method.

**Restorative properties of Rhododendron plant**

Flavonoids, secluded from the leaves of *Rhododendron arboreum* were found to have strong cell reinforcement property, the plant *Rhododendron arboreum* have been accounted for mitigating. There are different therapeutic properties of *R. arboretum* were accounted for.

**The hepatoprotective movement**

Hepatoprotective movement of *R. Arboretum* ethanolic leaf removes was assessed in wistar rodent model by examine of serum marker catalyst like SGOT, SGPT, ALP, immediate and all out bilirubin, fatty substances, cholesterol and assessment of ascorbic corrosive in pee. The outcomes showed huge hepato defensive activity. The acetic acid derivation part of *R. Arboretum* blossom remove is likewise shown proficient action against hepatic damage.

**The counter diabetic movement**

Hostile to diabetic action was concentrated on utilizing watery methanolic concentrate of *Rhododendron arboreum* by in vivo rodent gastrointestinal glucosidase technique. The concentrate was found to repress rodent gastrointestinal  $\alpha$ -glucosidase. The fluid methanolic separate showed inhibitory exercises on glucosidase demonstrated the counter diabetic activity.

**The mitigating hostile to nociceptive action**

Ethyl acetic acid derivation concentrate of *Rhododendron arboretum* flowers was explored for its calming and against nociceptive potential in creature models by calming movement in arachidonic prompted rear paw edema ( $p < 0.01$ ), cotton pellet granuloma model of aggravation ( $p < 0.01$ ) and Freund's adjuvant-actuated paw joint pain ( $p < 0.01$ ) and antinociceptive action in mice by security in acidic acid induced squirming legitimized the mitigating and antinociceptive capability of *Rhododendron arboreum*. anti-inflammatory action of ethanolic, watery and methanolic extricates from *R. arboretum* blossoms were explored by delivering paw oedema utilizing different

phlogistic specialists. The decline in paw volume showed greatest mitigating action of Extracts.

### The immunomodulatory movement

Alcoholic leaf concentrate of *R. Arboreum* is assessed for immunomodulatory movement and related hepatotoxicity in Swiss pale skinned person mice model. The boundaries like, humoral safe reaction, cell intervened resistant reaction and all out leukocyte counts (TLC) were evaluated in the antigenically tested mice with sheep RBC (SRBC). Liver capability tests like absolute bilirubin, SGPT and SGOT were additionally assessed. The orally controlled alcoholic concentrate of the leaves showed a huge concealment of the safe reactions, in a portion subordinate way. The concentrate at the most extreme portion (100 mg/kg) was found to have higher immunosuppressant impact in examination with control and levamisole ( $p < 0.01$ ). In this manner, it tends to be presumed that the alcoholic concentrate of *R. Arboreum* is a compelling and safe immunosuppressive agent.

### The anti-diarrheal action

The counter diarrheal property of ethyl acetic acid derivation concentrates of bloom of *R. Arboreum* concentrated on creature model and the concentrate was orally managed at the centralization of 100 mg kg<sup>-1</sup>, 200 mg kg<sup>-1</sup> and 400 mg kg<sup>-1</sup> body weight. The outcome showed that ethyl acetic acid derivation blossom remove has huge antidiarrheal movement against magnesium sulfate and castor oil prompted the runs by lessening both weight and volume of digestive substance essentially subsequently legitimizing its conventional use in looseness of the bowels and have extraordinary potential as a hotspot for regular wellbeing products.

### The antimicrobial action

The antimicrobial action of watery and ethanolic concentrate of blossom of *R. Arboreum* was considered against *Escherichia coli*, *Staphylococcus Aureus*, *Candida Albicans*, *Pseudomonas aeruginosa*, *Agrobacterium tumefaciens*, *Bacillus subtilis* and *Aspergillus niger*. The outcomes showed that watery and ethanolic blossom removes are viable against *E. coli* and *S. Aureus*. Watery concentrate showed antimicrobial action at 50 mg ml<sup>-1</sup> and 100 mg ml<sup>-1</sup> of focus against *E. coli* and *S. Aureus*, individually. Though methanolic separate showed movement against *E. coli* at the convergence of 12.5 mg ml<sup>-1</sup> or more and against *S. Aureus* at the convergence of 25 mg ml<sup>-1</sup> or more. Be that as it may, both the concentrates didn't show inhibitory exercises against rest of the strains.

### The cancer prevention agent property

The cancer prevention agent action of hydro-methanolic leaf concentrate of *R. Arboreum* via auto-oxidation of linoleic corrosive coupled response and  $\beta$  carotene. DPPH measure uncovered the extremist searching movement (IC<sub>50</sub>-0.47) of leaf concentrate of *R. Arboreum*. Heated water, cold water and ethanolic bloom concentrates of *R. Arboreum* were read up for Antioxidant property by superoxide revolutionary searching examine, hydroxyl extremist rummaging test and lipid peroxidation measure. The half maximal successful focus (EC<sub>50</sub>) values for hydroxyl extremist rummaging examine showed cancer prevention agent property high temp water, cold water and ethanolic blossom extract.

### The cardio protective action

The ethanolic concentrate of *Rhododendron arboretum* (ERA)

against isoproterenol-actuated myocardial ischemia in rodent myocardium involving Wister rodents showed huge height in serum heart marker proteins like lactate dehydrogenase (LDH), aspartate transaminase (AST) and alanine transaminase (ALT). Pretreatment with ERA to ISO-treated rodents caused a huge cardio protective impact and Histopathological assessment likewise affirmed the cardio protective impact of Ethanolic concentrate of *Rhododendron arboretum*.

The ethanolic concentrate of *Rhododendron arboreum* (ERA) leaves can forestall isoproterenol-prompted myocardial ischemia in rodent myocardium.

### Conclusion

The flavonoids present in *Rhododendron* not just shield the cardiovascular muscles from adverse consequence of oxidants yet additionally work on heart capability and enhance ventricular renovating through hindering UTR-interceded actuation of RhoA-ROCK pathways in myocardial dead tissue rats 23.

*Rhododendron* plants have medical advantages alongside different restorative properties which were actually used by the conventional professionals and tribes. The creators have attempted to audit the restorative properties and trusting that this survey will draw in the specialists to direct research in this field for the worth expansion which might help in the upgrade of business and economy for the impending age. *R. arboretum* is a plant with grouped compound constituents which applied numerous pharmacological impacts. There is a great opportunities for advancement of novel medications from *R. Arboreum* to treat various human sicknesses.

### References

1. Chamberlain DF. A Revision of *Rhododendrons*, II subgenus *Hymenanthes*, Notes Roy. Bot. Garden, Edinburgh. 1982;39:1-480.
2. Anpin Raja RD, Prakash JW, Jeeva S. Antibacterial activity of some medicinal plants used by Kani tribe, southern Western Ghats, Tamil Nadu, India. In Trivedi PC, Editor. Ethnic Tribes and Medicinal Plans. Jaipur: Pointer Publishers, 2010, 28-45.
3. Pradhan UC, Lachungpa ST. Sikkim-Himalayan *Rhododendrons*. Darjeeling: Primulaceae Books, 1990.
4. Paul A, Khan ML, Arunachalam A, Arunachalam K. Biodiversity and conservation of *Rhododendrons* in Arunachal Pradesh in the indo-Burma biodiversity hotspot. *Curr Sci*. 2005;89(4):623-634.
5. Laloo RC, L Kharlukhi, S Jeeva, BP Mishra. Status of medicinal plants in the disturbed and the undisturbed sacred forests of Meghalaya, northeast India: population structure and regeneration efficacy of some important species. *Curr. Sci*. 2006;90:225-232.
6. Swaroop A, A Prakash Gupta, A Kumar Sinha. Simultaneous determination of quercetin, rutin and coumaric acid in flowers of *Rhododendron arboreum* by HPTLC. *Chromatographic*. 2005;62(12):649652.
7. Debjyoti Bhattacharyya, M Sanjappa. *Rhododendron Habitats in India*, Journal American *Rhododendron Society*. 2009;63:4.
8. Sharma N, UK Sharma, AP Gupta. Simultaneous determination of epicatechin, syringic acid, quercetin-3-Ogalactoside and quercetin in the leaves of *Rhododendron* species by using a validated HPTLC method. *JF Comp and Analysis*. 2010;23:214-219.
9. Mohammad Nisar, Sajid Ali, Muhammad Qaisar.

- Preliminary Phytochemical screening of flowers, leaves, bark, stem and roots of *Rhododendron arboretum*, Middle-East Journal of Scientific Research. 2011;10(4):472-476.
10. Srivastava P. *Rhododendron arboreum* an overview. Journal of Applied Pharmaceutical Sciences. 2012;2(1):152-162.
  11. Manjunatha P Mudagal, Sandip Karia, Divakar Goli. Preventive effect of *Rhododendron arboreum* on cardiac markers, lipid peroxides and antioxidants in normal and isoproterenol-induced myocardial necrosis in rats African Journal of Pharmacy and Pharmacology. 2011 June;5(6):755-763.
  12. Prakash Tigari, Snehal Dayalal Fadadu, Uday Raj Sharma, VenkataS urendra. "Hepatoprotective activity of leaves of *Rhododendron arboreum* in CCl4 induced hepatotoxicity in rats", Journal of Medicinal Plant Research. 2008 Nov;2(11):315-20.
  13. NeerajVerma, Anil P Singh, G Amresh, PK Sahu, Ch. V Rao. Protective effect of ethyl acetate fraction of flowers against carbon tetrachloride induced hepatotoxicity in experimental models, Indian J Pharmacol. 2011 May-Jun;43(3):291-295.
  14. Bhandary MR, Kawabata J. Antidiabetic activity of Laligurans (*Rhododendron arboreum* Sm.) flower. J Food Sci Technol. 2008;4:61-63.