



A Rare Medicinal Herb *Remusatia Vivipara*

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ABSTRACT

In this current era, the demand for herbal medicines and products is increasing globally, and herbal medicines are being used traditionally as well as for the modern systems for treatment of various diseases and ailments. There are so many plants that are under research for their potential therapeutic and pharmaceutical applications, and *Remusatia Vivipara* is one of that rare plants belonging to the family Araceae. There are 105 Genera; more than 3300 species persist locally in tropical and sub-tropical areas and world widely. *Remusatia Vivipara* is commonly known as "Hitchhiker Elephant ear". Tribal people also named it as Lalkand. The root juice of *Remusatia Vivipara* used on the wound to dispel any germ and worms. *Remusatia Vivipara* has many folkloric applications like for Inflammation and arthritis treatment, analgesic, for disinfecting the Genitourinary tract, and treatment of reddish boils. Upon hydrolysis arabinose, galactose, glucose, mannose, xylose, and various uronic acids are the most commonly observed components. This review is an attempt to compile all the aspects and details of plant *Remusatia vivipara*.



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INTRODUCTION

There are so many plants reported for their therapeutic purposes, and *Remusatia Vivipara* is one of the rare plants having many pharmaceutical purposes belonging to the family Araceae. There are 105 Genera, more than 3300 species, persist locally, tropical areas, sub-tropical areas and world widely. *Remusatia Vivipara* is commonly known as "Hitchhiker Elephant ear". Tribal people also named it as Lalkand. The root juice of *Remusatia Vivipara* used on the wound to dispel any germ and worms (Man-

andhar, 1998). *Remusatia Vivipara* also reported for its folkloric application like for Inflammation and arthritis treatment, analgesic, for disinfecting Genitourinary tract and treatment of reddish boils (Bhurat et al., 2011c).

Upon hydrolysis arabinose, galactose, glucose, mannose, xylose and various uronic acids are most commonly observed components. Mucilage was also isolated from the tubers for pharmaceutical purposes (Bhurat and Barhate, 2013), mainly used parts of the plant are leaves, tubers and corm studied for different activities. The root paste with turmeric is made into an ointment and used in itching, and root juice with cow's urine is considered to be alexipharmic (Jadhav et al., 2017). The tubers are strongly poisonous but used externally to treat breast mastitis, abscesses and ascariasis (Tang et al., 2010).

In this context, we have deliberated various aspects of plant *Remusatia Vivipara*. Starting from its, Vernacular names, taxonomic classification, occurrence and distribution, Phytochemical constituents, pharmacological activities and Pharmaceutical applications.

Vernacular Name

English- Hitchhiker Elephant ear

Sanskrit- Laksmana

Kannada- Kadu gadde

Marakesu; Malayalam- Marachembu, Maratal

Marathi- Lalkand, Rukhalu

Nepali- Jalukaa, Kaalo pidaalu

Taxonomic Classification

Kingdom – Plantae

Phylum- Tracheophyta

Class- Liliopsida

Order- Arales

Family- Araceae

Genus- *Remusatia* (Bhurat et al., 2011b)

Occurrence and Distribution

Remusatia (Araceae) mainly consists of 4 different species. *Remusatia Vivipara* is a rare monsoon plant (Figure 1) found in hilly regions, widely distributed in East and West Africa, Himalayan area, East Asia and Tropical Asia. In India, it is distributed subtropical Himalaya, Khosla hills, Chota Nagpur, Maharashtra and Western Peninsula (Ara and Hassan, 2005).

Morphology

It is a monsoon plant grows on the tress.

Tubers

They are of 1-2 inches in diameter and 6-12 inches long, clustered depressed, rooting from the crown, short bulbiferous (Mali and Bhadane, 2008) (Figure 2).

Flowers

They are very rare and usually grow before the leaves. Peduncle surrounded by seven cataphylls, 6-20 cm long, 5-8 mm diameter. The spathe is tube ovoid, green and about 17 cm long (Marwah et al., 2007) (Figure 4).

Leaves

They are peltate, membranous orbicularovate, spathe 4-5 inches long, golden yellow, nerves 3-4 on either side of the midrib and 2-3 from the basal costae (Asha et al., 2013) (Figure 3).

Corm

They are thick, pink from outside, pinkish-white within and about 2.5-5 cm in diameter.



Figure 1: Whole Plant of *Remusatia Vivipara*



Figure 2: Tubers of *Remusatia Vivipara*

Phytochemical constituents

Phyto-Chemical Constituents present in Parts of plant *Remusatia Vivipara* are given in Table 1.

Table 1: Chemical Constituents present in Parts of plant *Remustia Vivipara*

Parts Used	Phyto-Chemical Constituents
Tubers	Starch, Lectins
Corms	Phenylpropanoid Glucoside, Coniferen, Caffeyl alcohol, coniferyl alcohol, Methyl proto-taccaoside, Saxifragifolin B, (2E, 4E)-N-isobutyl-2, 4-decadienamamide, Dehydroconiferyl alcohol-4- β -D-glucoside, (7R,8S)- Δ 7'-3,3'-dimethoxy-4,7,9,9'-tetrahydroxy-8-O-4'-neolignan-7-O- β -D-Glucose, 4, 7, 9, 9'-tetra-hydroxy-3, 3-dimethoxy-8-O-4'-neolign-7'-ene.
Leaves	Flavonoids, Terpenoids, Alkaloids and reducing sugars
Roots	Flavonoids, Terpenoids and reducing sugars

**Figure 3: Leaves of *Remustia Vivipara*****Figure 4: Flower of *Remustia Vivipara***

Pharmacological Activities

Cataleptic property

Bhurat et al. Studied the effect of chloroform, ethanol and ether extract of leaves of *Remusatia Vivipara* on haloperidol-induced catalepsy in mice. The evaluation of catalepsy was done by standard procedure. From results, they found that extract

of leaves has cataleptic property maybe by the blockade of dopaminergic receptors or other receptors ([Bhurat et al., 2011c](#)).

Anti-inflammatory activity

Bhurat et al. studied the anti-inflammatory activity of chloroform, ethanol and ether extract of leaves of *Remusatia Vivipara* with the standard drug Diclofenac by Human Red blood corpuscles (HRBC) membrane-stabilizing method. Results showed the significant anti-inflammatory activity of all the extracts ([Bhurat et al., 2011d](#)).

Antimicrobial activity

Kurdekar et al. worked on ethanolic, chloroform and ether extract of corm of *Remusatia Vivipara* by soxhlet and cold percolation method against the five different microorganism species using disc diffusion method. Results showed that any of extract by either method did not show any antimicrobial activity against any one species of microorganism ([Kurdekar et al., 2012](#)).

Depressant activity

Bhurat et al. compared the ethanolic extract of tubers of *Remusatia Vivipara* depression activity with the drug Imipramine and Diazepam. The results of the Force swim test and Tail suspension test showed a significant increase in the activity with extract as compared to the control group and drug-treated group. In the locomotor activity done with Actophotometer, there were no significant changes as compared to the control group or drug-treated group. With the FST and TST results, they concluded that the extract has a depression activity ([Bhurat, 2011](#)).

Antioxidant activity

Marwah et al. worked on different edible plant antioxidant activity and some for wound healing activity. Extraction of tubers of *Remusatia Vivipara* done by maceration process with chloroform and

then followed by aqueous alcohol. For antioxidant activity, they followed the free radical scavenging assay and found the extract of *Remusatia Vivipara* showed weaker antioxidant activity (Marwah et al., 2007).

Limits growth, motility and invasiveness of human breast cancer cells

Sindhura et al. worked on the binding of lectin to a specific site, apoptosis, growth inhibition and induction of reactive oxygen species for cell death by the use of different cell lines like MDA-MB-468, MCF-7 and MCF-10A. The results and findings suggested that *Remusatia Vivipara* Lectin (RVL) showed very high cell surface binding to cell lines, different dose of RVL on different time intervals showed a decrease in cell viability, after treatment with RVL from 0-24 hours microscopic studies showed cell changes, RVL also reported for inducing the apoptosis in both MDA-MB-468 and MCF-7 through oxidative stress or DNA damage. Hence, they concluded that the RVL exerts the cytotoxic effect on human breast cells by inducing apoptotic effects (Sindhura et al., 2017).

Anti-Urolithiatic activity

Anbuselvi et al., Analyzed the extracts of *Remusatia vivipara* for anti-urolithic activity, and the effect of different extract concentration was applied to measure the dissolution rate, turbidity, nucleation aggregation assay. The extract of *Theriophonum minutum* and *Remusatia vivipara* reflected the blocking action in both of nucleation and aggregation to better level and has more remarkable ability to dissolve artificial calcium stones and kidney stones rather than the standard drug (Anbuselvi et al., 2019).

Pharmaceutical applications

Gelling Property

Bhurat et al., extracted the mucilage from the tubers of *Remusatia Vivipara* by dissolving in water and precipitating in 90 % alcohol. Six batches of Diclofenac sodium were prepared with different concentration of the mucilage to check the gelling property of it with some other needed substances. The gel with 3.5% mucilage concentration showed the desired gel characteristics and hence used as gelling agent (Bhurat and Barhate, 2013).

Binding property

Shelke et al. evaluated the mucilage of *Remusatia Vivipara* by prepared the tablets with different concentration of the mucilage. They found 6% w/w mucilage tablet with the desired characteristics and found that the mucilage of *Remusatia Vivipara* useful for the preparation of uncoated

tablets as binder (Shelke et al., 2011).

Suspending property

Bhurat et al. studied suspending properties of *Remusatia Vivipara* were evaluated with Acacia at concentrations of 2-6% w/v in cefixime trihydrate suspension. Characterization test was carried out on purified *Remusatia Vivipara* mucilage. Sedimentation profile, re dispersibility, rheology, pH, particle size analysis, degree of flocculation, stability study were employed as an evaluation parameter for formulation. The results suggested that *Remusatia Vivipara* mucilage could be used as a suspending agent (Bhurat et al., 2011a).

CONCLUSIONS

This review provides valuable, accessible sources like Vernacular names, taxonomic classification, occurrence & distribution, Phytochemical constituents, pharmacological activities and Pharmaceutical applications of plant *Remusatia Vivipara* and it will help other researchers for further investigations and exploring properties present in this plant.

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Conflict Of Interest

The authors declare that they have no conflict of interest for this study.

REFERENCES

- Anbuselvi, S., Roshini, Esther, A., Punithavathy, R. 2019. In-vitro anti-urolithic activity of *Theriophonum minutum* and *Remusatia vivipara*. *International Journal of Recent Technology and Engineering*, 8(3):3088-3091.
- Ara, H., Hassan, M. A. 2005. Four new records of aroids for Bangladesh. *Bangladesh Journal of Plant Taxonomy*, 12(2):39-48.
- Asha, D., Nalini, M., Shylaja, M. 2013. Evaluation of phytochemicals and antioxidant activities of *Remusatia vivipara* (Roxb.) Schott., an edible genus of Araceae. *Der Pharmacia Lettre*, 5(5):120-128.

- Bhurat, M. 2011. Effect of Remusatia Vivipara (Roxb) Schott Tubers on Animal Models of Depression. *International Journal of Current Pharmaceutical Research*, 3(1):90-92.
- Bhurat, M., Kawatikwar, P., Kothari, N. 2011a. *Evaluation of Remusatia Vivipara tubers mucilage as an innovative suspending Agent; Inventi Impact: Novel Excipients*.
- Bhurat, M., Kawatikwar, P., Sanghavi, R., Umalkar, A., Salunkhe, P. 2011b. Isolation and Characterization of Remusatia Vivipara tubers Mucilage. *International Journal of Pharmacy and Biological Sciences*, 1(4):457-461.
- Bhurat, M., Nasir, M., More, S., Sanghavi, R., Salunkhe, P., Umalkar, A. 2011c. Preclinical Evaluation of Remusatia Vivipara Leaves Extracts On Haloperidol Induced Catalepsy In Experimental Animals. *International Journal of Pharmacy and Biological Sciences*, 1(4):420-424.
- Bhurat, M., Sapakale, H., Salunkhe, K., Sanghavi, R., Kawatikwar, P. 2011d. Preliminary Chemical Evaluation and In Vitro Anti-Inflammatory Activity of Leaves of Remusatia Vivipara. *Asian Journal of Biochemical and Pharmaceutical Research*, 2(1):303-306.
- Bhurat, M. R., Barhate, S. D. 2013. Preliminary Evaluation of Remusatia vivipara tubers Mucilage as Gelling Agent. *Research Journal of Pharmacy and Technology*, 6(4):366-369.
- Jadhav, R., Naik, V., Kunure, V. 2017. Physicochemical and Microscopical Properties of Starch From Tubers of Remusatia Vivipara Schott. *International Journal of Researches in Biosciences*, 5:293-296.
- Kurdekar, R. R., Hegde, G. R., Hegde, G., Hebbar, S. S. 2012. Antimicrobial screening of Medicinal plants against human Pathogens-A Comparative account of two different methods of Extraction. *Int. J. Drug Dev. & Res*, 4(1):82-89.
- Mali, P., Bhadane, V. 2008. Some rare plants of ethnomedicinal properties from Jalgaon district of Maharashtra. *International Journal of Green Pharmacy*, 2(2):76-76.
- Manandhar, N. P. 1998. Native phytotherapy among the Raute tribes of Dadeldhura district, Nepal. *Journal of Ethnopharmacology*, 60(3):199-206.
- Marwah, R. G., Fatope, M. O., Mahrooqi, R. A., Varma, G. B., Abadi, H. A., Al-Burtamani, S. K. S. 2007. Antioxidant capacity of some edible and wound healing plants in Oman. *Food Chemistry*, 101(2):465-470.
- Shelke, S., Aragade, P., Sarode, A. 2011. Preliminary Evaluation of Remusatia vivipara Mucilage as Tablet Binder. *International Journal of PharmTech Research*, 3(3):1649-1651.
- Sindhura, B. R., Hegde, P., Chachadi, V. B., Inamdar, S. R., Swamy, B. M. 2017. High mannose N-glycan binding lectin from Remusatia vivipara (RVL) limits cell growth, motility and invasiveness of human breast cancer cells. *Biomedicine & Pharmacotherapy*, 93:654-665.
- Tang, G., Wang, Y., Long, C. 2010. A new Phenylpropanoid Glucoside from Remusatia Vivipara (Araceae). *Acta Botanica Yunnanica*, 32(1):14-14.