



Phytochemical Profile and Therapeutic Potential of *Polyalthia Longifolia*: A Systemic Review.

Heena Kouser S, Pratap Gouda A P

SJM College of Pharmacy

ABSTRACT

Polyalthia longifolia, a medicinal plant of the family Annonaceae, is widely used in traditional medicine for managing various diseases. It contains diverse bioactive compounds such as clerodane diterpenes, alkaloids, flavonoids, tannins, terpenoids, and glycosides, which contribute to its therapeutic potential. Preclinical studies have demonstrated significant pharmacological activities, including antimicrobial, anti-inflammatory, antioxidant, anticancer, antidiabetic, antiulcer, antileishmanial, hepatoprotective, and uterine modulatory effects. Notably, the clerodane diterpene 16 α -hydroxycleroda-3,13(14)Z-dien-15,16-olide has shown strong activity against methicillin-resistant *Staphylococcus aureus* and *Leishmania donovani*. Experimental findings also support its hepatoprotective and antihyperglycemic effects through biochemical and histopathological evidence. Overall, these findings validate its traditional uses and highlight its potential as a source of novel therapeutic agents, though further studies on molecular mechanisms, toxicity, standardization, and clinical trials are needed to establish its safety and efficacy.

Keywords: Medicinal plants, *Polyalthia longifolia*, Annonaceae, antimicrobial activity, anti-inflammatory activity, anticancer activity, antihyperglycemic effect, antiulcer activity, traditional medicine

1. Introduction

Medicinal plants have been an integral part of traditional healthcare systems for centuries, playing a vital role in the prevention and treatment of various diseases. Natural products derived from plants are known for their therapeutic efficacy, safety, and minimal side effects compared to synthetic drugs. The increasing global demand for herbal medicines has encouraged scientific validation of traditionally used plants.¹ These plants serve as a rich source of bioactive compounds that contribute to modern drug discovery. Thus, exploring medicinal plants remains essential for developing novel therapeutic agents.²

Among these, *Polyalthia longifolia*, belonging to the family Annonaceae, is widely distributed in tropical and subtropical regions. It is an evergreen ornamental tree commonly found in India and other Asian countries. Traditionally, the plant has been used to treat fever, skin diseases, diabetes, hypertension, and microbial infections. Its widespread use in folklore medicine highlights its pharmacological importance. The plant's diverse applications have attracted attention from researchers for detailed scientific evaluation.³

Phytochemical studies of *Polyalthia longifolia* have revealed the presence of numerous bioactive constituents such as alkaloids, flavonoids, tannins, terpenoids, saponins, and glycosides. Among these, clerodane diterpenes are considered major active compounds responsible for many biological activities. These phytochemicals exhibit a wide range of pharmacological effects, including antioxidant, antimicrobial, and anti-inflammatory properties. The presence of such diverse compounds makes the plant a valuable candidate for drug development. Therefore, understanding its chemical profile is crucial for therapeutic applications.⁴

Extensive preclinical studies have demonstrated that *Polyalthia longifolia* possesses multiple pharmacological activities. These include antimicrobial, anticancer, antidiabetic, antiulcer, hepatoprotective, and antimalarial effects. Additionally, the plant has shown promising results in managing oxidative stress and inflammation. Its bioactive compounds have also exhibited activity against drug-resistant pathogens. Such findings support its traditional use and indicate its potential as a multi-target therapeutic agent.⁵

Moreover, various parts of the plant, including leaves, bark, seeds, and roots, have been investigated for their medicinal properties. Extracts prepared using different solvents have shown significant biological activities in both in vitro and in vivo models. Studies have also reported its effectiveness in treating parasitic infections, fungal diseases, and cardiovascular disorders. These diverse pharmacological effects highlight the versatility of the plant. However, further studies are needed to establish standardized extracts and dosage forms.⁶

Despite extensive research, there is still a need to compile and critically analyze the available information on *Polyalthia longifolia*. Most studies are limited to preclinical investigations, and clinical validation is still lacking. Additionally, variations in extraction methods and experimental models create

inconsistencies in reported results. A systematic review can help in identifying research gaps and future directions. This will aid in better understanding its therapeutic potential and safety profile.⁷

Therefore, the present review aims to provide a comprehensive overview of the phytochemical constituents and pharmacological activities of *Polyalthia longifolia*. It focuses on summarizing the available scientific evidence supporting its traditional uses. The review also highlights its potential in the development of novel drugs and therapeutic formulations. Furthermore, it emphasizes the need for advanced research, including clinical trials and toxicity studies. Overall, this study contributes to the scientific validation and future exploration of this important medicinal plant.

2. Taxonomy.²³

Botanical name	<i>polyalthia longifolia</i>
Kingdom	Planate
Class	Magnoliopsida
Division	Magnoliophyta
Order	Magnoliales
Family	Annonaceae
Genus	Polyalthia
Species	Longifolia

3. Traditional Uses

In South India, the plant's parts have long been used to cure leukorrhea, uterine diseases, fever, and gonorrhea. A bark decoction is particularly useful for treating mouth ulcers. The plant's leaves have long been used in Vellore, Tamil Nadu, to cure heart issues, mouth ulcers, uterine abnormalities, fever, and gonorrhea. Tribal populations in Visakhapatnam and Andhra Pradesh utilize the stem bark as a febrifuge. In Tamil Nadu's Uthiramerur, locals use fresh stem bark juice to alleviate dyspepsia. The stem bark is used to aid pregnant women in the Manchale area of Shimoga district, Karnataka, avoid having an abortion. In traditional medicine, the plant's numerous parts are used to treat a wide range of illnesses.²⁶

4. Principle constituents^{24,25}

Preliminary phytochemical screening of *Bougainvillea glabra* leaves revealed the presence of alkaloids, flavonoids, tannins, steroids, proteins, saponins, and trace amounts of glycosides, with phenolic compounds abundantly distributed in the leaves and flowers. Additionally, *Polyalthia longifolia* has been widely reported to exhibit diverse pharmacological activities, including antibacterial, antioxidant, anti-inflammatory, analgesic, hepatoprotective, and anticancer effects.



5. Reason for review

The goal of this review was to methodically gather and examine the scant preclinical data regarding the pharmacological, phytochemical, and botanical characteristics of *Polyalthia longifolia*. Despite its widespread traditional use, research on its medicinal potential is still inconsistent. Combining this data makes it easier to see its diverse pharmacological actions and bioactive components. The evaluation also intends to identify research gaps and direct future investigations toward clinical validation and medication development.

6. Pharmacological activities.

1. Anti-inflammatory activity

Polyalthia longifolia leaf solvent extracts were tested for their anti-inflammatory properties, and the most effective extract's potential for hepatoprotection was evaluated. Methanol demonstrated the highest anti-inflammatory effect among the six solvents employed for consecutive extraction. Thus, additional testing was done on methanolic extract at 300, 600, and 900 mg/kg. The anti-inflammatory properties of the methanolic extract were not dose-dependent. The results show that the methanolic leaf extract has significant anti-inflammatory properties.⁶

2. Anticancer activity

The therapeutic potential of alcoholic extract and its chloroform fraction derived from *P. longifolia* leaves was investigated for its anticancer potential because plants of the Annonaceae family contain antitumor and anticancer active ingredients. The mechanism of action of the chloroform fraction in inducing apoptosis in HL-60 cells was investigated further. All cancer cells exhibit dysregulation of apoptosis, therefore substances that trigger programmed cell death in cancer cells may be useful anticancer treatments. Anticancer medications work by activating apoptosis in cancer cells through a variety of routes, which eventually results in cell cytotoxicity.⁷

3. Anti hypoglycaemic activity and hyperglycaemic activity

Rats with alloxan-induced diabetes were used to test the hypoglycemic and antihyperglycemic effects of several *P. longifolia* var. pendula leaf extracts. The extracts and crude powder did not considerably alter any important biochemical indicators associated with diabetes, despite the fact that they produced discernible glucose-lowering effects. This suggests that the plant extracts have a general glucose-lowering effect even though they lack real antidiabetic qualities. Interestingly, the extracts demonstrated a strong antihyperglycemic activity against sucrose-induced hyperglycemia, which is regarded as a crucial feature of medications used to treat diabetes.⁸

4. Antiulcer activity

Several ulcer models, including aspirin plus pylorus ligation-induced ulcers in rats, HCl-ethanol-induced ulcers in mice, and stress-induced ulcers in rats at an oral dose of 300 mg/kg, were used to assess the antiulcer effectiveness of the ethanol extract of *P. longifolia* leaves. In every model, the extract demonstrated significant ($P < 0.01$) antiulcer effects. In comparison to controls, it dramatically decreased the ulcer index, free acidity, and stomach volume in the pylorus ligation model. Furthermore, it generated a 95.3% protection index in the stress-induced ulcer model and an 89.71% ulcer inhibition in the HCl-ethanol model.⁹

5. Antioxidant activity

Medicinal herbs have long been used for treating various diseases due to their therapeutic properties. *Polyalthia longifolia* possesses diverse pharmacological activities, including antibacterial, anti-inflammatory, antioxidant, and anticancer effects. Phytochemical analysis of its ethanolic leaf extract revealed tannins, alkaloids, terpenoids, flavonoids, steroids, and cardiac glycosides, while some compounds were absent. The extract showed significant antioxidant activity in the DPPH assay, suggesting its potential in managing oxidative stress and as a natural antioxidant.¹⁰

6. Uterine Function Indices

The bark of *Polyalthia longifolia* is traditionally used in the treatment of numerous diseases such as diabetes and malaria, and the present study studied the phytochemical content and effects of its aqueous leaf extract on uterine function indices in female Wistar rats. Saponins, flavonoids, tannins, phenolics, cardiac glycosides, steroids, anthraquinones, phlobatannins, and alkaloids were detected by phytochemical screening; terpenoids were not. Rats given with the extract at dosages of 50, 100, and 200 mg/kg for 30 days revealed dose-dependent effects on uterine biochemical markers. When compared to the control group, the 100 mg/kg dose significantly altered the levels of total protein, alkaline phosphatase activity, cholesterol, and uterine glucose. Overall, the findings show that *P. longifolia* leaf aqueous extract has the potential to improve fertility by favourably affecting uterine function parameters.¹¹

7. Anti-microbial activity

Numerous investigations have shown that *Polyalthia longifolia* has significant antibacterial potential. In both in vitro and in vivo settings, a clerodane diterpene (16 α -hydroxycleroda-3,13(14)Z-dien-15,16-olide) that was extracted from the plant shown strong efficacy against methicillin-resistant *Staphylococcus aureus* with low minimum inhibitory concentrations. With MICs ranging from 7.8 to 500 μ g/mL, methanolic extracts from a variety of plant parts, especially leaves and berries, showed encouraging antibacterial and antifungal activity. Furthermore, a variety of leaf extracts, including 1,4-dioxan, methanol, and acetone, demonstrated wide antibacterial effectiveness against strains that are clinically significant. These extracts demonstrated the plant's medicinal potential by being particularly effective against Gram-positive bacteria at greater concentrations.^{12,13}

8. Antidiabetic activity

In both in vitro and in vivo experimental paradigms, extracts from *Polyalthia longifolia* have shown notable antidiabetic efficacy. The enzymes α -amylase and α -glucosidase were significantly inhibited by both ethanolic and chloroform extracts, with the ethanolic extract exhibiting higher activity and safety up to 2000 mg/kg. These extracts increased glucose tolerance and caused dose-dependent drops in blood glucose levels in animal models of diabetes generated by streptozotocin and alloxan. Significant hypoglycemic effects were also demonstrated by petroleum ether, n-hexane, ethyl acetate, and methanolic extracts from leaves and bark, especially at larger doses. Among the many solvent extracts investigated, ethanolic extracts generally showed the most reliable and strong antidiabetic benefits.^{14,15,16,17,18}

9. Anti-leishmanial Activity

In both single chemical and extract experiments, *Polyalthia longifolia* has demonstrated encouraging antileishmanial action. Long-term survival of treated animals demonstrated the strong, non-cytotoxic antileishmanial effects of 16 α -hydroxycleroda-3,13(14)Z-dien-15,16-olide, a clerodane diterpene. With an IC₂₁ of 8.04 mg/mL, this chemical was similar to the reference medication miltefosine in causing quick, dose-dependent parasite killing. Furthermore, *Leishmania donovani* promastigote growth was considerably suppressed in vitro by a methanolic leaf extract of *P. longifolia*. The extract's therapeutic potential was highlighted by its low IC₅₀ value of 4.18 μ g/mL and robust dose-dependent action.^{19,20}

10. Hepatoprotective activity

Polyalthia longifolia methanolic extracts have shown strong hepatoprotective effects in both in vitro and in vivo investigations. Freshly isolated rat hepatocytes and HepG2 cells were shielded from CCl₄-induced toxicity at different doses by fruit extract. Histopathological results corroborated the significant improvement in liver indicators, such as AST, ALT, ALP, bilirubin, and total protein levels, in in vivo CCl₄ poisoning animals. Similarly, at dosages of 300–900 mg/kg, methanolic leaf extract demonstrated potent hepatoprotective effects. These findings support *P. longifolia*'s potential as a strong hepatoprotective agent against liver damage caused by chemicals.^{21,22}

11. Antimalarial activity

This study evaluated the antimalarial activity of *Polyalthia longifolia* leaf extract (PLE) and developed suitable oral dosage forms. In *Plasmodium berghei*-infected mice, PLE showed significant parasitaemia suppression (61.25%) and curative effect (58.78%) at 100 mg/kg, along with improved hematological parameters. Tablet and suspension formulations were prepared and met all pharmacopoeial quality standards, including weight uniformity, friability, disintegration, and dissolution. The suspension also showed acceptable viscosity, pH, and sedimentation properties. Both dosage forms remained stable over six months, confirming their suitability for malaria management.²⁷

12. Anthelmintic activity

Polyalthia longifolia has been traditionally used to treat intestinal worm infections, and this study evaluated its anthelmintic activity using leaf and stem bark extracts in *Heligmosomoides bakeri*-infected mice. Phytochemical analysis revealed the presence of bioactive compounds such as alkaloids, flavonoids, tannins, saponins, and phenols, while toxicity studies showed the extracts were safe (LD₅₀ > 5000 mg/kg). Both in vivo and in vitro studies demonstrated significant reduction in egg and larval counts compared to the control group, with higher doses (400 and 800 mg/kg) showing strong effects comparable to standard treatment. Overall, the findings suggest that *P. longifolia* possesses potent anthelmintic (vermicide) activity and could serve as a promising natural source for developing antiparasitic agents.²⁸

13. Hypotensive activity.

A defatted root bark extract of *Polyalthia longifolia* var. *pendula* prepared in 50% methanol demonstrated significant antihypertensive activity. Phytochemical investigation identified compounds such as kolavenic acid, clerodane, liriodenine, lysicamine, and bisclerodane imide. Among these, kolavenic acid showed a notable effect, reducing mean arterial blood pressure by about 22% at a dose of 30 mg/kg. The extract was effective in lowering blood pressure in both normotensive and egg yolk-induced hypertensive rat models. These findings indicate that *P. longifolia* root bark possesses promising blood pressure-lowering properties.²⁹

14. Antifungal activity.

Polyalthia longifolia has shown significant antifungal activity against various pathogenic fungi, including *Fusarium equiseti*, *Fusarium lateritium*, *Aspergillus candidus*, and *Penicillium chrysogenum*, using the poisoned food technique. Studies also reported its effectiveness against *Fusarium oxysporum* and *Pythium aphanidermatum*, which are associated with plant diseases like soft rot in ginger. Bioassay-guided isolation revealed that diterpenoids from seed extracts possess notable antibacterial and antifungal properties. Additionally, ethanolic and methanolic extracts of the leaf and bark exhibited strong antifungal activity against *Candida albicans* and *Candida krusei*. Overall, these findings highlight the broad-spectrum antifungal potential of *P. longifolia*.³

Summary

The Annonaceae family includes the significant medicinal plant *Polyalthia longifolia*, which is frequently used in traditional medicine to treat a variety of illnesses. Its medicinal properties are attributed to a number of bioactive substances, including clerodane diterpenes, alkaloids, flavonoids, tannins, terpenoids, and glycosides. Significant pharmacological activity, such as antibacterial, anti-inflammatory, antioxidant, anticancer, antidiabetic, antiulcer, antileishmanial, and hepatoprotective properties, have been shown in preclinical research. Additionally, the herb has positive benefits on reproductive regulation and uterine function. 16 α -hydroxycleroda-3,13(14)Z-dien-15,16-olide is a crucial chemical that has demonstrated substantial efficacy against parasites and resistant microorganisms. These results demonstrate its potential for medication development and validate its conventional usage. To verify its safety and therapeutic effectiveness, more clinical research, toxicity analysis, and standardization are required.

9. Conclusion

In traditional medicine, *Polyalthia longifolia* is a significant medicinal plant that is used to cure a variety of illnesses. Clerodane diterpenes, alkaloids, flavonoids, tannins, terpenoids, and glycosides are among the bioactive substances that give it its medicinal properties. Significant pharmacological properties, such as antibacterial, anti-inflammatory, antioxidant, anticancer, antidiabetic, and hepatoprotective effects, have been demonstrated by preclinical research. 16 α -hydroxycleroda-3,13(14)Z-dien-15,16-olide is a significant chemical that has shown strong efficacy against parasites and resistant bacteria. These results demonstrate its potential as a source of novel medicinal medicines and validate its conventional usage.

10. Conflicts and interest

Regarding the publication of this review article, the authors confirm that they have no conflicts of interest. There are no personal, professional, or financial ties between the writers that could affect the work. This study was only carried out for scholarly and research reasons.

11.Future perspective

Although preclinical research provides the majority of the evidence, *Polyalthia longifolia* exhibits significant pharmacological potential. Clinical studies should be the main focus of future research to verify its effectiveness and safety in people. To guarantee quality and reproducibility, thorough molecular mechanism research and extract standardization are required. Its therapeutic applicability may be enhanced by thorough toxicological analyses and sophisticated drug delivery formulations. All things considered, the plant is a viable source for the development of innovative phytopharmaceuticals with more multidisciplinary study.

References

1. Aslam MS, Ahmad MS. Worldwide importance of medicinal plants: current and historical perspectives. **Recent Adv Bio Med.** 2016;2:88–93.
2. Mohammed AH. Importance of medicinal plants. **Res Pharm Health Sci.** 2019;5(2):124–125.
3. Gupta VK, Verma S, Pal A, Srivastava SK, Srivastava PK, Darokar MP. In vivo efficacy and synergistic interaction of 16 α -hydroxycleroda-3,13(14)Z-dien-15,16-olide, a clerodane diterpene from *Polyalthia longifolia*, against methicillin-resistant *Staphylococcus aureus*. **Appl Microbiol Biotechnol.** 2013;97:9121–9131.
4. Jothy SL, Siew CY, Saravanan DS, Deivanai SD, Latha LY, Vijayarathna SV, Sasidharan S. *Polyalthia longifolia* Sonn.: an ancient remedy to explore for novel therapeutic agents.

5. Lavanya C, Rao BG, Ramadevi D. Phytochemical and pharmacological studies on *Polyalthia longifolia*. **Int J Pharm Sci Res.** 2018;3(4):01–07.
6. Tanna A, Nair R, Chanda S. Assessment of anti-inflammatory and hepatoprotective potency of *Polyalthia longifolia* var. *pendula* leaf in Wistar albino rats. **J Nat Med.** 2009;63(1):80–85.
7. Wu YC, Duh CY, Wang SK, Chen KS, Yang TH. Two new natural azafluorene alkaloids and a cytotoxic aporphine alkaloid from *Polyalthia longifolia*. **J Nat Prod.** 1990;53(5):1327–1331.
8. Nair R, Shukla V, Chanda S. Assessment of *Polyalthia longifolia* var. *pendula* for hypoglycemic and antihyperglycemic activity. **J Clin Diagn Res.** 2007;3:116–121.
9. Nair R, Shukla V, Chanda S. Assessment of *Polyalthia longifolia* var. *pendula* for hypoglycemic and antihyperglycemic activity. **J Clin Diagn Res.** 2009;3:116–121.
10. Ghous M, Dogar NA, Hanif A, Jabbar M. Phytochemical analysis and antioxidant potential of ethanolic extract of *Polyalthia longifolia* leaves. **Pak J Sci.** 2023;75(2):434–438.
11. Abdullahi TO, Yakubu MT, Suleiman AI, Ahmad AI, Abdulazeez BO, Muhammad B, Onemola KR, Obansa UO, Ahmed TM. Effect of *Polyalthia longifolia* leaf extract on uterine function indices of female Wistar rats. **Dutse J Pure Appl Sci.** 2024;10(1C):96–104.
12. Gupta VK, Verma S, Pal A, Srivastava SK, Srivastava PK, Darokar MP. In vivo efficacy and synergistic interaction of 16 α -hydroxycyclo-3,13(14)Z-dien-15,16-olide, a clerodane diterpene from *Polyalthia longifolia* against methicillin-resistant *Staphylococcus aureus*. **Appl Microbiol Biotechnol.** 2013;97:9121–9131.
13. Chanda S, Nair R. Antimicrobial activity of *Polyalthia longifolia* (Sonn.) Thw. var. *pendula* leaf extracts against 91 clinically important pathogenic microbial strains. **Chin Med.** 2010;1:31–38.
14. Chanda S, Nair R. Antimicrobial activity of *Polyalthia longifolia* (Sonn.) Thw. var. *pendula* leaf extracts against 91 clinically important pathogenic microbial strains. **Chin Med.** 2010;1:31–38.
15. Sivashanmugam AT, Chatterjee TK. In vitro and in vivo antidiabetic activity of *Polyalthia longifolia* (Sonner.) Thw. leaves. **Orient Pharm Exp Med.** 2013;13(4):289–300.
16. Laddha GP, Bavaskar SR, Baile S, Chaudhari M. Assessment of anti-diabetic bustle of *Polyalthia longifolia* Roxb. **J Pharm Res.** 2012;5(3):1457–1459.
17. Lakshmi A, Rao Y, Bhargavi C, Seelam U. Antidiabetic and wound healing activity of various bark extracts of *Polyalthia longifolia*. **Asian J Pharm Clin Res.** 2011;4(1):109–113.
18. Nair R, Shukla V, Chanda S. Assessment of *Polyalthia longifolia* var. *pendula* for hypoglycemic and antihyperglycemic activity. **J Clin Diagn Res.** 2007;3:116–121.
19. Misra P, Sashidhara KV, Singh SP, Kumar A, Gupta R, Chaudhaery SS, Gupta SS, Majumder HK, Saxena AK, Dube A. 16 α -Hydroxycyclo-3,13(14)Z-dien-15,16-olide from *Polyalthia longifolia*: a safe and orally active antileishmanial agent. **Br J Pharmacol.** 2010;159:1143–1150.
20. Pal D, Bhattacharya S, Baidya P, De KB, Pandey JN, Biswas M. Antileishmanial activity of *Polyalthia longifolia* leaf extract on the in vitro growth of *Leishmania donovani* promastigotes. **Glob J Pharmacol.** 2011;5(2):97–100.
21. Rajangam J, Christina A. Evaluation of hepatoprotective and antioxidant potential of methanolic extract of *Polyalthia longifolia* fruits: an in vitro and in vivo approach. **J Appl Pharm Sci.** 2013;3(2):69–76.
22. Jain AK, Jain A, Jain A, Jain S, Sikarwar MS, Dubey SK. Xanthine oxidase inhibitory activity of *Polyalthia longifolia*.
23. Katkar KV, Suthar AC, Chauhan VS. The chemistry, pharmacologic, and therapeutic applications of *Polyalthia longifolia*. **Pharmacogn Rev.** 2010 Jan;4(7):62–68.
24. Lavanya C, Rao BG, Ramadevi D. Phytochemical and pharmacological studies on *Polyalthia longifolia*. **Int J Pharm Sci Res.** 2018;3(4):1–7.
25. Dixit P, Mishra T, Pal M, Rana TS, Upreti DK. *Polyalthia longifolia* and its pharmacological activities. **Int J Sci Innov Res.** 2014;2:17–25.
26. Dattatray TV, Baburao SP, Shivaji CS. Comprehensive review on *Polyalthia longifolia*. **Tradit Med Res.** 2021;6(2):19.
27. Korsah S, Gbedema SY, Bayor MT, Boakye-Gyasi ME, Owusu FW, Forkuo AD. In vivo antimalarial activity of *Polyalthia longifolia* (Annonaceae) leaf extract and assessment of its formulated oral dosage forms. **Evid Based Complement Altern Med.** 2021;2021:6519346.
28. Louis VC, Okolie NJ, Amah HC, Uroko RI, Amadi AN, Madubuike KG, Ijioma SN. Anthelmintic activities of *Polyalthia longifolia* leaf and stem bark extracts in *Heligmosomoides bakeri*-infected mice. **Anim Res Int.** 2021;18(2).
29. Saleem R, Ahmed M, Ahmed SI, Azeem M, Khan RA, Rasool N, et al. Hypotensive activity and toxicology of constituents from root bark of *Polyalthia longifolia* var. *pendula*. **Phytother Res.** 2005;19(10):881–4.

30. Satish S, Raghavendra MP, Mohana DC, Raveesha KA. In vitro evaluation of the antifungal potentiality of *Polyalthia longifolia* against some sorghum grain moulds. J Agric Technol. 2010.