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Review Article

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Curcuma caesia Roxb.: A Promising Medicinal Plant: Comprehensive Review of Its Bioactive Potential

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Abstract

Curcuma caesia Roxb., a member of the Zingiberaceae family, is a notable yet insufficiently studied medicinal plant with a wide range of uses in Pharmacognosy and Pharmacology. This perennial herb, distinguished by its bluish-black rhizomes, is traditionally referred to as 'turmeric' commonly known as Kali Haldi or black turmeric, Curcuma caesia Roxb is an important species within the curcuma genus, it has been classified as endangered due to a significant reduction in its population in natural environments the excessive harvesting of C. caesia, mainly for extracting bioactive compounds to satisfy pharmaceutical industry demands, has greatly contributed to this population decline.

It is esteemed for its medicinal qualities, including cooling effects, astringency, and digestive benefits, making it a preferred choice in therapeutic practices with minimal side effects. According to Indian medicinal system, it is utilized to treat conditions such as leukoderma, asthma, tumors, piles, and bronchitis. This study seeks to explore the phytochemical composition, ethnopharmacological applications, ecological traits, pharmacological activities, and compound identification related to curcuma caesia Roxb, thereby enhancing our comprehension of its therapeutic potential and ecological significance.

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Introduction:

Curcuma caesia Roxb., belonging to the Zingiberaceae family, is a lesser-known perennial herb native to the northeastern and central regions of India. Its bluish-black tuberous rhizomes are noted for their strong aroma and medicinal benefits. Historically, this plant has been utilized for treating various ailments. Herbalists employ its rhizome for its antitumor, antioxidant, antimicrobial, and thrombolytic properties[1]. This herb is found in northeastern and central India, as well as in the papi Hills of East Godavari, West Godavari, and Andhra Pradesh. In traditional medicine, both fresh and dried rhizomes of *Curcuma caesia* are used to address conditions like leukoderma, asthma, tumors, piles, bronchitis, and bruises[2]. *Curcuma caesia* is a perennial plant that grows upright, reaching heights of 0.5-1.0 m. It has a large tuberous rhizome, broad oblong leaves that stand vertically, and flowers that are pale yellow with a reddish edge. The inner part of the rhizome is bluish-black or buff in color and displays a circular pattern often mistaken for growth rings[3]. The plant thrives in tropical and subtropical regions globally and is widely cultivated in various Asian countries. In India, it is commonly known as "kali haldi." Numerous studies have highlighted the pharmacological effects of Curcuma species, showcasing their potential for antitumor, anti-inflammatory, antifungal, and immunological activities[4]. Curcuma caesia is a moderately aromatic herbaceous plant with rhizomes measuring 30 to 60 cm in length. It has a leafy cluster and large, petiolate, elongated leaves that are smooth and greenish on both sides, tapering to sharp tips[5].

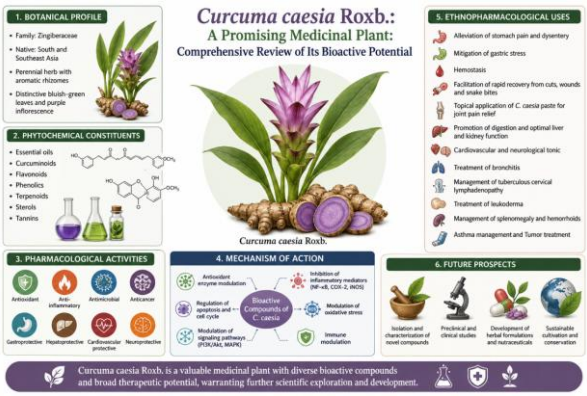

Fig 1. A Promising Plant *Curcuma caesia* (AI generated)

A plant bio-stimulant is any substance or microorganism applied to plants to enhance nutrient efficiency, tolerance to abiotic stress, and/or crop quality characteristics, regardless of its nutrient content. These bio-stimulants specifically reduce the need for mineral fertilizers by improving the uptake of micro and macronutrients by plants, thereby positively affecting root morphology and overall plant growth[6]. The genus Curcuma, commonly known as Kali haldi, is a well-known spice originating from India. It is an upright herbaceous plant with rhizomes and broad leaves[7].

Taxonomical classification:

Table 1: Taxonomy[3]

Kingdom	Plantae
Sub kingdom	Viridaeplantae
Phylum	Tracheophyta Sinnott
Subphylum	Euphyllophytina
Class	Magnoliopsida
Order	Zingiberales
Family	Zingiberaceae
Subfamily	Zingiberoideae
Genus	Curcuma
Species	Curcuma caesia Roxb

Vernacular Names:

In different parts of India *Curcuma caesia* is known by different names[5]

Table 2: Vernacular names

Hindi	Kali Haldi, Nar Kachura Krishna, Kedar
Marathi	Kali-halad
Manipuri	Yaingang Amuba or Yaimu
Telugu	Nalla Pasupu
Kannada	Kariarishina, Naru Kachora
Bengali	Kala Haldi Mizo: Aihang, Ailaihang
Assamese	Kala Haladhi
Nepalese	Kaalo Haledo

Genus of Curcuma:

The zingiberaceae family comprises a notable collection of rhizomatous plants, renowned for their medicinal and aromatic qualities, largely attributed to their volatile oils and oleoresins. This family includes prominent genera such as Curcuma, Kaempferia, Hedychium, Amomum, Zingiber, Alpinia, Elettaria, and Costus. Originating from the Indo-Malayan region, the curcuma genus exhibits significant diversity in India, especially in terms of species and cultivars, out of the roughly 100 species identified within this genus, about 40 are indigenous to India. On a global scale, Curcuma is increasingly recognized for its potential in treating various health issues due to its bioactive components[8].

Morphology:

Rhizome:

The rhizome is tuberous, generally measuring between 2-6 cm in diameter, and exudes a sweet, camphor-like aroma, though its form and size can differ. It is compressed from the sides and features adventitious roots, root scars, and warts. Circular wrinkles on its exterior mark the nodal and internodal areas, and the surface color of the rhizome may be dark brown, bluish black, or buff[9].

Fig 2. Rhizome of *Curcuma casiea*

Flower:

The blossoms display a light yellow shade accented by a reddish edge, calyx ranges from 10-15 mm in length, is blunt, and generally has three teeth. The corolla is long and tubular, with a pale yellow tint, and features a three-lobed, semi-elliptical lip[10].

Fig 3. Leaves and flower of *Curcuma casiea*

Leaves:

The black turmeric plant's leaves are long and oval, with a reddish tint along their edges leaves usually appear in clusters ranging from 10-20 cm, the petioles are ivory in color and do not sheath, instead intertwining to create a pseudo axis. This parallel leaf structure is a typical trait seen in monocots[11]. The *Curcuma caesia* plant bears a strong resemblance to *Curcuma longa*, with the main difference being that *Curcuma caesia's* leaves have a distinct red-violet streak running the full length of the lamina[12].

Cultivation and collection:

Curcuma caesia, known as Black Turmeric, is mainly found in West Bengal, Madhya Pradesh, Orissa, Chhattisgarh, and Uttar Pradesh, thriving in moist deciduous forests. Indigenous to Northeastern and Central India, it is also in the Papi Hills, Himalayan foothills, and North Hill forests of Sikkim. Black Turmeric rhizomes are economically valuable for their medicinal benefits. The Curcuma genus, a well-known Indian spice called "Haldi," includes over 200 species globally. *Curcuma caesia*, part of the Zingiberaceae family, is locally called "Kali Haldi." This upright herb is notable for large leaves. Fresh rhizomes have a strong camphor scent, traditionally used externally for sprains and bruises[11]. Understanding morphological and genetic diversity in Odisha and West Bengal is

crucial for developing new agricultural crop varieties. Currently, 92 *Curcuma* species are recorded globally (The Plant List, 2013). Curcuma caesia, endangered and native to Southeast Asia, is in India, Bangladesh, China, Nepal, Malaysia, and Thailand. In India, it grows in Andhra Pradesh, Khammam district, Papi Hills, and Northeastern and Central India. Cultivation techniques for Curcuma caesia resemble those for common turmeric. Rhizomes are cleaned, placed in a cauldron, covered with water, boiled for 30 minutes until foam appears, and a strong odor is emitted[12]. Rhizomes are removed once water reduces to one-third, softened, and their inner color changes from blue to dark or pale brown[13], they are sun-dried for 10-15 days until hardened and then packaged for use[14].

Chemical constituent:

The chemical composition of *Curcuma caesia* includes a variety of constituents such as curcuminoids, polyphenolic compounds, desmethoxycurcumin, bisdemethoxycurcumin, and cyclic curcumin[3]. Additionally, it contains alkaloids, phenols, resins, phytosterols, terpenoids, carbohydrates, reducing sugars, tannins, glycosides, saponins, quinones, amino acids, oils, and flavonoids[15].

The leaves of *Curcuma caesia* are characterized by the presence of 1, 8-cineole, camphor, borneol, α-terpineol, and β-pinene.

The rhizome oil comprises δ-camphor, 1, 8-cineole, ocimene, 1-αr-curcumene, δ-camphor, δ-linalool, δ-borneol, and zingiberol[16].

Furthermore, the rhizomes and leaves of *Curcuma caesia* have been identified to contain essential oils, including camphor, eucalyptol, tropolone, ledol, and camphene, which contribute to its distinctive aromatic fragrance[17].

The rhizome of curcuma caesia is recognized for its extensive range of compounds, including alkaloids, terpenes, amino acids, carbohydrates, tannins, flavors, flavonoids, steroids, reducing sugars, proteins, anthracene, glycosides, and cardiac glycosides. The essential oil extracted from curcuma caesia rhizomes comprises 30 chemical constituents, accounting for 97% of the total oil. The primary components are camphor (28%), turmingon (12%), curcumin (7%), ocimene (2%), cineole (5%), elemene (4%), borneol (4%), neryl acetate (3%), and curcumen (3%)[18].

Ethnopharmacological Applications:

Curcuma caesia is used for a wide range of therapeutic purposes, including the alleviation of stomach pain and dysentery, mitigation of gastric stress, and promotion of digestion along with optimal liver and kidney function. It is also valued for its hemostatic properties and its ability to facilitate rapid recovery from cuts, wounds, and snake bites. The paste is applied topically for relief from joint pain, while internally it is considered beneficial as a cardiovascular and neurological tonic. Additionally, it is traditionally employed in the treatment of bronchitis, tuberculous cervical lymphadenopathy, leukoderma, splenomegaly, hemorrhoids, asthma, and even tumors[19].

Pharmacological activity:

Thrombolytic activity:

Thrombolytic agents play a crucial role in managing conditions such as myocardial infarction, strokes, deep vein thrombosis, and pulmonary embolism by breaking down blood clots. Nonetheless, the synthetic drugs currently in use pose risks like bleeding and heart-related issues, highlighting the necessity for safer natural alternatives. This research explores the potential of *Curcuma caesia* rhizome ethanol extract as a thrombolytic agent in vitro. The findings reveal a significant clot dissolution rate of 49.18±3.41%, which is comparable to Streptokinase at 71.54±3.26% and much better than water at 2.96±0.28%. These results indicate that *Curcuma caesia* could be a promising natural option for treating cardiovascular diseases, meriting further investigation[20].

Antimicrobial activity:

This study aimed to evaluate the antimicrobial properties of *Curcuma caesia* employed dichloromethane (DCM) and ethanol extracts to assess their efficacy against Gram-positive bacteria (Staphylococcus aureus, Streptococcus pyogenes), Gram-negative bacteria (Escherichia coli, Pseudomonas aeruginosa), Aspergillus fumigatus, and Candida albicans using the cup-plate method. Phytochemical analysis identified the presence of glycosides, carbohydrates, saponins, phytosterols, resins, flavonoids, and diterpenoids in the extracts. *Curcuma amada* demonstrated superior antimicrobial activity against both bacterial strains compared to Curcuma caesia. In antifungal assays, the ethanol extract of Curcuma caesia (200 mg/ml) exhibited the

highest efficacy against Candida albicans, whereas the DCM extract of *Curcuma amada* (100 mg/ml) was the least effective. For Aspergillus fumigatus, the ethanol extract of *Curcuma caesia* (200 mg/ml) was the most effective, while the DCM extract of *Curcuma caesia* (100 mg/ml) was the least effective[21].

Antioxidant and cytotoxic activity:

The study investigated the pharmacological effects and toxicity of a methanol extract derived from the bark of *Curcuma Caesia*. Swiss albino mice were utilized to evaluate the antioxidant and cytotoxic properties, which were compared to a control group receiving 5% CMC. The extract demonstrated both depressive and toxic effects. Central nervous system activity was assessed using open field and hole board tests, revealing a dose-dependent reduction in both peripheral and central movement, as well as decreased head dipping and poking. Chronic toxicity was evaluated through complete blood count, liver enzyme tests, and histopathological analysis. Additionally, methanolic leaf extracts exhibited strong antioxidant and antibacterial properties, characterized by high concentrations of flavonoids and tannins. The extract showed significant DPPH scavenging activity (IC_{50} 28.30 µg/ml), surpassing that of ascorbic acid[22].

Antiparasitic activity:

The rhizomes of *Curcuma caesia*, also known as Kali Haldi or Black Turmeric, are prevalent throughout India and are known for their various medicinal benefits. Although prior studies have highlighted its antioxidant, anti-inflammatory, and pain-relieving properties, potential as an anthelmintic agent has not been extensively studied. This research aimed to evaluate the anthelmintic effects of three different extracts (ethanol, chloroform, aqueous) from *Curcuma caesia* rhizomes at concentrations of 25 mg/dl, 50 mg/dl, and 100 mg/dl, using albendazole (20 mg/dl) as a reference. The extracts caused paralysis and subsequent death in earthworms, with the ethanolic extract at 100 mg/dl showing the most effective paralysis time of 18.06±0.74 minutes, while the chloroform extract at the same concentration induced paralysis in 16.24±0.86 minutes. Additionally, the ethanolic extract at 100 mg/dl resulted in death within 36.81±1.13 minutes, which is comparable to the effects of albendazole, which caused paralysis in 23.09±1.56 minutes and death in 37.20±1.74 minutes. This study indicates that *Curcuma caesia* rhizomes have potential vermifuge activity, characterized by their ability to induce paralysis rather than immediate death, similar to albendazole, in a dose-dependent manner[23].

Analgesic and inflammatory activity:

The research focused on examining the pain-relieving and anti-inflammatory properties of a methanol extract derived from the rhizomes of *Curcuma caesia* (MECC). Different concentrations of MECC (100, 200, and 400 mg/kg) were administered to animal models. Analgesic effects were assessed using acetic acid-induced writhing and hot plate tests in Swiss albino mice, while anti-inflammatory effects were evaluated through carrageenan-induced paw edema and cotton pellet-induced granuloma models in Wistar rats. The results demonstrated notable analgesic activity in mice and effective anti-inflammatory responses in both acute and subacute inflammation models in rats[24,25].

Locomotors activity:

Curcuma caesia Roxb., a member of the Zingiberaceae family, has been traditionally used to address a range of health issues, including wound healing, infections, leukoderma, fever, asthma, cancer, piles, bronchitis, ulcers, and bruises. A recent study explored its effects on locomotor activity, memory, and learning behaviors in mice. The behavioral tests involved assessing exploratory behavior with a head dip apparatus and learning behavior using a stationary rod. When administered orally at doses of 150 and 300 mg/kg, the plant extract showed potential antidepressant and anxiolytic properties. These results highlight *Curcuma caesia's* promise as a valuable natural resource for medicinal applications, warranting further research[26,27].

Anti-asthmatic activity:

Curcuma caesia, has traditionally treated severe bronchitis and asthma a research aimed to validate its medicinal use by evaluating the antiasthmatic effects of petroleum ether, ethanol, and water extracts from *Curcuma caesia* rhizomes administered intraperitoneally at 25 to 100 mg/kg, the ethanol extract showed a significant ability to stabilize mast cells at all doses (25, 50, 100 mg/kg i.p.), providing protection rates of 75.13%, 76.07%, and 81.70%, indicating its potential effectiveness over other extracts[28].

Anti-tuberculosis activity:

The research explored bioactive compounds from Curcuma caesia rhizomes for potential anti-tuberculosis agents. Phytochemical screening and GC-MS analysis identified alkaloids, flavonoids, phytosterols, saponins, and phenolics as key components. Notably, (+)-3-Bromocamphor-8-sulfonic acid ammonium salts, isolated via methanol extraction, showed significant anti-tuberculosis properties. Docking studies with Mycobacterium tuberculosis proteins highlighted hydrogen bonding, indicating potential as a drug candidate compliant with Lipinski's rule of five, crucial for drug development[29].

Infection:

This research examines the active components in black turmeric extract and assesses its antibacterial effectiveness against bacteria responsible for nosocomial infections, Kirby-Bauer disk diffusion method was employed to measure inhibition zones. The results indicated that black turmeric extract exhibits antibacterial properties against both gram-positive and gram-negative bacteria, with the most significant effect observed at an 80% concentration, producing a 15.10 ± 6.95 mm inhibition zone against Staphylococcus aureus[30].

Antiulcer:

An ulcer is identified by a disruption in the mucosal lining of the stomach or duodenum, leading to a localized sore or cavity due to persistent inflammation. The research suggests that ethanolic extracts of *Curcuma caesia* have a significant protective effect against gastric ulcers, similar to the standard drug ranitidine.

Antiemetic:

The ethanolic extract from the rhizome of *Curcuma caesia* showed significant antiemetic effects in a chick emetic model, with its performance being compared to the standard drug domperidone[31].

Conclusion

Curcuma caesia is garnering growing interest from scientists due to its potential health advantages. This plant is seen as a promising natural remedy in the realm of complementary and alternative medicine, with potential applications in both pharmaceutical and nutraceutical fields. Research suggests that the medicinal and pharmaceutical benefits of *C. caesia* are likely linked to its wide array of metabolites, which could be further explored using advanced metabolomics methods. The plant's various therapeutic properties have piqued researchers' interest in its health benefits. Scientific investigations have underscored its antioxidant, antibacterial, antifungal, anticancer, anti-inflammatory, analgesic, anticonvulsant, muscle relaxant, locomotor antidepressant, thrombolytic, antiulcer, and antiemetic activities.

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Informed Consent

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Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. The authors declare no conflict of interest among themselves. The authors alone are responsible for the content and writing of this article.

Financial Interests

The authors declare they have no financial interests.

Human and Animal Rights

NA

Ethics approval and consent to participate

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Reference:

1. Borah A. and Kumar D.2020. A review on ethnobotany and promising pharmacological aspects of an endangered medicinal plant, Curcuma caesia Roxb. Turk J Bot, 44(3):205–13.

2. Sonjit D. and Prodyut M.2013. Curcuma caesia Roxb. and it's medicinal uses: a review. Int J Res Pharm Chem, 3(2):370–5.

3. Ibrahim ,NNA. 2023 Jan. A Comprehensive Review with Future Prospects on the Medicinal Properties and

Biological Activities of Curcuma caesia Roxb. Russo D, editor. Evid Based Complement Alternat Med,(17):1–17.
4. Kanase V. and Khan F. 2018. An overview of medicinal value of Curcuma species. Asian J Pharm Clin Res, 11(2):40–5.
5. Bhardwaj, AK.2023. Proximate composition and mineral content analysis of Curcuma caesia rhizome. BiochemSystEcol ,109:104661.
6. Chitra R. and Janaki D. 2020. Influence of bio-stimulants on growth and rhizome yield of black turmeric (Curcuma caesia). IJCS, 8(4):2304–7.
7. Yadav, M. and Saravanan KK. 2019. Phytochemical analysis and antioxidant potential of rhizome extracts of Curcuma amada Roxb and Curcuma caesia Roxb. J Drug Deliv Ther ,9(5):123–6.
8. Behar, N. 2014. A review on non-conventional turmeric: Curcuma caesia Roxb. Curr Trends BiotechnolPharm ,8(1):91–101.
9. Sharma N, and Verma. PP .2017. Pharmacognostical evaluation and conservation of threatened species Curcuma caesia Roxb. Int J Ayurvedic Med ,8:68–72.
10. Paliwal, P. and Pancholi SS .2011. Pharmacognostic parameters for evaluation of the rhizomes of Curcuma caesia. J Adv Pharm TechnolRes ,2(1):56–61.
11. Pathan, AR.2013. Curcuma caesia almost untouched drug: An updated ethnopharmacological review. Inven Rapid Planta Act ,4:1–4.
12. Chowdhury ,S. and Pal .K .2020. Conservation and in vitro propagation of an endangered wild turmeric (Curcuma caesia Roxb.) species from Sub-Himalayan Terai region of West Bengal. Int J Curr Microbiol App Sci ,9(2):2132–40.
13. Paw ,M. and Munda S.2020.Estimation of variability, genetic divergence, correlation studies of Curcuma caesia Roxb. J Appl Res Med Aromat Plants, 17:100251.
14. Singh ,WR. andSingh .HB .2015. Conservation of Curcuma caesia by in vitro techniques. Helix, 2:708–13.
15. Kataki, C. and Bhattacharjee. M. 2020.An overview on medicinal uses of exiguous plant Curcuma caesia Roxb. Int J Pharm Sci Rev Res, 63(1):2.
16. Asem ,SD. 2012. Investigation of the structure-nonlinearity relationship of zederone from the rhizomes of Curcuma caesia Roxb. [cited 2024 Jun 23] Available from: https://nopr.niscpr.res.in/handle/123456789/15194
17. Haida ,Z. 2022. Shoot induction, multiplication, rooting and acclimatization of black turmeric (Curcuma caesia Roxb.): an important and endangered curcuma species. Horticulturae ,8(8):740.
18. Sharma P, Bajaj S, Fuloria S, Porwal O, Subramaniyan V, Ozdemir M, et al. Ethnomedicinal And Pharmacological Uses Of Curcuma Caesia. NVEO - Nat VOLATILES Essent OILS J NVEO. 2021 Dec 24;14902–10.
19. Haida,Z.2023. Ethnomedicinal uses, phytochemistry, pharmacological properties and toxicology of Curcuma caesia Roxb.: a review. Adv TraditMed ,23(4):985–1001.
20. Fathima ,SN.2015. Evaluation of in vitro thrombolytic activity of ethanolic extract of Curcuma caesia rhizomes. Int J Pharma Res Rev.4(11):50–4.
21. Kaur, R. and Kaur. B. 2018. Comparative assessment of in vitro antimicrobial activity of Curcuma caesia Roxb. and Curcuma amada Roxb. Asian J Pharm Clin Res ,11(14):94–94.
22. Mishu, FH.2017. Pharmacological and Toxicological Study of Methanolic Extract of Curcuma Caesia with the Evaluation of Antioxidant and Cytotoxic Activity of Curcuma Caesia [Internet] [PhD Thesis]. East West University; Available from: http://103.133.167.5:8080/handle/123456789/2626
23. Chadalavada, V. andBudala. S. 2017. Study on anthelmintic activity of curcuma caesia. J Pharm Res. 7 (07). Available: https://www.researchgate.net/profile/Vineela-Chadalavada/publication/319464089_STUDY_ON_ANTHELMINTIC_ACTIVITY_OF_CURCUMA_CAESIA/links/59acf0730f7e9bdd11539d9e/STUDY-ON-ANTHELMINTIC-ACTIVITY -OF-CURCUMA-CAESIA.pdf
24. Sawant ,SB. 2014. Evaluation of analgesic and anti-inflammatory activity of methanolic extract of Curcuma caesia Roxb. rhizomes in laboratory animals. Int J Pharm Pharm Sci. 6(2):243–7.
25. Grover, M. 2019. Investigation of the utility of *Curcuma caesia* in the treatment of diabetic neuropathy. J Pharm Pharmacol, 71(5):725–32.
26. Sultana, N. and Azhar. I.2013. Experimental evaluation of ethanol extract of Curcuma caesia Roxb. on locomotor and learning behavior. Int J Biol Res, 1:123–7.

27. Bohra, A.2023. Evaluation of Antitumor and Antioxidant Activity of Curcuma Caesia Roxib for Targeting Cancer Apoptosis. J Indian Acad Oral Med Radiol ,35(2):171–5.
28. Pathan ,AR. 2016. Curcuma caesia rhizomes: evaluation of antiasthmatic effect by using clonidine induced mast cell degranulation. Neuropharm J, 1:7–12.
29. Das, P. and Bagwan. R. 2023. Anti-Tuberculosis and Molecular Docking Study of–Rhizomes of Curcuma caesia. Indian J Sci Technol, 16(47):4504–11.
30. Juariah, S. 2023. Antibacterial potential of Curcuma caesia Roxb ethanol extract against nosocomial infections. Bali Med J, 12(2):1959–63.
31. Zende, DS. Yadav. SM2023. Curcuma caesia Valuable Source for Developing Therapeutic Activities. Int J Res Eng Sci Manag, 6(10):43–8.