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# A Review on Ayurvedic Bitter Herb-Kiratatikta (*Swertia chirayita* (Roxb) H. Karst)- A Plant of Immense Medicinal Value

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***Abstract:*** ***Kiratatikta (Swertia chirayita (Roxb.) H. Karst.) is a herb with diverse medicinal properties. Name of the plant itself signifies that it is more of bitter taste and this bitterness is due to presence of different active principles like Amarogentin, Swertiamarin and Mangiferin etc. By these active principles it has shown pharmacological activities like Anticancer, and CNS depressant Antiviral activity. Kiratatikta is popularly known for its traditional uses in Jwara, Raktapitta, pidaka and many more. As this herb is now endangered species, another herb called Kalamegha (Androghaphis paniculata) which is having similar properties like Kiratatiktha is being used as substitute. Some authors mention it as adulterant.***
***Keywords: Kiratatikta, Swertia chirata, Swertia chirayata, Bhunimba, Kalamegha, Bitter herb***

## I. INTRODUCTION

Kiratatiktha botanically identified as *Swertia chirayita* (Roxb.) H. Karst belongs to Gentianaceae family. In India, 40 species of *Swertia* are recorded [1]. *S. chirayita* was first described in 1814 by Roxburgh under the name of *Gentiana chyrayta*[2]. This ethnomedicinal herb is known mostly for its bitter taste caused by the presence of different chemical constituents such as amarogentin- most bitter compound isolated till date, swerchirin, swertiamarin, and other bioactive compounds that are directly associated with human health welfare[3]. Its widespread uses in traditional medicine have resulted in over-exploitation from the natural habitat and it is now on the verge of extinction in the wild. So now it is a critically endangered medicinal herb that grows at high altitudes in the sub-temperate regions of the Himalayas between 1200 and 2100 m altitudes from Kashmir to Bhutan [4]

The references about the plant Kiratatikta is found in brihatrayi especially in Ganas and some of therapeutic usage have been mentioned. We can see eloborated more description in many Nighantus. The herb Kiratatikta is popularly familiar with names like Bhunimba. The present article intend to review in detail about Kiratatikta mentioned in ayurvedic classics along with detailed information available in different sources.

## II. GENERAL INFORMATION REGARDING KIRATATIKTHA MENTIONED GANAS OF DIFFERENT CLASSICS

Our preceptors classified the drugs based on pharmacodynamics and therapeutic value generally and also by their morphological features and properties. Kiratatikta (*Swertia chirayita* (Roxb.) H. Karst) classified under various such groups is enlisted below.

Table: 1 showing classification according to different Classics [5,6,7,8,9,10,11,12,13,14,15]

| | |
|---|---|
| 1.Charaka Samhita | Stanyashodhana Gana, Trushnanigraha gana, Tikta Skandha Dravyas |
| 2.Sushruta Samhita | Aargvadhadi Gana |
| 3.Ashtang Samgraham | Stanyashudhikarana Gana, Aargvadhadi Gana, Tikta Skandha Dravyas |
| 4.Nighantu Aadarsh | Kiratadi Varga |
| 5.Dhanvantari nighantu | Guduchyadi Varga |
| 6.Bhavprakash nighantu | Haritakiyadi Varga |
| 7.Kaidev nighantu | Aaushdhi Varga |
| 8.Priya nighantu | Shatpushpadi Varga |
| 9.Raj nighantu | Prabhadradi Varga |

 

| | |
|---|---|
| 10.Madanpala nighantu | Abhayadi Varga |
| 11.Shodhala nighantu | Guduchyadi Varga |

## III. NIRUKTI [16, 17, 18]

The nirukti of the drug –Kiratatikta (*Swertia chirayita* (Roxb.) H. Karst) mentions its taste is purely bitter and its habitat i.e, its available in 'Kirata desha'- which is North east part of India.

1) **'किराततिक्त'- किरातः भूनिम्बस्तदत् तिक्तः | वृक्षविशेषः॥(श.क.द्रु)**

चिराता इति भाषा | तत्पर्यायः | भूनिम्बः, अनार्यतिक्तः ||

2) **किराततिक्तो भूनिम्बोडनार्यतिक्तः - किरातदेशोडस्ति जन्मस्थानमस्य | किरातश्वासौ तिक्तश्च || (अ.को.)**

3) **किराततिक्त – किरातदेश उत्पत्तिस्थानत्वे नाख्यस्य अच् | (शब्दस्तोम-महानिधि)**

## IV. SYNONYMS

Table: 2: Showing synonyms according to different authors. [8,9,10,11,12,13,14,15]

| Sl. no | SYNONYMS | Sho. Ni | Dha.Ni | Pri. Ni | Kai. Ni | Ra.Ni | Bha. Ni | Ni. Aa | Ma. Ni |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Kiratatikta | + | + | + | + | + | + | + | + |
| 2 | Kandtikta | + | + | - | + | - | + | + | - |
| 3 | Kirataka | + | + | - | + | - | + | + | + |
| 4 | Bhunimb | + | + | - | + | + | + | + | + |
| 5 | Naditikta | + | - | - | + | - | - | - | + |
| 6 | Shleshmaha | + | - | - | - | - | - | - | - |
| 7 | Ramsenaka | + | + | - | - | - | + | - | + |
| 8 | Shulapaha | + | - | - | - | - | - | - | - |
| 9 | Maladhvansi | + | - | - | - | - | - | - | - |
| 10 | Krumighno | + | - | - | - | - | - | - | - |
| 11 | Balakpriya | + | - | - | - | - | - | - | - |
| 12 | Naipal | + | + | - | - | - | + | - | + |
| 13 | Sannipatari | + | - | - | - | - | - | - | - |
| 14 | Anaryatikta | - | + | - | - | - | + | + | - |
| 15 | Kirato | - | + | - | - | - | - | - | + |
| 16 | Jvarantaka | - | + | - | - | - | + | - | + |
| 17 | Mahatikta | - | + | - | - | - | - | - | - |
| 18 | Tikta | - | + | - | - | - | - | - | - |
| 19 | Nidrari | - | + | - | - | - | - | - | + |
| 20 | Sannipataha | - | + | - | - | - | - | - | + |
| 21 | Kairat | - | - | + | - | - | + | - | - |
| 22 | Tiktakando | - | - | + | - | - | - | - | - |
| 23 | Atitiktaka | - | - | + | - | - | - | - | - |
| 24 | Haim | - | + | - | - | - | - | - | - |
| 25 | Haimstikta | - | - | - | + | - | - | - | - |
| 26 | Ramsena | - | - | - | + | - | - | + | - |
| 27 | Katruna | - | - | - | + | - | - | - | - |
| 28 | Kairataka | - | - | - | + | - | - | - | - |
| 29 | Naryatikta | - | - | - | + | - | - | - | - |
| 30 | Ardhatiktaka | - | - | - | + | - | + | - | + |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 31 | Nepalnimba | - | - | - | - | + | - | - | - |
| 32 | Katutikta | - | - | - | - | - | + | - | - |

## V. VERNACULAR NAMES

Table: 3. Showing vernacular names: [19, 20, 21]

| | |
|---|---|
| Arabic | Qasabuzzarirah |
| Bengali | Chireta, chirayita |
| Burmese | Sekhagi |
| English | Chiretta, chirata |
| Deccan | Charayatah |
| Persian | Nenilawandi |
| Canarese | Nelabevu |
| Gujarati | Chirayata, chirayita, kariyatu, kariyatun, chirayatah |
| Hindi | Charayatah, chirayita, nepal nim, chirayata |
| Oriya | Chireita |
| Kannada | Nelavebu, chirata kaddi, nelaveppu, kariyathu. |
| Kashmiri | Lose, chiraita |
| Assamese | Chirta |
| Malayalam | Nelaveppu, kirayathu, nilamakanjiram, uttarakiriyattu. |
| Marathi | Kiraita, kaduchiraita, chirayita. |
| Persian | Nenilawandi, qasabuzzarirah. |
| Punjabi | Chiretta, chiraita |
| Sanskrit | Kiratatikta, kirata, bhunimba, kirataka. |
| Patna | Cherayta |
| Tamil | Nilavembu, shirattakuchi, chirattakucchi |
| Telugu | Nelavemu, nilaveru, nilavembu |
| Urdu | Chiraita, chirayata |
| Nepal | Cherata |

## VI. TAXONOMICAL POSITION[22, 23]

Table no.4 Taxonomic position of Kiratatikta

| | |
|---|---|
| KINGDOM | Plantae |
| DIVISION | Magnoliophyta |
| CLASS | Magnoliopsida |
| SUBCLASS | Asteridae |
| ORDER | Gentianales |
| FAMILY | Gentianaceae |
| GENUS | Swertia |
| SPECIES | Chirata |

## VII. HABITAT and HABIT[19]

1) Global: It is specially grown in Nepal and Bhutan.
2) India: Distributed in temperate Himalayas between 1200 – 3000 m altitude and in Khasi hills in Meghalaya, Arunachal Pradesh and northeast (1200-1500m) covering Himachal Pradesh,Uttaranchal, Uttarpradesh, Sikkim.
3) Habit
4) It is erect, branched, robust, annual herb.
5) Stem: 1m long and 6mm in diameter, glabrous, yellowish-brown to purplish, slightly quadrangular above and cylindrical below, large and continuous.
6) Leaves: opposite, cauline, broad at base, ovate or lanceolate, entire, acuminate, glabrous, usually with 5-7 prominent lateral veins, branching from axils of the leaves which ramify further into paniculate inflorescence.

*7)* Flowers: small, numerous, greenish yellow, tinged with purple, in profuse panicles, ovoid.
*8)* Fruit: a capsule with numerous, minute reticulated seed, 0.25- 0.55 mm long and 0.16- 0.45 mm broad irregularly ovoid. Seeds: many smooth, 0.5 mm, polyhedral. Flowering: July – October **Fruiting**: October – December

## VIII. CHEMICAL CONSTITUENTS [19, 20]

Mangiferin, Swertiamarin, Swertianin, Chiratanin, Enicoflavine, Gentianine, Gentiocrucine, Chiratin, Amarogentin, Gentiopicrin, Cerolic, Oleic, Leucine, Arginine, Stearic acid,Glutamic acid, Chiratenol, Methionine, Kairatenol, Swertanone, Swertenol, Episwertenol, Ursolic acid, Teraxerol , B sitosterol

## IX. RASA PANCHAKA[8,9,10,11,12,13,14,15]

The science of Ayurveda explains Pharmacodynamics of a drug in unique way i.e, in terms of Rasapanchaka i.e, Rasa, Guna, Veerya, Vipaka, Doshakarma. This description we find mainly in lexicons.

Table: 5- Showing Rasa panchaka of Kiratatikta according to different authors

| Rasa Panchaka | Dha.Ni | Sho.Ni | Mad.Ni | Kai.Ni | Ra.Ni | Bha.Ni | Ni.Ad | Pri.Ni |
|---|---|---|---|---|---|---|---|---|
| GUNA | | | | | | | | |
| LAGHU | + | - | + | + | - | + | + | - |
| RUKSHA | - | - | + | + | - | + | + | - |
| SARA | - | - | - | + | - | + | - | - |
| RASA | | | | | | | | |
| TIKTA | + | - | + | + | + | + | + | + |
| VIRYA | | | | | | | | |
| SHEETA | - | - | + | + | - | + | + | - |
| ANUSHNA SHEETA | + | + | - | - | - | - | - | - |
| VIPAKA | | | | | | | | |
| KATU | - | - | - | - | - | + | - | - |
| DOSHAGNATA | | | | | | | | |
| VATA ↑↑ | - | - | + | + | + | - | + | - |
| KAPHA ↓↓ | + | - | - | + | + | + | + | + |
| PITTA ↓↓ | + | - | + | + | + | + | + | + |
| KARMA | | | | | | | | |
| JWARAGHNA | + | + | + | + | + | + | + | + |
| RAKTASHODHAK | + | - | + | + | + | + | + | - |
| TRISHNA NIGRAHANA | + | - | - | + | + | + | + | - |
| KASA HARA | + | - | + | + | - | + | + | - |
| SHOPHAHARA | + | - | - | + | + | + | + | - |
| KRIMIGHNA | - | + | - | + | - | + | + | + |
| DAHASHAMAN | - | - | + | + | - | + | + | + |
| RUCHYA | - | - | - | + | - | - | - | - |
| SARAK | - | - | - | + | - | + | - | - |
| KUSHTHGHNA | - | - | - | + | + | + | + | + |
| KANDUGHNA | - | - | - | - | + | - | + | - |
| PATHYA | - | - | - | - | + | - | + | - |
| VRANSAMROPAN | - | - | - | - | + | + | + | + |
| YOGAVAHI | - | - | - | - | + | - | + | - |

| DISEASES INDICATED | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Dh.Ni | Sho.Ni | Bha.Ni | Pri.Ni | Kai.Ni | M.Ni | R.Ni | Ni.ad |
| JWARA | + | + | + | + | + | + | + | + |
| TRUSHNA | + | - | + | - | + | - | + | + |
| KASA | + | - | + | - | + | + | - | + |
| SHOPHA | + | - | + | - | + | - | + | + |
| KRIMI ROGA | - | + | + | + | + | - | - | + |
| SHOOLA | - | + | - | - | - | - | - | + |
| KUSHTHA | - | - | + | + | + | - | + | + |
| VRANA | - | - | + | + | - | - | + | + |
| DAHA | - | - | + | + | + | + | - | + |
| SHVASA | - | - | + | - | + | + | - | + |
| MEHA | - | - | - | - | + | - | - | - |
| ARUCHI | - | - | - | - | + | - | - | - |
| KANDU | - | - | - | - | - | - | + | - |

## X. THERAPEUTIC USES [24]

1) Jwara: Hot infusion of Kiratatikta mixed with Dhanyaka leaves alleviates fever immediately. (Siddha.Bhaishajya manimala.4/32)
2) Grahani: Kiratadhya churna (Charaka chikitsa.15/137-140) Bhunimbadhya churna (Charaka chikitsa.15/132-133).
3) Oedema: Paste of Kiratatikta and Shunthi destroys oedema which is chronic and caused by three doshas. ( Charak chikitsa.12/42)
4) For purifying breast milk: Decoction of Katuka, Guduchi, Saptaparna bark, Sunthi and Kiratatikta is administered. (Charaka chikitsa30/261-262)
5) Eruptive boils: Bhunimbadi kashaya.( Gada Nigraha.2/ 40-66)
6) Raktapitta (Intrinsic haemorrhage): Kiratatikta mixed with sandal is beneficial in the disease. (Charaka chikitsa.4/74-76)

## XI. RESEARCH PROFILE

Amarogenin constituent has shown as Anticancer activity[25] and Antidiabetic activity [26]
Swertiamarin has proven for CNS depressant[27] and Anti diabetic activity[28]
Mangiferin has shown Antiviral activity[29].
*S. chirayita* extracts showed anti-hepatitis B virus (anti-HBV) activities[30]

## XII. PARTS USED[20] And POSOLOGY[20]

Whole plant i.e. Panchanga
Posology:- Powder form: 1 – 3 gm  Decoction: 20-30 ml.

## XIII. CLASSICAL FORMULATIONS[31, 32, 33]

Table: 6. Showing vishista yogas of Kiratatikta

| Sl.no | YOGAS | INDICATIONS | CLASSICAL REFFERANCE |
|---|---|---|---|
| 1 | Sudarshana churna | Jwara | Sha.Sa.Ch -6 Jwarachikitsa (26-36) |
| 2 | Kiratadi kwatha | Vata jwara | B.R. jwara chikitsa(75) |

 

| | | | |
|---|---|---|---|
| 3 | Maha tikta ghrit | Kushtha, Raktapitta, Arsha, Visarpa, Pandu, Hridroga, Kamala etc | B.R. kushtharogachikitsa (243-248) |
| 4 | Sarvajwarahar lauha | Plihavruddhi, Hridyagravruddhi, Yakruthvruddhi, Jeerna jwara etc | B.R.jwrachikitsa (1170-1174) |
| 5 | Jwarantak lauha | All types of jwara, Prameha, Grahani, Kamala, Pandu | B.R. jwarachikitsa (1193-1203) |
| 6 | Patrangasava | Shvetpradar, Raktapradar, Jwara, Shotha, Pandu, Mandagni etc | B.R. pradarchikitsa (122-126) |
| 7 | Mrutyunjaya rasa | Jwara, Asadhya roga | R.Y.S. Jwaradhikar (3162-3171) |
| 8 | Punarnavadi leha | Kamala, Pandu, Kasa, Shvasa, Halimaka, Shvayathu, Swarasada etc | R.Y.S Pandukamalachikitsa (820-829) |
| 9 | Raktapittantako rasa | Raktapitta, Rasayan | R.Y.S CH-karadi rasa (158-159) |
| 10 | Sarvajwarankusha Vati | All types of Jwara | R.Y.S SH-karadi rasa (1281-1285) B.R. Jwaradhikar |
| 11 | Kiratadi taila | Santat jwara, Satata Jwara, Dhatusthit jwara, Kamala, Grahani, Atisara etc | B.R.Jwarachikitsa (1357-1361) |
| 12 | Unmadbhanjano rasa | Unmad, Apasmar,Daruna Raktapitta, Karshya | R.Y.S Unmad adhikara (1686) |
| 13 | Shodashanga Churna | Sarva jwara | Vanspati chandrodaya Vol – 4 |
| 14 | Kiratadi mandura | Pandu, Halimaka, Gulma, Prameha, Shotha, Kushtha, Shvitra etc | R.Y.S KA-karadi rasa (1159-1161) |
| 15 | Chaturbhadra kwatha | Vata jwara, Pitta jwara | B.R. Jwara chikitsa (269) |

## XIV. SUBSTITUTES[34] And ADULTERANTS[34]

*A. Substitutes*

*1)* Swertia purpurascens Wall.

*2)* S.decussata Nimmo ex Grah.

 

3) S.chinensis Franchet.
4) S.paniculata Wall.
5) S.perennis Linn.
6) S.lawii Burkill
7) S.affinis C. B. Clarke.
8) Exacum bicolor Roxb.
9) E.tetragonum Roxb.
10) Erythraea roxburghii G.Don.
11) Enicostemma littorale Blume.

B. *Adultrants*[34]
1) Swertia angustifolia Buch.Ham.ex D.Don
2) Swertia alata Royle ex.C.B.Clarke
3) Rubia cordifolia Linn
4) Andrographis panniculata Nees.

## XV. CONCLUSION

Kiratatikta – a herb with bitter taste, it has got lot of medicinal values. *Swertia chirayata* is now considered as endangered species because of its extensive use. There are many species are taken substite for Kiratatikta, but popularly Kalamegha- (*Andrographis paniculata*) which is having similar properties is being used instead of Kiratikta. In ayurvedic classics the herb has been one of the key ingredient in many preparations used in Jwara, Raktapitta, Shotha etc even used in liver disorders.

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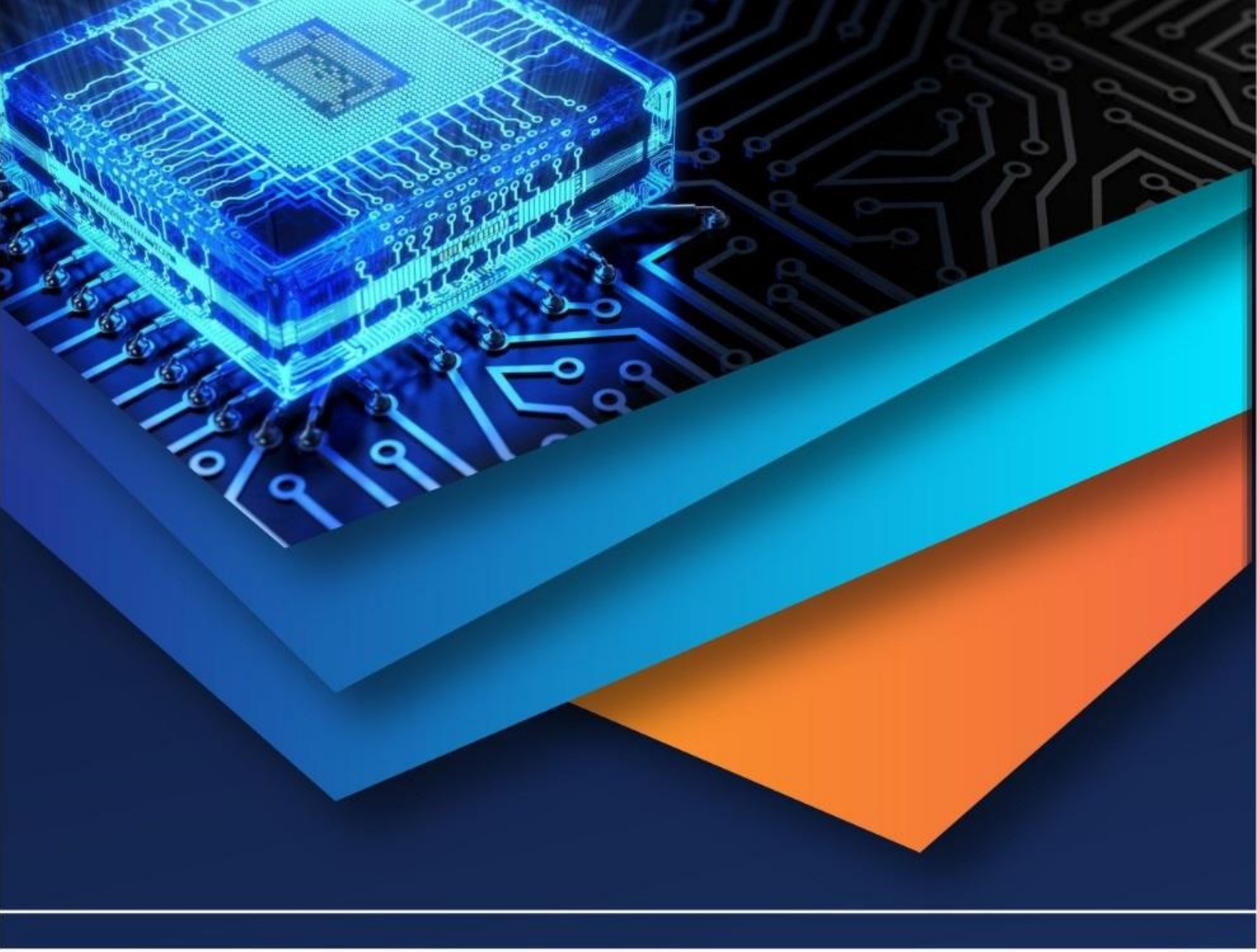
KIRATATIKTHA (*Swertia chirayita* (Roxb.) H. Karst) Images :



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