

## Exploring *Panchatikta*: A comprehensive review of Ayurvedic Pharmacology

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### Abstract

Ayurveda, an ancient system of medicine, emphasizes the holistic well-being of individuals through a deep understanding of life sciences. This article explores *Panchatikta*, a formulation derived from five bitter herbs—*Nimba*, *Patola*, *Kantakari*, *Guduchi*, and *Vasa*—known for their therapeutic properties. The significance of *Dravyaguna* and *Rasapanchaka* concepts comes into perspective when analyzing pharmacological effects of these herbs. *Panchatikta* is predominant tastes are *Tikta* and *Kashaya*, thus contributing to its action in the reduction of *pitta* and *kapha* dosha, detoxification, and enhancement of blood health. The phytoconstituents, such as alkaloids, terpenoids, and essential oils, may bring in various pharmacological actions and properties, including anti-microbial, anti-inflammatory and anti-cancer. With the Ayurvedic knowledge being incorporated into modern health care, *Panchatikta* stands as a classic example of a whole-health approach, looking into both symptoms and the root issues of ailments, thereby reinforcing the relevance of Ayurveda in contemporary care.

**Key words** : Panchatikta, Rakta Dhatu, Tikta Rasa, Rasapanchaka.

**A**yurveda is the oldest medical system and life science presenting the spiritual, mental, and physical welfare of humans globally. The word Ayurveda is composed of two words “*Ayu*” (Life) and “*Veda*” (Authentic real knowledge). The science, which imparts knowledge of life, is known as Ayurveda. It is not only curative therapy but also preventive

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therapy. It is aimed to prevent as well as protest against diseases. For achieving *Dharma*, *Artha*, *Kama* and *Moksha* the health is important. The normal status of *Dosha*, *Dhatu*, *Mala*, *Agni*, *Manas* and *Atma* is known as health.<sup>6</sup>

*Dravyaguna*, which is, composed of two words “*Dravya*” (substance) and “*Guna*” (properties, uses). The word *Guna* emphasizes the properties of the *Dravya* as well as its *Karma* and therapeutic actions. thorough knowledge of *Dravya* becomes extremely important for the maintenance of health. This knowledge obtained from *Dravyaguna Shastra*.<sup>15</sup>

*Rasa* (taste) is the *Padartha* of *Dravya*, which is perceived by tongue. *Rasa* is an attribute of the drug that is experienced by an individual *Rasanendriya* (tongue). *Rasa* is not only perception of taste, but it is an indicator of *Panchamahabhuta* combination of the *Dravya* (substance), *Guna* (properties) and *Karma* (action of the substance). *Jala* is the substance for all *Rasa*, when *Jala*, which is *Soumya* in *Antariksa* (Atmosphere), will have *Avyakta Rasa* (no taste), when it touches, ground it acquires all *Panchabhautika* qualities attains 6 individual tastes which nourishes the animals and plants. *Rasa*'s are six in number *Madhura* (sweet), *Amla* (sour), *Lavana* (salty), *Katu* (pungent), *Tikta* (bitter), *Kashaya* (astringent).<sup>9</sup>

*Tikta Rasa* is one, which spreads all over the tongue within no time *i.e.* the action of *Tikta Rasa* occurs very fast.<sup>7</sup> *Tikta Rasa* has predominance of *Vayu* and *Akasha Mahabhoota*. Due to *Akasha Mahabhoota* it has *Vishada* (cleaning) property and due to

*Vayu Mahabhoota* it is *Ruksha* thus *Upashoshaka* (absorbing) in nature. *Vayu* and *Akasha* both are *Laghu*; hence, *Tikta Rasa* is also *Laghu*, *Ruksha*, *Sheeta guna*, *Sheeta veerya* and *Katu Vipaka*. All these qualities are similar to *Vata* while opposite to *Pitta* and *Kapha*, so it is *Pittakapha Shamaka*. *Tikta Rasa* causes *Upashoshana* of *Meda* and *Majja Dhatu*. It causes *Twak*, *Mamsa* and *Asthi Shithikarana* (stability) and *Stanya Sodhana* (breastmilk purifier). Perhaps due to its *Ruksha Guna* it dries *Dhatu*s and *Upadhatu*s having *Snigdha* and *Guru Gunas* *e.g.* *Kleda*, *Vasa*, *Lasika*, *Sweda*, *Mutra* and *Purisha*.<sup>16</sup> *Tikta rasa* is *Swayamarochish-nurapyarochakghna* (itself is not good in taste) but still *Ruchipradana* (improve taste), *Vishahara* (anti-poisonous), *Krimighna* (deworming), *Murcha Prashamana* (alleviating syncope), *Daha Prashamana* (alleviating burning sensation), *Kandu Prashamana* (alleviating itching), *Kotha Prashamana* (alleviating pruritus), *Kustha Prashamana* (alleviating skin disease), *Trishna Prashamana* (alleviating thirst), *Jwaraghna* (antipyretic), *Deepana* (stimulant of digestive fire), *Pachana* (digestant), *Stanya Sodhana* (breast purifier), *Kanthya* (voice promoter), *Lekhana* (scraping), *Chedana* (cutting), *Medhya* (brain tonic).

In Ayurveda, the culture of combination or mixture of different drugs under one group has been followed and prescribed from very ancient time. One such combination named *Panchatikta* has been described in many classical texts like *Rasa Tarangini*, *Sushruta Samhita* etc. “*Panchatikta*” is derived from two words “*Panch*” means five and “*Tikta*” means bitter. Hence, *Panchatikta Dravya* is a class denoting five medicinal herbs having

mostly bitter taste in varying degrees. These medicinal herbs are used profusely for their therapeutic properties and for good health.

The five Ayurvedic medicinal herbs belonging to the group of *Panchatikta dravyas* are as follows: Nimba (*Azadirachta indica* A. Juss.), Patola (*Trichosanthes dioica* Roxb.), Kantakari (*Solanum xanthocarpum* Burm.f.), Guduchi (*Tinospora cordifolia* Willd.), and Vasa (*Adathoda vasica* Nees.).<sup>1</sup>

These five drugs mainly possess

properties like *Tikta Rasa Pradhanyata*, *Laghu Ruksha Guna*, *Katu Vipaka*, *Sheeta Veerya* and mainly acts on *Kapha Pitta Shamaka* and it acts as *Dipana*, *Pachana* and *Ruchya*. It acts as *Chardinigrahana*, *Kusthagna*, *Stanyashodhana*, *Jwaraghna*, *Krimighna*, *Vishagna* and *Kandughna*.<sup>8</sup>

Basic details of *Panchatikta dravya*'s based on Botanical Name, Family, Kula and useful parts are mentioned in Table-1.

Table-1. Classical list of *Panchatikta dravya* 's<sup>20</sup>

S. no.	Name of the drugs	Botanical names	Family	Kula	Useful Part
1	<i>Guduchi</i>	<i>Tinospora cordifolia</i> willd	Menispermaceae	Guduchi	Stem
2	<i>Nimba</i>	<i>Azadirachta indica</i> A. Juss	Meliaceae	Nimba	Leave, Dark, Seed, Fruit, Flowers, Resin
3	<i>Vasa</i>	<i>Adhatoda vasica</i> Nees	Acanthaceae	Vasa	Leaves
4	<i>Kantakari</i>	<i>Solanum surattense</i> Burm. f.	Solanaceae	Kantakari	Fruit, Whole Plant
5	<i>Patol</i>	<i>Trichosanthes dioica</i> Roxb.	Cucurbitaceae	Koshatki	Leaves

The *Rasapanchaka* is a unique theory where the properties of the drug are used to explain the pharmacological effect in

the body. The *Rasapanchaka* are the 5 components of *Dravya* namely *Rasa*, *Guna*, *Virya*, *Vipaka* and *Prabhava*.

Table-2. *Rasapanchaka* of *Panchatikta*<sup>20</sup>

S.no.	Name of the drugs	Rasa	Guna	Virya	Vipaka
1	<i>Guduchi</i>	<i>Tikta, Kashaya</i>	<i>Guru, Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>
2	<i>Nimba</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Shita</i>	<i>Katu</i>
3	<i>Vasa</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Shita</i>	<i>Katu</i>
4	<i>Kantakari</i>	<i>Tikta, Katu</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>
5	<i>Patol</i>	<i>Tikta</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>

The mechanism of action of *Panchatikta dravya* is described on the basis of *Rakta, Mamsa, Meda, Asthi, Majja & Shukra*) and *Trimala (Mutra, Purisha & Tridosha (trihumours), Sapta Dhatu (Rasa, Sweda)* (Table-3).

Table-3. Mechanism of Action of *Panchatikta Dravya* on *Dosha, Dhatu* and *Mala*<sup>20</sup>

S.no.	Name of the drugs	Dosha	Dhatu	Mala
1	<i>Guduchi</i>	<i>Tridosha Shamaka</i>	<i>Rakta</i>	<i>Mutra</i>
2	<i>Nimba</i>	<i>Kapha-Pitta Shamaka</i>	<i>Rakta</i>	-
3	<i>Vasa</i>	<i>Kapha-Pitta Shamaka</i>	<i>Rakta</i>	-
4	<i>Kantakari</i>	<i>Kapha-Vata Shamaka</i>	<i>Rakta</i>	-
5	<i>Patol</i>	<i>Tridosha Shamaka</i>	<i>Rakta, Sukra</i>	<i>Purisha</i>

Phytoconstituents are non-nutrient active plant chemical compounds or bioactive compounds and are responsible for protecting the plant against infections, infestations, or predation by microbes, pests, pathogens, or predators. Some are responsible for color, aroma, and other organoleptic properties. Phytoconstituents are synthesized in plants through primary and secondary metabolic pathways and many of them may be grouped as active drug constituents and inert nondrug constituents. A wide range of active components has been discovered and they have been divided into 16 main or more groups and the most important of them are alkaloids, terpenoids, phenols and phenolic glycosides, coumarins and their glycosides, anthraquinones and their glycosides, flavones and flavonoid

glycosides or heterosides, mucilage and gums, tannins, volatile oils, saponins, cardioactive glycosides, cyanogenic glycosides, etc. Other relevant active constituents in plants, such as vitamins, minerals, amino acids, carbohydrates and fibers, some sugars, organic acids, lipids, and antibiotics, are essential nutrients.

Table-4. Phytoconstituents of *Panchatikta*

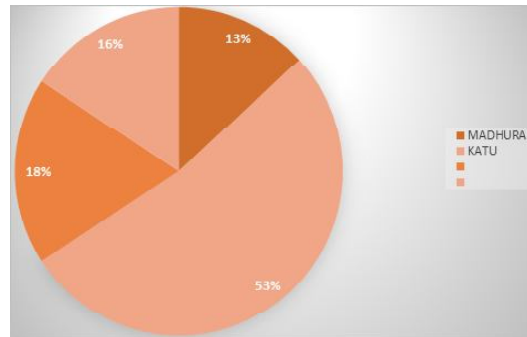
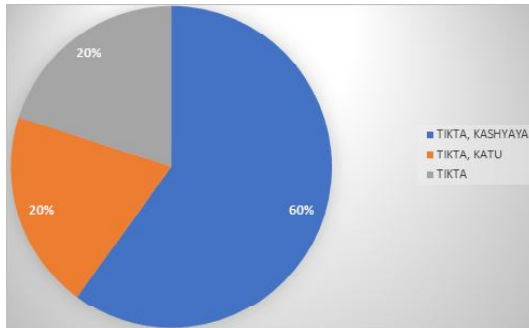
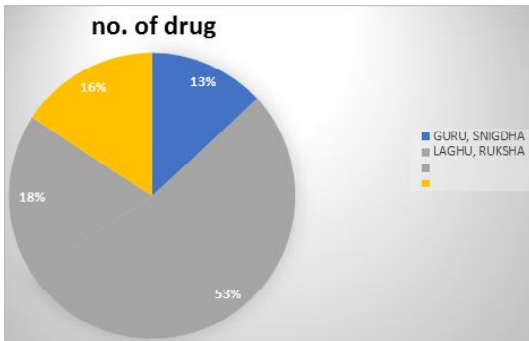
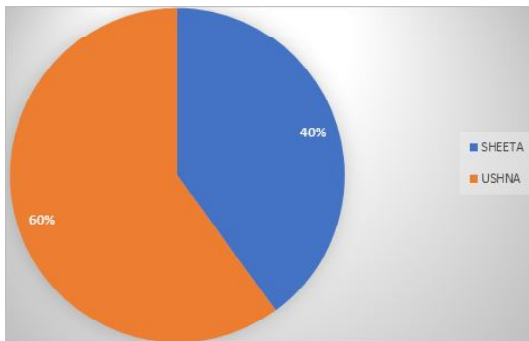
S. no.	Name of the drugs	Phytoconstituents
1	<i>Guduchi</i> <sup>2</sup>	Terpenoids, alkaloids
2	<i>Nimba</i> <sup>4</sup>	Triterpenoids, sterol
3	<i>Vasa</i> <sup>5</sup>	Alkaloids, essential oil
4	<i>Kantakari</i> <sup>3</sup>	Glucoalkaloids, steroids
5	<i>Patol</i>	Meso-inositol, b-sitosterol

Table-5. Phytoconstituents and their Pharmacological actions

Sl. no.	Phytoconstituents	Pharmacological Actions
1	Terpenoids	Anti-viral, Anti-bacterial, Anti-inflammatory, Anti-cancer
2	Alkaloids	Anti-malarial, Anti-asthma, Anti-cancer, Anti-bacterial
3	Triterpenoids	Anti-cancer, Anti-microbial, Anti-inflammatory, Anti-viral
4	Sterols	Anti-cancer, Anti-inflammatory, Anti-oxidant, Anti-obesity, Anti-viral
5	Essential oil	Anti-microbial, Anti-viral, Anti-inflammatory
6	Steroids	Anti-inflammatory, Anti-asthma
7	Meso-inositol	Anti-inflammatory, Anti-diabetic
8	b-sitosterol	Anti-cancer, Anti-inflammatory

Table-6. *Gana and Karma of Panchatikta*

S. no.	Name of the drugs	Gana	Karma
1	<i>Guduchi</i> <sup>10</sup>	<i>Charaka-Triptighna, Stanyashodhana, Dahaprashmanam, Snehopaga, Trishnanigrahana, Sandhaniya, Vayasthapan, sushruta -Guduchyadi, Patoladi, Araghwadhadi, Kakolyadi, Vallipanchamool Bhavprakasha Nighantu- Guduchyadi varga Medhya, Hridya, Chakshushya,</i>	<i>Jwarahara, Rasayana, Sangrahi, Deepana, Amahara, Trishnahara, Dahahara, Pramehaghna, Kasahara, Kusthaghna, Balya, Krimighna, Chardighna, Arshoghna, Vayasthapanana.</i>
2	<i>Nimba</i> <sup>12</sup>	<i>Charaka – Kandughna Sushruta - Araghwadadi, Guduchyadi, Lakshaadi Kasahara, Shwasahara,</i>	<i>Krimighna, Vishaghana, Kushtaghna, Netrya, Ruchikara, Vranaghna, Jwaraghna, Chardighna, Pramehara, Raktashodhana</i>
3	<i>Vasa</i> <sup>13</sup>	<i>Bhavaprakasha Nighantu - Guduchyadivarga</i>	<i>Swasahara, Kasahara, Swarya, Hridhya, Raktapittahara, Trishnashamaka, Jwaraghna, Chardighna, Mehahara, Kusthaghna, Ruchya, Kamalahara, Varnya</i>
4	<i>Kantakari</i> <sup>11</sup>	<i>Charaka - Kasahara, Kanthya, Hikkanighrahana, Shothahara, Sheetaprashamana, Angamardaprasamana Sushruta - Brihatyadigana, Varunadigana, Laghupanchamoola Bhavprakasha Nighantu -Guduchyadivarga</i>	<i>Kanthya, Kasahara, Swasahara, Jwaraghna, Deepana, Pachana, Krimighna, Hridhya, Kandughna, Kusthaghna, Rochana, Pramehahara, Sukrarechaka, Bhedana, Chakshushya, Balya</i>
5	<i>Patol</i> <sup>14</sup>	<i>Charaka - Trptighna, Trishnanighrahana, Sushruta - Patoladi, Aragwadhadi Bhavprakasha Nighantu - Sakavarga</i>	<i>Kusthagna, Jwaraghna, Amlapittahara, Deepana, Pachana</i>

**Result****Number of drug based on *Rasa*****Chart no. 1****Number of drug on the basis of *Guna*****Chart no.2****Number of drugs on the basis of *Virya*****Chart no. 3****Number of drugs on the basis of *Vipaka*****Chart no. 4**

The human body undergoes a complex sequence of tissue transformation known as *Dhatu-vada*. This begins with *Rasa* (the essence), which transforms into *Rakta* (blood). From *Rakta*, *Mamsa* (flesh) is formed, followed by *Meda* (fat), *Asthi* (bones), *Majja* (marrow), and finally *Shukra* (reproductive fluid). This process leads to *Garbha* (conception), resulting in embryo development.<sup>17</sup> In this context, the three doshas-*Vata*, *Pitta* and *Kapha* – have specific relationship with *Dhatu*s. *Vata* primarily resides in *Asthi* (bones), while *Pitta* is associated with *Rakta* (blood) and *Sweda* (sweat), and *Kapha* relates to the remaining *dhatu*s and *malas*, very intimately as the *Ashraya* and *Ashrayi*. Due to this, the *dravya*, which increases or decreases one (*Asraya*) also increase or decrease other (*Ashrayi*). Hence, *Pitta* and *Rakta* are inseparably connected. *Rakta dhatu* is directly impacted by an increase or decrease in *Pitta dosha*.<sup>18</sup> Each *Dhatu* has distinct functions: *Prinana* (nourishment-*Rasa dhatu*), *Jivana* (enlivening-*Rakta dhatu*), *Lepana* (overlying-*Mamsa dhatu*), *Snehana* (Lubrication, Unctuousness- *Medo dhatu*), *Dharana* (Support, Retention- *Asthi dhatu*), *Purana* (Filling up- *Majja dhatu*) and *Garbhotpadana* (Conception- *Sukra dhatu*) respectively.<sup>18</sup> The Blood vessels, which includes arteries,

veins and capillaries plays a vital role in circulation, with their *Moola Sthana* being *Yakrut* (Liver), *Pleeha* (Spleen) and *Raktavaha Dhamani*. Injuries to these vessels can result in symptoms like *Shyavangata* (Cyanosis in affected areas), *Jwara* (Fever), *Daha* (Burning sensation), *Panduta* (Pallor), *Shonitagma* (Hemorrhage), *Raktanetra* (Blood shot eyes). Similarly, channels associated with *Shukra* (Semen) are connected to the *Stana* (Breast), and *Vrushana* (Testicles) and if this channels are injured, it can result in *Kliabya* (Impotence), *Chiratpraseka* (Delayed ejaculation), *Raktashukrata* (Blood tinged semen).<sup>19</sup> Furthermore, *Rakta*- related disorders can manifest *Kustha* (Skin disease), *Visarpa* (Acute spreading disease of the skin), *Pidaka* (Carbuncles), *Raktapitta* (Bleeding diseases), *Asrugdhara* (Menorrhagia), *Guda-medhrapaka* (Inflammation and suppuration in rectum and penis), *Asyapaka* (Mouth ulcers), *Pleeha* (Disease of spleen), *Gulma* (tumors in abdomen), *Vidradhi* (Abscess), *Neelika* (Blue moles), *Kamala* (Jaundice), *Vyanga* (Blackish discoloration on face), *Piplava* (Port wine mark), *Tilakalaka* (Black moles), *Dadru* (Ringworms), *Charmadala* (Dermatitis), *Shvitra* (Leukoderma), *Pama* (Papules), *Kotha* (Urticaria), *Asramandala* (Red circular patches)<sup>21</sup>, while *Sukra* – related issues are *Klaibya* (Impotence), *Aharshana* (Libido), *Apatya* (Diseased progeny), *Garbha* (not formed and if formed aborted or miscarried).<sup>21</sup> *Rasa* reflects *Panchabhautik* composition (the five elemental qualities) of *Dravya* influencing their pharmacological effects. *Tikta rasa* has *Laghu*, *Sheeta*, *Ruksha guna*, *Sheeta virya* and *Katu Vipaka*. All these qualities are similar to *vata* while opposite to *pitta* and *kapha*. So on the basis of *samanya-*

*vishesha* principle it is *Pitta-kapha shamaka* and as *Panchatikta* is *tikta rasa pradhana* it acts on *pitta* and *kapha* and as *pitta* and *rakta* is *ashraya-ashrayi* it acts on *rakta*. The *Panchatikta* formulation is known for its therapeutic properties, in balancing *Pitta* and *Kapha doshas* and *Rakta Dhatu*. Its mode of action can be understood through its *Rasapanchaka* – *Rasa*- All 5 herbs exhibit *Tikta* (bitter) and *Kashaya* (astringent) *rasas*. *Tikta Rasa* is often connected to detox processes and is known to stimulate *Agni* (digestive fire). *Panchatikta* helps remove *Ama* (toxins), from the body especially from the *Rakta* (blood tissues), which promotes overall health. *Panchatikta* can also improve appetite, making it helpful in cases of reduced appetite or sluggish digestion. Generally, its *Guna* possesses *Laghu* (light), *Ruksha* (dry), and *Snigdha* (unctuous) properties. These traits make it effective for balancing excess *Pitta* and *Kapha*. *Tikta rasa* has *Sheeta* (cool) properties that help calm excess *Pitta*. Additionally, its *Ruksha* (rough) and *Laghu* (light) properties can reduce *Kapha*, making it useful for conditions related to these *Doshas*. The *Virya* (potency) of *Guduchi* and *Kantakari* is *Ushna* (hot), while *Nimba*, *Vasa*, and *Patola* have *Sheeta* (cold) potency, allowing for a balanced approach in treatment. *Guduchi* shows *Madhura* (sweet) *vipaka*, while others display *Katu* (pungent) *vipaka*, which further enhances their overall effectiveness. *Panchatikta* primarily affects the three *doshas*, influencing the seven *Dhatu*s and three *Malas*. *Tridosha* effect- *Guduchi* is known to balance all three *Doshas*, while other primarily focus on balancing *Kapha* and *Pitta*. This makes *Panchatikta* suitable for a variety of conditions, including skin disorders, respiratory disorders and digestive disturbances. *Dhatu* involvement.

The formulation supports *Rakta* (blood) and promotes detoxification processes that help maintain the overall health of *Dhatus*. *Mala* regulation. It helps regulate *Malas* like *Mutra* (urine) and *Purisha* (feces), ensuring proper elimination and detoxification. By using these actions, *Panchatikta* is effective in treating conditions such as skin diseases, digestive issues, and metabolic disorders, particularly those related to *Pitta* and *Rakta*. The phyto-constituents found in *Panchatikta dravyas*, like terpenoids, have anti-inflammatory properties that reduce inflammation in blood vessels. This promotes better circulation and lowers the risk of clot formation. They also have anti-cancer properties that inhibit the growth of cancerous cells in the blood, especially in hematological malignancies. Alkaloids have anti-cancer and anti-bacterial properties. They combat infections that may affect blood health, potentially preventing sepsis. Triterpenoids have anti-inflammatory and anti-microbial properties. They help eliminate pathogens in the blood, supporting overall immune functions. Sterols have anti-inflammatory, anti-cancer, and anti-obesity properties. They support healthy lipid profiles in the blood by reducing cholesterol absorption. Essential oils have anti-microbial and anti-inflammatory properties. Steroids have anti-inflammatory and anti-asthma properties. They enhance oxygenation in the blood by reducing airway inflammation and improving lung function. Meso-inositol has anti-inflammatory and anti-diabetic properties. It improves insulin sensitivity, promotes better glucose metabolism, and reduces complications related to blood sugar levels. B-sitosterol has anti-cancer and anti-inflammatory properties. These compounds contribute to overall blood health by reducing inflammation, fighting infections, supporting

healthy blood cell functions, and affecting lipid and glucose metabolism. Their various effects are crucial for maintaining blood balance and addressing different blood-related disorders.

*Panchatikta* is a notable formulation in Ayurvedic medicine. It displays the combination of five strong bitter herbs recognized for their healing properties. This blend effectively balances *Pitta* and *Kapha* doshas, promotes detoxification, and supports overall health. The wide range of plant compounds, including terpenoids, alkaloids, and essential oils, boosts its effectiveness through different pharmacological actions, such as reducing inflammation and fighting microbes. By using the principles of *Dravyaguna* and *Rasapanchaka*, *Panchatikta* represents Ayurveda's holistic approach to health, addressing both symptoms and the root causes of various issues. *Panchatikta* can be used for several diseases mentioned above (*Raktapradoshaja vikara*, diseases indicated for *Tikta rasa* etc.). Its importance in modern wellness practices shows the lasting wisdom of Ayurvedic traditions in promoting balance and vitality today.

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