

A CONCEPTUAL REVIEW OF TAILA PATANA VIDHI IN AYURVEDA PHARMACEUTICS

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Article Received: 18 June 2026 | Article Revised: 09 July 2026 | Article Accepted: 30 July 2026

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How to cite this Article: Puneeth Raj R. M., Ranjith Bharadwaj, Subramanya S., Mohar Pal Meena, Sakhitha K. S., Reetesh Ramnani (2026) A CONCEPTUAL REVIEW OF TAILA PATANA VIDHI IN AYURVEDA PHARMACEUTICS. World Journal of Pharmaceutical Science and Research, 5(8), 650-664.



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ABSTRACT

Introduction: *Taila Kalpana* is a vital dosage form in Ayurveda pharmaceuticals, known for its efficiency in extracting and delivering lipid-soluble active principles. Classical texts describe multiple methods of *Taila* preparation, among which *Taila Patana Vidhi* is a specialized technique used for extracting oil from hard substances and materials with minimal oil content. This method employs various *Yantras* such as *Patala Yantra*, *Bhudhara Yantra*, and *Akasha Patana Yantra*, reflecting the advanced pharmaceutical understanding of ancient scholars. **Methods:** The present work is a conceptual literary review based on classical Ayurveda and Rasashastra texts. Data regarding *Taila Patana Vidhi*, different *Yantras*, their structure, procedure, and applications were collected from authoritative sources. The information was systematically compiled and analysed in a descriptive manner, preserving classical authenticity while correlating with pharmaceutical concepts. **Discussion:** *Taila Patana Vidhi* is mainly applied for extracting oil from *Beeja*, *Twak*, *Kashta*, *Asthi*, *Mamsa*, and mineral-origin drugs such as *Gandhaka*. *Patala Yantra* is the most widely used apparatus, especially for substances with low oil yield. The process involves controlled heating, pressure, and condensation, showing similarities with modern extraction techniques like distillation. Variations in *Yantra* design indicate adaptability based on drug characteristics. **Conclusion:** *Taila Patana Vidhi* represents a scientifically sound and efficient extraction technique described in Ayurveda. Its principles align with modern pharmaceutical processes and offer potential for developing eco-friendly and cost-effective extraction methods.

KEYWORDS: *Taila Patana Vidhi*, *Sneha Kalpana*, *Yantra*, Ayurveda Pharmaceuticals, Oil Extraction.

1. INTRODUCTION

Taila Kalpana^[1] is one of the most important dosage forms described in Ayurveda pharmaceuticals, widely utilized for both internal administration and external therapeutic procedures. Among *Sneha Kalpanas*, *Taila* (medicated oil) is especially valued due to its ability to penetrate deeply into tissues (*Sukshma Srotogamitva*), carry active principles efficiently, and provide sustained therapeutic action. Because of its lipophilic nature, *Taila* facilitates the extraction of fat-soluble phytoconstituents and enhances drug absorption, making it an indispensable formulation in the management of various disorders, particularly those involving *Vata* and *Kapha Dosha*, as well as skin diseases.^[2]

Classical Ayurveda texts have elaborately described multiple methods for the preparation of *Taila*, each method being selected based on the nature of the raw material and the intended therapeutic application. These include *Taila* prepared by *Paka Vidhi*,^[3] *Druti* method,^[4] *Deepika Taila Paka Vidhi*,^[5] *Aditya Paka* method,^[6] and *Taila Patana Vidhi*.^[7]

While *Paka Vidhi* is widely used for herbal drugs and involves boiling *Sneha* with *Kalka* and *Drava Dravya*, methods like *Druti* and *Deepika* are employed for specific substances such as minerals or woody materials. *Aditya Paka* utilizes solar heat, reflecting an eco-friendly and natural approach to drug processing. However, among all these, *Taila Patana Vidhi* stands out as a specialized and technically advanced method.

Taila Patana Vidhi (TPV) is primarily adopted for extracting oil from hard substances, drugs containing minimal oil content, or materials from which oil cannot be obtained through conventional methods like *Ghani* (mechanical pressing) or *Sneha Paka*. This method involves the application of controlled heat and often utilizes closed or semi-closed systems to facilitate the release and collection of oil. The classical *Acharyas* have described various *Yantras* (apparatus) for this purpose, such as *Patala Yantra*, *Valukagarbha Patala Yantra*, *Akasha Patana Yantra*, *Bhudhara Yantra*, *Taila Patana Yantra*, and others. These *Yantras* are ingeniously designed to utilize principles of temperature regulation, pressure variation, condensation, and sometimes even vacuum-like conditions, indicating a highly evolved understanding of pharmaceutical engineering in ancient Ayurveda.

References to TPV are found extensively across *Samhita* and post-*Samhita* literature, including works of *Rasashastra* and *Bhaishajya Kalpana*. These texts not only describe the structural aspects of different *Yantras* but also provide detailed procedural guidelines for extracting oil from a wide variety of substances such as *Beeja* (seeds), *Twak* (bark), *Kashta* (wood), *Asthi* (bone), *Mamsa* (muscle tissue), and mineral-origin drugs like *Gandhaka*. The adaptability of *Taila Patana Vidhi* to such diverse raw materials highlights its versatility and significance in Ayurveda pharmaceuticals.

Moreover, different *Yantras* are selected based on the physical properties of the drug, such as hardness, oil content, and thermal sensitivity. For instance, *Patala Yantra* is widely used for substances with low oil yield, whereas *Bhudhara Yantra* is suitable for extracting oil from *Beeja*, *Mamsa*, and *Asthi*. Similarly, *Akasha Patana Yantra* and *Nadika Yantra* demonstrate principles comparable to distillation techniques, where vapours are condensed and collected. Such diversity in apparatus design reflects a systematic and rational approach adopted by ancient scholars for maximizing yield and preserving the therapeutic efficacy of the extracted *Taila*.

Another important aspect of TPV is its reliance on different sources of heat such as *Vanopalas* (cow dung cakes), charcoal, sunlight, and *Dhanya Rashi*. This indicates not only the adaptability of the method to different environments but also its sustainability and cost-effectiveness. Additionally, the process requires careful monitoring, skilled

manpower, and proper instrumentation, emphasizing the importance of precision and expertise in achieving optimal results.

From a modern perspective, TPV can be correlated with various extraction techniques such as dry distillation, destructive distillation, and steam distillation, depending on the type of *Yantra* used. The principles of heat transfer, pressure, and condensation involved in these traditional methods align closely with contemporary pharmaceutical and chemical engineering practices. Therefore, a thorough understanding of these classical techniques can provide valuable insights into the development of novel, efficient, and eco-friendly extraction methodologies.

In the current scenario, where there is a growing emphasis on the scientific validation of traditional knowledge and the development of green extraction technologies, the study of TPV becomes highly relevant. It not only bridges the gap between ancient wisdom and modern science but also opens new avenues for research in Ayurveda pharmaceuticals and drug development. Hence, this article aims to present a comprehensive review of TPV, focusing on its classical references, types of *Yantras*, working principles, pharmaceutical modifications, and therapeutic applications, thereby highlighting its significance in both traditional and contemporary contexts.

2. MATERIALS AND METHODS

This study is a conceptual literary review based on classical Ayurveda texts including Samhita, Rasashastra, and Bhaishajya Kalpana literature. Relevant references pertaining to TPV, types of *Yantras* (apparatus), procedures, and applications were compiled and analysed descriptively.

2.1. REVIEW OF LITERATURE

In Ayurveda classics, there are different methods mentioned for the preparation of Tailas. The basic methods mentioned are as follows:

Methods of Taila Preparation

- A. Taila by Paka Vidhi
- B. Taila by Druti method
- C. Taila by Deepika Taila Paka Vidhi
- D. Taila by Aditya Paka method
- E. Taila by Patana Vidhi

A. Taila - By Paka Vidhi

The *Taila Paka Vidhi* (oil processing method) is carried out as described in *Sneha Kalpana* (lipid formulation) or as per individual references. In this method, the *Taila* (oil) obtained is *Laghu* (light), free from *Ama Dosha* (toxic impurity), *Veerya* (potent), and *Soukhyadayi* (comforting) due to proper *Moorchana* (purification) and *Paka* (processing). This method ensures efficient extraction of oil-soluble active principles from the *Dravya* (substance), thereby enhancing its *Guna* (property) and *Karma* (action) through appropriate *Samskara* (processing).

B. Taila - By Druti Method

To procure oil from minerals and other hard materials, the *Druti Vidhi* (melting/exudation method) is adopted. The well-known oil of *Gandhaka* (sulphur) is obtained using this method. Take 1 part of *Gandhaka* (sulphur) and make it into a fine powder. Then mix 1/16th part of *Trikatu Churna* and triturate properly. Sprinkle the powder on a clean cloth

and roll it to form a *Varti* (wick), and tie it with a thread. Then it should be dipped in *Tila Taila* (sesame oil) for one *Prahara* (~3 hours). After that, take it out and suspend it on an iron rod for some time. Ignite the *Varti* (wick) from the central part, and oil starts oozing out drop by drop, which is collected in a glass vessel.

C. Taila - By Deepika Taila Paka Vidhi

The *Deepika Taila Paka Vidhi* (oil extraction by ignition method) involves specific materials such as a long branch of *Brihat Panchamoola* (*Bilva*, *Agnimantha*) and a piece of *Kshauma* (linen cloth) treated with *Moorchita Taila* (processed sesame oil). An 18 *Angula* (~31.68 cm) long branch is taken and wrapped with the prepared *Kshauma*. The wrapped material is then ignited from below, allowing the oil to exude and be collected. This procedure can similarly be applied using branches of *Devadaru* (*Cedrus deodara* (Roxb. ex D. Don) G. Don), *Kushtha* (*Saussurea lappa*), and *Sarala* (*Pinus roxburghii*). The extracted *Taila* (oil) is primarily used for *Karna Purana* (ear instillation therapy).

D. Taila - By Aditya Paka Method

While referring to various classics, ample references are found regarding sunlight (*Aditya*) as a source of heat. In the context of *Loha Paka* (metal processing), *Shilajatu Shodhana* (purification of mineral exudate), *Putana Karma* (incubation/controlled heating process), and various *Sneha Nirmana* (oleaginous preparations) such as *Kasisadi Ghrita* and *Pamahara Taila*, the use of sunlight (*Aditya Paka*) as a heat source for *Paka* (processing) is clearly observed.

E. Taila - By Patana Vidhi

To extract *Taila* from hard substances, a specialized method known as TPV is adopted, commonly employing the *Patala Yantra*. The description of *Patala Yantra* is mentioned in *Charaka Samhita* (*Chikitsa Sthana* and *Vimana Sthana*). From *Samhita Kala* (classical period) to later texts of *Rasashastra*, extensive references are available describing TPV and the use of *Patala Yantra* along with other *Yantras* (devices) for this purpose. This method is particularly applicable to substances that contain very minimal oil content and from which extraction is otherwise difficult.

Taila Patana Vidhi

Requirements

- Raw Materials
- Yantra
- Fuel source
- Instruments and devices
- Manpower

a. Raw Materials

Taila Patana method can be applied to extract oil from *Kashtaushadhis* (plant-derived drugs), *Rasaushadhis* (mineral/metallic preparations)

Kashtaushadhis

Beeja, *Kanda*, *Twak*, Heartwood, fruits, shells of the fruits, etc., come under this group.

Rasaushadhis

Gandhakadi Dravyas

Other sources

Twacha, Asthi, Mamsa, etc.^[8]

b. Yantras Used in Taila Patana**Table 1: Yantras Used in Taila Patana Vidhi.**

References	Name of the Yantra	Utility
Charaka Samhitha Vimanasthana ^[9]	Patana Yantra	Bhallataka, Devadaru, Sarala Taila Patana
Charaka Samhitha Chikitsasthana	Patana Yantra	Bhallataka Taila Patana
Sushruta Samhita Chikitsasthana ^[10]	Similar to Patala Yantra	Bhallataka Taila Patana
Ashtanga Hridaya ^[11]	Patana Yantra	Bhallataka Taila Patana
Rasarnavam ^[12] / Rasatantram	Patala Yantra	Nishacharphala Taila Patana
Rasendra Chudamani ^[13]	Patala Yantra	Ankola Taila Patana
Rasendra Chudamani ^[14]	Vidyadhara Yantra	Ankola Taila Patana
Rasendra Chudamani ^[15]	Kanduka Yantra	Ankola Taila Patana
Rasa Prakasha Sudhakara ^[16]	Patala Yantra	Vishwamitra Kapala, Bhallataka, Godhuma, Vamsha, Dhattura Beeja, Jayapala Beeja Taila Patana
Rasa Ratna Samucchaya ^[17]	Kanduka Yantra	Ankola Beeja Taila Patana
Ananda Kanda ^[18]	Patala Yantra	Kashtha, Twak, Beeja, Mamsa and Asthi Taila Patana
Rasa Chintamani ^[19]	Patala Yantra	Jaypala Taila Patana
Bhaishajya Ratnavali (Kshudra Roga) ^[20]	Patala Yantra	Nimba Beeja Taila
Bharata Bhaishajya Ratnakara ^[21]	Patala Yantra / Kupika Yantra	Jaypala Taila Patana
Bharata Bhaishajya Ratnakara ^[22]	Nalika Yantra	Sarjarasa Taila
Bharata Bhaishajya Ratnakara ^[23]	Patala Yantra	Laxmivilasa Taila
Bharata Bhaishajya Ratnakara ^[24]	Patala Yantra	Visarpanashana Tailam
Bharata Bhaishajya Ratnakara ^[25]	Patala Yantra	Visarpahara Tailam
Brihat Rasaraja Sundara ^[26]	Patala Yantra	Taila Patana
Rasa Tantra Sara evam Siddha Prayoga Sangraha ^[27]	Patala Yantra	Taila Patana
Rasa Tantra Sara evam Siddha Prayoga Sangraha ^[28]	Taila Patana Yantra	Taila Patana
Rasa Tantra Sara evam Siddha Prayoga Sangraha ^[29]	Valukagarbha Patala Yantra	Taila Patana
Rasa Tantra Sara evam Siddha Prayoga Sangraha ^[30]	Akasha Patana Yantra	Taila Patana
Rasa Tarangini ^[31]	Patala Yantra	Gandhaka Taila
Rasaratnakara ^[32]	Taila Patana Yantra	Pashana Taila
Rasa Ratnakara ^[33]	Taila Nishkasana Yantra	Bilwa Beeja Taila Patana
Rasa Ratnakara ^[34]	Patala Yantra / Bhudhara Yantra	Beeja, Asthi, Majja Taila Patana
Rasa Ratnakara ^[35]	Bhudhara Yantra	Narikela Kapala Taila, Vamshadi Sarva Kashta Taila, Tusha, Dhanya Taila, various Beeja Taila Patana
Arya Bhishak ^[36] (Page 338)	Patala Yantra	Vishwamitra Kapala Taila Patana
Arya Bhishak ^[37] (Page 338)	Arka Yantra	Vishwamitra Kapala Taila Patana

Additional Text

In Sushruta Samhita, it is also mentioned that oil of all the drugs of *Salasaradi Gana* has to be extracted by *Patala Yantra Vidhi*.

Taila Patana can be performed by *Sootya Paka* method, *Anala Paka* method and by *Yantra Yogas*.^[38]

Apakva Arka Patra Swarasa Bhavana to be employed to the drugs from which Taila is extracted, which facilitates easy extraction of oil.^[39]

From all the varieties of *Beeja* oil can be extracted by *Patala Yantra*.^[40]

Detailed Description of Yantras

Patala Yantra^[41]

A pit measuring one Hasta (~46 cm) in depth is dug in the ground, in which an earthen pot (collecting vessel) is placed.

In another earthen vessel, the materials from which oil is to be extracted are taken, and the mouth is closed with a *Sharava* (lid) containing multiple holes. Proper *Sandhibandhana* (sealing of joints) is carried out, and the entire apparatus is placed in an inverted position over the lower vessel kept inside the pit. The surrounding space is then filled with mud. *Vanopalas* (cow dung cakes) are placed over the upper vessel and ignited to provide heat. After *Swanga Sheeta* (self-cooling), the upper vessel is carefully removed, and the oil is collected from the lower pot. This *Patala Yantra* is particularly useful for extracting oil from *Gandhaka* (sulphur) and similar substances.^[42]

According to another opinion, an earthen pot is filled with small pieces of *Beeja* (seeds), *Kashta* (wood), *Twak* (bark), *Asthi* (bone), *Vamsha* (bamboo), etc., and covered with a *Sthali* (plate) having five holes to prevent the material from falling. A pit of about 1¼ Hasta depth is then prepared and coated with *Gomaya Lepa* (cow dung plaster). Another vessel is placed below, and the *Ghata* (upper pot) is positioned such that the perforations face downward, facilitating the collection of oil.^[43,44]

Valuka Garbha Patala Yantra

A wide-mouthed earthen crucible (*Mrittika Musha*) is taken and covered with an iron or mud plate (*Loha/Mrittika Patra*). A hole is made at the center of both the plate and the crucible, such that the neck of a bottle (*Kupi*) of one Angula (~1.76 cm) can pass through it. The bottom of the bottle is supported by a ring suspended from the hole in the plate, ensuring that the bottle remains in a straight position. An iron rod (*Loha Danda*) is placed inside the crucible at a distance of about 3 Angula from the plate and should be approximately 4 Angula longer than the glass bottle. The *Nalika* (tube/channel) and its surrounding space are filled with sand while cow dung is placed within the crucible around the *Nalika* and subjected to heating. This arrangement represents another type of Yantra (apparatus) used for the extraction of *Arka* (distillate) and *Taila* (oil).^[45]

Akasha Patana Yantra

An open-mouthed earthen pot is taken and subjected to *Mritilepa* (mud smearing). A brick is placed inside, and the material from which *Arka* (distillate) or *Taila* is to be extracted is arranged on all sides of the brick. A glass or china clay vessel is placed over the brick. Another earthen pot filled with water is placed above it, and proper *Sandhibandhana* (sealing) is done using wheat flour paste or cloth smeared with mud. The entire setup is then subjected to heat. The distilled material is collected in the inner vessel. This method is useful for extracting *Shankha Drava*, oil, and similar preparations.^[46,47,48]

According to another opinion, one Kalasa Pramana (~3.072 g) of *Bhallataka Asthi* (seeds of *Semecarpus anacardium*) is collected, crushed, and placed in an earthen jar with fine perforations at the bottom. The jar is covered with a lid and sealed properly with clay. It is then placed over another strong earthen vessel, smeared internally with oil and buried in

the ground up to its neck. *Vanopalas* (cow dung cakes) are arranged around the upper jar and ignited until the *Bhallataka Asthi* are completely drained of their oil content. After cooling, the upper jar is removed, and the oil collected in the lower vessel is obtained. A similar procedure can be adopted for extracting oil from the wood of *Suradaru Sarala* etc.^[49]

Bhudara Yantra

According to the text *Rasa Ratnakara*, *Bhudhara Yantra* is used in the extraction of *Taila* from all sorts of *Beeja*, *Mamsa*, *Asthi*.^[50]

A small pit is dug and sand is filled up to a depth of two *Angula* and a *Moosha* is kept in between and sand is filled all over for two *Angula* length. Above this *Upala* is placed and *Agni* is given.^[51]

Similar explanations can be found in other texts. Dig a pit in the ground, fill 2–3 *Angula* of sand. Place *Paradadi* drugs/*Aushadhayukta Musha* over it and again sand is placed over it about 2 *Angula* length and apply mild heat.^[52]

Taila Patana Yantra

Take a vessel and tie a clean cloth over the vessel tightly. Then place the material from which *Taila* is to be extracted at the centre. Place *Abhraka Patra* (sheets of mica) such that the *Aushadha* and cloth are covered. Above the *Abhraka Patra*, place a *Loha Patra* filled with fuel, After approximately half an hour, *Taila* starts to fall down.^[53]

Vidyadhara Yantra

Two *Sthalis* (vessels) are taken, one filled with *Dravyas* (materials) and the other with water, and both are properly sealed with mud. The upper *Sthali* is positioned with its mouth facing upwards, and the entire apparatus is placed on a *Koshti* (furnace) surrounded by heat from all four sides (*Agni*). This arrangement is utilized in processes such as *Gandhaka Jarana* (incineration of sulphur) and *Hingulotta Parada* (extraction of mercury from cinnabar).^[54] A *Samputa* (closed container system) formed by joining two vessels is also referred to as *Vidyadhara Yantra*.^[55]

Nadika Yantra

Take a vessel or *Ghata* (pot) and fill it with *Jala* (water) or other *Drava Dravya* (liquid materials). Another *Adhomukha Ghata* (inverted vessel) is placed over it, and proper *Sandhibandhana* (sealing) is done. In the upper *Ghata*, a hole of one *Angushta Pramana* (thumb-sized) is made, and a *Nali* (tube) is fitted. This *Nali* passes through a tube containing cold water and is connected to a collecting bottle. Heat is applied below the vessel, and the evaporated material condenses and collects in the bottle. This apparatus is known as *Nadika Yantra* and is used for the extraction of *Shuddha Jala* (purified water), *Arka* (distillate), *Sanjeevani Sura*, etc.^[56]

Nalika Yantra

A cylindrical iron *Nalika* (tube) is filled with *Dravyas* (materials) and sealed at both ends. It is then placed within a vessel containing *Lavana* (salt) and subjected to *Agni* (heat). This apparatus is known as *Nalika Yantra* and is used for processing and extraction purposes.^[57]

Kanduka Yantra

In a wide-mouthed semi-circular earthen pot, water is taken, and the opening is covered with a cloth tightly tied around the pot. The *Dravya* (substance) to be steam-heated is placed over the cloth, and another semi-circular pot is kept

inverted as a lid. Heat is applied from below, facilitating *Swedana* (steam processing). This apparatus is known as *Kanduka Yantra*, and it is also referred to by some scholars as *Swedani Yantra*.^[58]

Adha Patana Yantra

This particular *Yantra* has been explained in the context of sublimation of mercury (*Parada Urdhva Patana*). It can also be used to extract *Taila* from various *Dravyas* with slight modifications. Two equal-sized and similarly shaped earthen pots are taken. On the inner surface of one vessel, the paste of drugs is applied. This vessel is then kept inverted over the other vessel, and proper *Sandhibandhana* is done. The entire apparatus is placed in a pit and irrigated with water. Heat is applied from above using *Vanopalas*. The *Taila* starts to exude and is collected in the lower vessel.^[59,60,61]

Tiryak Patana Yantra

One large earthen vessel is connected at its neck to a tube, which is further attached to a smaller vessel positioned near its base. The larger vessel is filled with the drug material, while the smaller collecting vessel is kept immersed in water to facilitate condensation. All joints are properly sealed to ensure an airtight system. The larger vessel is then subjected to intense heat (*tivragni*), causing the volatile components to vaporize and pass through the tube, where they cool and condense. After a period of heating, the extracted oil is collected in the receiving vessel.^[62,63]

Arka Yantra

The *Yantra* described in *Arya Bhishak* is considered to be structurally similar to the *Damaru Yantra*.^[64,65]

A critical analysis of classical Ayurveda texts reveals that the majority of oil extraction procedures are predominantly carried out using *Patala Yantra* and *Patana Yantra* methods. Substances whose oils cannot be obtained through conventional techniques are specifically subjected to *Taila Patana* using *Patala Yantra Vidhi*.

The description of *Patala Yantra* in *Rasa Tarangini* differs slightly from that in *Rasa Tantra Sara evam Siddha Prayoga Sangraha*. In *Rasa Tarangini*, a pit measuring one *Hasta* is prepared, wherein a collecting vessel is placed, and another vessel containing the drug (*aushadhi*) is inverted above it within a broad-mouthed *sharava* filled with cow dung cakes (*vanopala*). Upon ignition, the oil begins to ooze out gradually in a dropwise manner. In contrast, *Rasa Tantra Sara evam Siddha Prayoga Sangraha* describes a completely sealed (*sandhibandhita*) system with no space between the upper and lower vessels, emphasizing an airtight environment.

Logically, the space described in *Rasa Tarangini* may facilitate the escape of unwanted volatile vapours, thereby improving the purity of the final product. On the other hand, the airtight condition described in *Rasa Tantra Sara* suggests the involvement of both pressure and temperature in enhancing oil extraction efficiency. Unlike the *Ghani* (traditional oil mill), where only mechanical pressure is responsible for oil extraction, *Patala Yantra* operates through a combination of controlled heat, pressure, and partial vacuum conditions. This makes it particularly suitable for substances with very low oil content or those resistant to conventional extraction methods.

Thus, specialized preparations such as *Vishwamitra Kapala Taila* are effectively obtained using *Patala Yantra Vidhi*.

The oils extracted through this method are predominantly utilized for external therapeutic applications, especially in various skin disorders.

Table 2: *Taila Patana* methods for different drugs and contexts.

Source / Context	Drug / Material	Method / Procedure	Yantra / Technique	Outcome / Note
Rasendra Chudamani	Ankola Beeja	Kalka placed in vessel with iron spokes converging into collector	Patala Yantra	Taila extraction ^[66]
	Ankola Beeja	Direct extraction	Vidyadhara Yantra	Alternative method ^[67]
	Ankola Beeja	Powder mixed with Ushna Jala, kept for two nights	Natural separation	Oil floats and collected ^[68]
	Ankola Beeja	Paste applied on cloth and exposed to sunlight	Solar method	Oil obtained ^[69]
	Ankola Beeja	Paste with Kanji, Swedana for two Ghati, Pottali compression	Kanduka Yantra	Oil extraction ^[70]
Siddha Bhesaja Manimala (Taila Varga)	Various drugs	Property-based extraction	—	Oil reflects drug properties ^[71]
Siddha Bhaishajya Manimala	General	Extraction yielding Dhupelam	Patala Yantra	Useful in Kshudra Rogas ^[72]
Rasa Raja Sundara	General	Description of Patana Yantra	—	Attributed to Shambhu ^[73]
Ananda Kanda	Sutakadi Dravya	Patana process	Patana Yantra	Used for Nipatana ^[74]
Ananda Kanda	Kashta, Twak, Beeja, Mamsa, Asthi, Vamsha	Oil extraction	Patala Yantra	Applicable to all drug types ^[75]
Rasa Prakasha Sudhakara	Vishwamitra Kapala, Bhallataka, Godhuma, Vamsha, Dhattura, Jayapala	Extraction	Patala Yantra	Multi-drug applicability ^[76]
Rasa Tantra Sara evam Siddha Prayoga Sangraha	General	Four extraction modalities	Multiple Yantras	Taila Patana, Patala, Valukagarbha, Akasha ^[77]
Rasa Ratnakara	General	Swya Paka, Anala Paka, Yantra Yoga	—	Multiple methods ^[78]
	Dhattura Beeja	Paste on Kamsya Patra, sunlight exposure	Solar method	Oil extraction ^[79]
	Shigru, Bhringaraja Beeja	Similar to above	Solar method	Oil extraction ^[80]
	Various drugs	Agni Samsarga Vidhi	Heat method	Alternative extraction ^[81]
	Various drugs	Additional procedures described	—	Extended techniques ^[82]
	Kaktundi	Kept in Dhanyarashi	Natural heat	Oil extraction ^[83]
	Pashana Beeja	Extraction	Taila Patana Yantra	Oil obtained ^[84]
	Gunja, Karanja	Bhavana with Naramutra, sunlight exposure	Solar method	Oil extraction ^[85]
	Jyotishmati Beeja	Kalka with Kanji, sunlight	Solar method	Oil extraction ^[86]
	Putranjeeva, Agastya	Traditional method	Ama Taila process	Oil obtained ^[87]
	Bilwa Beeja	Bhavana with Narikela Jala	Taila Nishkasana Yantra	Oil extraction ^[88]
	Ankola Beeja	Kalka with Chanaka Kinwa, Tankana, sunlight	Solar method	Oil extraction ^[89]

	<i>Ramee Beeja</i>	<i>Putra</i> method	Heat processing	Oil extraction ^[90]
	Various seeds	Triturated with <i>Indravaruni Kashaya</i> , sunlight	Solar method	Oil extraction ^[91]
	<i>Beeja, Mamsa, Asthi</i>	Paste subjected to extraction	<i>Patala Bhudhara Yantra</i> /	Oil obtained ^[92]
	<i>Narikela Kapala, Vamsha, Tusha, Dhanya</i>	Specialized extraction	<i>Bhudhara Yantra</i>	Efficient oil yield ^[93]
Classical references (<i>Vagbhata</i>) ^[94]	General	Conceptual explanation	—	Supports drug-dependent nature

c. Fuel source

Usually *Vanopalas* are the main source of fuel for extraction of oil. Other sources like coal, charcoal, sunlight, *Dhanya Rashi* etc. also sometimes serve as sources of heat.

d. Instruments and devices

The majority of *Taila Patana* procedures can be carried out by using various *Yantras* as devices; supporting instruments like Pyrometer, Weighing Machine, and measuring jars are also essential.

e. Manpower

Extraction of oil requires skilled manpower and expert services at each stage. Maintenance and monitoring of the procedure help to obtain maximum yield.

3. DISCUSSION

Taila Patana Vidhi represents one of the most technically advanced and conceptually rich extraction methodologies described in Ayurveda pharmaceuticals. Unlike conventional *Sneha Paka*, which primarily relies on boiling and solvent-mediated extraction, Taila Patana is specifically designed for substances that are hard, compact, or contain minimal oil content. The method demonstrates a clear understanding of physicochemical principles such as heat transfer, pressure generation, volatilization, and condensation, indicating the sophisticated pharmaceutical knowledge of ancient Acharyas.

The wide variety of *Yantras* described in classical texts reflects the adaptability of this method according to the nature of the raw material. Among these, *Patala Yantra* is the most extensively used apparatus, especially for drugs like *Bhallataka*, *Gandhaka*, and various *Beeja Dravyas*. Its design allows controlled heating in a semi-closed or closed environment, facilitating efficient oil release even from substances with very low lipid content. The presence or absence of space between the upper and lower vessels, as described differently in texts like *Rasa Tarangini* and *Rasa Tantra Sara*, suggests variations in pressure dynamics and vapor escape mechanisms, which directly influence the quality and yield of the extracted oil.

Similarly, *Yantras* such as *Bhudhara Yantra* and *Valukagarbha Patala Yantra* emphasize uniform heat distribution and insulation using sand or earthen materials, thereby preventing overheating and degradation of active principles. *Akasha Patana Yantra* and *Nadika Yantra* exhibit principles closely resembling distillation, where vaporized components are condensed and collected, highlighting parallels with modern pharmaceutical extraction techniques.

Another significant aspect of Taila Patana Vidhi is the use of diverse heat sources such as Vanopalas, charcoal, sunlight, and Dhanya Rashi. This indicates not only the versatility of the method but also its eco-friendly and sustainable nature. The use of natural fuels and simple apparatus makes this technique cost-effective and adaptable in different settings.

The method also emphasizes the importance of proper Sandhibandhana (sealing), temperature regulation, and skilled manpower. Any deviation in these factors can lead to loss of volatile components, reduced yield, or degradation of therapeutic efficacy. The involvement of preparatory processes such as Bhavana further enhances extraction efficiency by facilitating the breakdown of cellular structures and improving oil release.

From a modern perspective, Taila Patana Vidhi can be correlated with processes such as dry distillation, destructive distillation, and steam distillation. The classical approach of using pressure, heat, and controlled environments aligns well with contemporary pharmaceutical engineering concepts. This indicates that ancient Ayurveda scholars had an empirical understanding of these scientific principles, even without modern instrumentation.

Overall, Taila Patana Vidhi stands as a bridge between traditional knowledge and modern science, offering valuable insights into efficient extraction techniques. Its ability to process diverse raw materials, including plant, animal, and mineral origins, further enhances its significance in Ayurveda drug formulation and research.

4. CONCLUSION

Taila Patana Vidhi represents a scientifically significant and efficient extraction technique described in Ayurveda pharmaceuticals. It is particularly useful for processing substances that are difficult to extract through conventional methods. The principles involved indicate a profound understanding of heat transfer, pressure, and condensation.

However, the present study is limited to a conceptual review without experimental validation. Future research should focus on standardization, experimental validation, and comparative evaluation with modern extraction techniques.

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