

REVIEW ON THERAPEUTIC USES OF ERAND TAILA

(*Ricinus communis* Linn.)

Dr. Rakesh Kumar Pandey

Assistant Professor Dept. Of Dravyaguna, Shubhdeep Ayurved Medical College & Hospital,
Indore, Madhya Pradesh-India

ABSTRACT

Ricinus communis Linn. famous as Castor belonging to family Euphorbiaceae is generally cultivated for its oil seeds. The all parts of plant viz. root, bark, leaves, flower, fruit, seeds, oil etc. possess high medicinal value and traditionally used for the treatment of various ailments of human being. It is known as Eranda in Sanskrit which illustrates the property of drug to drive out diseases. Castor oil is pale yellowish or almost colourless oil and having a peculiar odour with sticky consistency. It has been freely used all over India since centuries mostly as a purgative. In Charaka Samhita Castor oil is mentioned as the best one amongst purgatives. It is popularly used since centuries in Ayurvedic system of medicine for the management of rheumatic disorders, various skin diseases, worms and ascites. The aim of this study is to document the literature on Ayurvedic therapeutic aspect of Castor oil and highlight its importance as a medicinal agent. A scrutiny of literature revealed its notable therapeutic uses in the disorders like gastrointestinal diseases, ascites, skin diseases, Rasayana or Rejuvenation and many more conditions. This review comprehensively incorporates the salutary uses of Castor oil as per Ayurvedic as well as modern science.

KEYWORDS: *Ricinus communis* Linn., Castor oil, therapeutic uses, Ayurveda's therapeutic guidelines of Eranda Taila

INTRODUCTION

Tailas are used in Ayurveda for enema therapy, drinking in oleation therapy, nasal medication, filling the ears and along with foods and drinks for the purpose of mitigating aggravation of Vata. Eranda Taila obtained from the seed of castor plant is widely used traditionally as a medicine. Based on origin Eranda Taila comes under Sthavara Sneha (vegetable origin) which can be used both Abhyantara and Bahya. It is one of the widely used medicines in Snehana and Virechana therapy of Panchakarma. It can

also be administered as vehicle for various Ayurvedic formulations. Eranda Taila is widely used in traditional medicine for chronic backache, sciatica, constipation, abdominal disorders, muscle aches, arthritis, bilharziasis, chronic headache, expulsion of placenta, gallbladder pain, menstrual cramps, rheumatism and insomnia^[1] It is used in the management for scrotocele, lumbago, coxalgia, intermittent fever, colonitis, coxitis,^[2] occupational eczema and skin disorders.^[3]

DESCRIPTION

Castor plants, belonging to Euphorbiaceae family has great industrial importance besides used in medicine. *Ricinus communis* is said to be very variable species.^[4] Castor plants are soft wooded, bushy and perennial. Leaves are palmately lobed, with seven or more serrate lobes. Flowers are monoecious in terminal panicle racemes. Fruits when young is green and covered with fleshy prickles and are globose, explosively dehiscent, 3 seeded capsules. Seeds oblong with smooth, hard mottled crustaceous testa, enclosing oily and fleshy endosperm.^[5]

Two varieties of castor plants are known: A perennial bushy plant with large fruits and large red seeds which yield about 40% of oil. A much smaller annual shrub with small grey (white) seeds having brown spots and yielding 37% of oil.^[6]

PARTS USED

Moola, Twak, Patra, Beeja, Taila.^[7] Seeds are best collected from May to August.^[8]

DOSAGE OF TAILA

20 g to 40 g.^[9] 10-15ml oil from seeds along with warm water in empty stomach in the morning for purgation.^[10] For acute constipation or as a laxative against worms, at least 5 or 10 capsules must be taken.^[11]

IN AYURVEDIC LITERATURES

Two varieties of Eranda are described in Samhitas. Sweta eranda and Rakta eranda.

SYNONYMS

SWETA ERANDA:

Synonyms: Gandharvahasthaka, Panchangula, Amanda, Citra, Vardhamana, Dirghadanda, Vyadambaka, Vatari, Taruna and Rubuka.

RAKTA ERAND

Synonyms: Urubuka, Rubu, Cancu and Uttanapatraka^[12]
Vyaghrapuccha vatari.^[13]

STHULAIRANDA

Synonyms: Mahairanda, Mahapancangula. It is better in Rasa, Virya and Vipaka.^[14]

ERANDA TAILA MURCHANA

Murchana is the process which removes Ama dosa of Taila/Ghrta and provides good colour and fragrance. Murchana process is to be followed before any Sneha preparation.^[15]

Following drugs are used for Eranda Taila murchana: Vikasaa (Manjishta), Musthaka, Dhanya, Triphala, Vajjayantika (Agnimantha), Hriversa, Vanakarjura, Vata sringa, Haridra, Daruharidra, Nalika, Bhesajam (Sunthi), Kethaki, Dadhi and Kanchikam^[16]. Take the ingredients (Kalka dravyas) in the composition (each 12 g), dry, powder and pass through sieve number 85. Transfer the powdered ingredients to wet grinder, grind with sufficient quantity of water to prepare Kalka. Take Eranda Taila (768ml) in a stainless steel vessel and heat it mildly. Add ingredients of Kalka. Add Dadhi (1.536ml) and Kanji (1.536ml) in the specified ratio and stir thoroughly. Continue heating till the mixture becomes moisture free. Filter while hot through a muslin cloth and allow it to cool.^[17]

AS SHODHANA DRAVYA

In Rasashatra, Eranda Taila along with Matulangambu is used for Swarna makshika Shodhana.^[18]

PROPERTIES OF ERANDA PHALA MAJJA

Its marrow / pulp (Majja) is similar in properties causes purgation (Vidbhedi) cures abdominal enlargement caused by Vata and Kapha (Vata sleshma udarapaha)^[19]. As per Dhanwanthari nighantu, seeds have Madhura, Ksharayuktha rasa, Laghu guna, Ushnaveerya, Mala bhedana property and pacifies Vata.^[20] Its Majja is Vidbhedi,

pacifies Vata and Kapha and cures Udara.
[21,22]

CLASSIFICATION OF INDICATIONS IN NEUROLOGICAL AND MUSCULOSKELETAL DISORDERS

In Yogaratnakara, in the management of Gridhrasi, extensive use of Vasthi and Pana by medicated Eranda Taila with Vajeegandhadi drugs is recommended.^[23] It is also advised to take Eranda Taila with Gomutra for one month for Gridhrasi.^[24] In Katisula, of different origin Eranda Taila should be taken along with Dasamoolee kashaya or Nagara ambu.^[25] Haritaki together with Eranda Taila should be consumed daily by the patient of Amavatha, Grdhrasi, Vrddhi etc adhering to the proper procedure. To win over the mighty elephant called Amavatha roaming all over the body; only one lion called Eranda Taila is enough (Aamavatha gajendrasya sarira vana charina, Eka eka nihantyashu eranda Taila kesari).^[26]

IN GASTROINTESTINAL DISORDERS

While describing management of Vata gulma, there is description stating that Eranda Taila can be administered orally along with Varunimanda, or with milk.^[27] In Vata udara, Eranda Taila can be used orally along with Dasamoola or Gomutra or with Triphala churna.^[28] In Udara roga samanya vidhi, there is description suggesting that Eranda Taila should be taken along with Ksheera or with mutra.^[29] Eranda Taila is advised as Pathya for Udara roga.^[30] In Vatodara chikitsa, decoction of Dasamula added with Eranda Taila consumed daily cure abdominal enlargement due to Vata, dropsy and colic.^[31] In Udara roga management, Eranda Taila should be consumed either with milk or cows urine frequently for purification.^[32] In Susrtutha samhita, it is described that hot water taken

after licking a compound consisting of Eranda oil saturated with powdered Kushta and Trikatus, acts as a good purgative. Castor oil taken with a decoction of Triphalas double/thrice its own measure, or with milk or extract of meat (Rasa), acts as a good purgative, which should be prescribed for infants, old men, or persons debilitated from the effects of ulcer.^[33]

IN GENITO URINARY DISORDERS

Eranda Taila added with Yavakshara and consumed relieves dysuria; in case of pain in the waist in (Eranda Taila) should be consumed either with decoction of Dasamula or of Nagara.^[34] In scrotal enlargement due to Vata the patient should be administered oleation therapy first, followed by purgation, drink Eranda Taila mixed with milk for one month. Guggulu and Eranda Taila consumed along with Gomutra; this cures scrotal enlargement of Vata origin quickly, though persisting for a long time.^[35] Eranda Taila cooked with decoction of Bala and consumed suitably cures Antra vridhhi (scrotal hernia) associated with flatulence and pain in the abdomen.^[36] Paste of Abhaya is fried in Eranda Taila and then added with powder of Krsna and Saindhava and consumed daily is best to cure Bradhna roga.^[37]

IN VECTOR BORNE DISORDERS

The patient of Slipada (Filariasis) who consumes Haritaki, fried in Gandharva hasta Taila (Eranda Taila) along with Gomutra, everyday gets cured of Slipada within seven days.^[38] It is regarded as Pathya for Vriddhi vardhma roga.^[39] It is regarded as Pathya for Slipada.^[40]

In Saligrama nighantu, it is described as Anala shodhana.^[41] Eranda taila and Nimba taila are Rasayanas and prevent diseases.^[42] Eranda taila cooked with the juice of

Prasarini and consumed mitigates all the Dosas and best to cure diseases arising from Kapha.^[43]

ERANDA TAILA AS ANUPANA

Cakradutta indicates it in back ache with nagara and Sunthi.^[44]

Amavatari rasa – Eranda Taila as Anupana indicated for Amavatha.^[45]

Rasnadi choornam- application mixed with eranda Taila indicated for Sirasthoda.^[46]

Vijaya choornam- Eranda Taila as Anupana indicated for Kasa.^[47]

Madhyama rasnadi kwatha- as Anupana eranda Taila.^[48]

Maharasnadi kashayam II- Anupana eranda Taila indicated for Sarvangakampa.^[49]

Rasnadi pancha dasa kwatha- Eranda Taila as Anupana indicated for Amavatha.^[50]

Satavaryadi kashaya- Anupana eranda Taila, indicated for Vata asheeti vinashanam.^[51] Erandadi kashaya- Anupana eranda Taila, indicated for Ashteela.^[52]

METHODS OF OIL EXTRACTION

Oil from the perennial types is used for illumination and lubrication while that from the annual types is preferred for medicinal use.^[53] Purification of the oil is by treating the oil with animal charcoal in the proportion of four to one by weight. Impurities are absorbed by the charcoal and on filtering, refined oil is obtained.^[54]

CHIEF CONSTITUENTS OF ERANDA TAILA (CASTOR OIL)

Castor oil consists of up to 90% ricinoleic. Linoleic, Oleic, Stearic, and Dihydroxy stearic acids are also present.^[55]

TOXIC PRINCIPLES IN CASTOR BEANS

The principal toxic substance is the albumin, ricin.

FATAL DOSE

Fatal dose of seeds -2. 5 – 6.^[56]

RICIN

Ricin toxin (RT) is a water-soluble glycoprotein that does not partition into the oil extract on phase separation.^[57]

PHARMACOKINETICS

Eranda Taila is an Irritant/stimulant laxative.^[58] In the small intestine ricinoleic acid causes increased water secretion.^[59] Onset of purgation: 2-6 hr^[60]

PHARMACOLOGICAL STUDY OF CASTOR OIL

WOUND HEALING ACTIVITY

The comparison study of two different concentrations (5% w/w and 10% w/w) of castor oil was resulted that the 10 % w/w Castor oil ointment possesses better wound-healing property. The study resulted that the Castor oil reduced the epithelisation time in excision wound model and reduced the scar area showing wound healing activity.^[61]

LARVICIDAL AND ADULT EMERGENCE INHIBITION ACTIVITY

In the present communication, the R. communis extract caused 100% mortality against An. stephensi and Ae. albopictus mosquitoes at 64 µg/mL, and against Cx. quinquefasciatus at 32 µg/mL. The seed extract, in the present communication, demonstrated excellent larvicidal and adult emergence inhibition activity against An. stephensi, Cx. quinquefasciatus and Ae. albopictus mosquitoes; has been found to possess no toxicity to fish, O. niloticus, and such activity may be due to the synergistic activity of the mixture of bioactive constituents present in the extract.^[62]

ANTIOXIDANT ACTIVITY

Ricinus communis seed at low concentration shows high antioxidant activity that it could be very useful for the treatment of disease resulting from oxidative stress. The responsible chemical constituents are methyl

ricinoleate, ricinoleic acid, 12-octadecadienoic acid and methyl ester, which produce antioxidant activity.^[63]

ANTIULCER ACTIVITY

The castor oil at a dose of 500 mg/kg and 1000 mg/kg possess significant antiulcer properties, but at the dose 1000 mg/kg was more potent against the ulceration caused by pylorus ligation, aspirin and ethanol in rats. The antiulcer activity is due to the cytoprotective action of the drug or strengthening of gastric mucosa and thus enhancing the mucosal defence.^[64]

CLINICAL STUDIES

Castor oil induces laxation and uterus contraction: Ricinoleic acid is a selective agonist of EP3 and EP4 receptors. Normal intestinal transit time is shown by mice lacking either EP3 or EP4. Wild type mice responded with strong diarrhoea when given castor oil, starting about 30 min after application and for about 2 hrs the laxative effect lasted.^[65]

IDENTIFICATION TEST OF CASTOR OIL

About 5 ml of light petroleum (50° to 60°) when mixed with 10 ml of castor oil 15. 5° shows a clear solution, but the mixture becomes turbid, if the amount of light petroleum is increased to 15 ml. This test is not shown by other oils.^[66]

ADVERSE EFFECT OF CASTOR OIL (FREQUENCY NOT DEFINED)

Adverse effect includes dizziness, abdominal cramps, diarrhoea, nausea, electrolyte disturbance, hypotension and pelvic congestion.^[67]

CONTRAINDICATIONS OF CASTOR OIL

Hypersensitivity, GI obstruction or perforation, severe impaction, symptoms of appendicitis or acute surgical abdomen, ulcerative colitis, rectal fissures.^[68]

DISCUSSION

Eranda is highly useful in the treatment of a variety of common and chronic disorders. Moreover, the plant is very common and can be seen wildly growing in forests. Eranda Taila being a simple harmless purgative can be prescribed after considering the strength of the disease, digestive fire and strength of the body of the patient. Eranda due its Teekshna and Ushna guna possess Agneya property (predominant of qualities of Tejas bhuta). Ushna and Snigdha guna mitigates Vata. whereas Teekshna, Ruksha, and Ushna guna mitigates Kapha. Due to its Sookshma guna it can enter into minute pores, and Srotovishodhana property enables it to cleanse the channels. It enhances Medha kanti bala arogya smriti sukla (improve cognitive and memory functions and augment general health and heartiness). Eranda Taila possess rasayana property also.

CONCLUSION

Eranda is found throughout India and it has been used since ages as medicine. Ricinus communis or castor plant is a widely traditionally used and potent medicinal plant amongst all the thousands of medicinal plants. More scientifically based studies on its property and various ways of administration has to carry out. A systematic review of Eranda Taila provides information about its usage, dosage, adverse reactions etc. Srotorodha is a main cause for disease generation. It has wide range of indications and is an ingredient in various potent formulations. It is a conventional laxative with less adverse effect and is inexpensive. It pacifies Vata and Kapha dosa, is Sookshma, Srotosodhsana and Rasayana in property. The therapeutic value of Eranda taila is much more and can be given in various conditions.

REFERENCES

1. Sarfaraz Khan Marwat, Fazal-ur-Rehman, Ejaz Ahmad Khan, Mohammad Safdar Baloch, Muhammad Sadiq, Imdad Ullah, Sadaf Javaria and Salma Shaheen (2017). Ricinus communis: Ethnomedicinal uses and pharmacological activities, Pakistan journal of pharmaceutical sciences, Vol. 30, No. 5, pp. 1815-1827. [Accessed on Feb 14. 02. 2018].
2. P.K.Warrier, V P K Nambiar, and C Ramankutty, Indian medicinal plants, a compendium of 500 species, Vol 5, Orient Longman Private limited, Chennai, Reprinted on 2004, pg no: 3.
3. Hand book of medicinal plants (Revised and enlarged), Central council for Research in Ayurveda and Siddha, New Delhi, 1979, pgno. 69.
4. Y.R.Chadha, The wealth of India A Dictionary of Indian raw materials & Industrial Products. Raw Materials, Vol. IX:Rh-So, Reprinted by National Institute of Science Communicating (CSIR), 1999, p. 26.
5. P.K.Warrier, V P K Nambiar, and C Ramankutty, Indian medicinal plants, a compendium of 500 species, Vol 5, Orient Longman Private limited, Chennai, Reprinted on 2004, pg no: 1.
6. Dr.K.M.Nadkarni, Indian material medica with Ayurvedic, Unani-Tibbi, Siddha, Allopathic, Homeopathic, Naturopathic and Home remedies, Appendices and indexes, Vol 1, 3rd edition, Popular Prakashan Bombay, 1982, pg 1065-1066.
7. Sri Narahari Pandit, Raj Nighantu, 8th edition, Chapter 8, Salmalyadi varga, Text with Dravyaguna prakashika Hindi Commentary by Dr.Indradeva Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2008, p. 243.
8. Manik Sharma, Mohd Yousf, Abrar Hussain, Showkat Hussain, Malik Romana and, Sumeerah Nazir (2013) Phyto and Pharmacological value of Ricinus Communis 1: A Review, IJPRD, Vol 5(02), April 2013 (014-023). Retrieved from <https://www.ijprd.com/PHYTO%20AND%20pharmacological%20value%20OF%20RICINUS%20COMMUNIS%20L.pdf>. [Accessed on 27. 03. 2018], (p. 14).
9. Sri Narahari Pandit, Raj Nighantu, 8th edition, Chapter 8, Salmalyadi varga., Text with Dravyagunaprakashika Hindi Commentary by Dr.Indradeva Tripathi, Varanasi: Chaukhambha Krishnadas Academy;2008, p. 243.
10. Hand book of medicinal plants (Revised and enlarged), Central council for Research in Ayurveda and Siddha, New Delhi, 1979, pgno. 69.
11. Joerg Gruenwald, Thomas Brendler, and Christof Jaenicke, PDR for Herbal medicines, 4th edition, Published by Thomson Healthcare Inc., Montvale, (2007), pg no:167.
12. Sri Narahari Pandit, Raj Nighantu, 1st edition, Salmalyadi varga, sl. no 55, Text with English translation and Critical Commentary by Dr. Satish Chandra Sankhyadhar, Dr. Deepika Sankhyadar and Prof. KC. Chunekar, Chaukhambha Orientalia, Varanasi, 2012, p. 378-379.
13. Bhavamisra, Bhavaprakasha, Vol-1, Purvakhanda, Chapter 6, Guducyadi varga, sl. 60-66. Text with English translation by Prof. K. R. Srikantha murthy, Chaukhambha Krishnadas Academy, Varanasi, 2004, p. 236.
14. Sri Narahari Pandit, Raj Nighantu, 1st edition, Salmalyadi varga, sl. 59, Text with English translation and Critical Commentary by Dr. Satish Chandra

Sankhyadhar, Dr. Deepika Sankhyadar and Prof. KC. Chunekar, Chaukhambha Orientalia, Varanasi, 2012, p. 378-379.

15. The Ayurvedic Pharmacopoeia of India, Part II (Formulations), Vol I, 1st edition, Government of India Dept. Of Ayush, New Delhi, effective from 2008, pg no: 257.

16. Kaviraj vinod lal sen, Bhaisajya ratnavali a well Sanskrit treatise on practical therapeutics with a Sanskrit commentary Vinodini, Jwaradhikara, sl: 178. A well known Sanskrit treatise on practical therapeutics with a Sanskrit commentary Vinodini. Krishna Das Ayurveda series no. 71, Varanasi, 2001, p. 64.

17. The Ayurvedic Pharmacopoeia of India, Part II (Formulations), Vol I, 1st edition, Government of India Dept. of Ayush, New Delhi, effective from 2008, pg no: 258.

18. Yogaratnakara, 2nd edition, Swarnamakshikam, Text with Vaidyaprabha Hindi Commentary by Indradev Tripathi and Dr. Daya Shankar Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2007, pg no. 112-113.

19. Bhavaprakasha Bhavamisra, Bhavaprakasha, Purvakhanda, Vol-1, Chapter 6, Guducyadi varga, sl. 64-66. Text with English translation by Prof. K. R. Srikantha murthy, Chaukhambha Krishnadas Academy, Varanasi, 2004, p. 237.

20. Dr. B. K. Dwivedhi, Dhanwanthari nighantu, 1st edition, Hari hindi vyakhya sahith, Guducyadi prathama sarga, sl no:285-288, edited by P. Harihara Prasad Tripathi, Chaukhambha prakashan, Varanasi, 2008, pg no:70-71.

21. Saligrama vaishya, Saligrama nighantu, Saptama ashtama bhago Brhat nighantu ratnakara antargatau, Tailavarga.

Choukhamba Prakashan, Varanasi. 2011, pg no 220.

22. Acharya Priyavarta Sharma, Dr. Guruprasad Sharma, Kayya Deva Nighantu[Pathya apathya vibhodhakah], Oshadi varga, sl. no 120, Chowkhambha prakashan, Varanasi Reprint edition on 2017, pgno:25.

23. Yogratnakara, 2nd edition, Aseethivathaja roganam samkshipta chikitsa, sl 154, Text with Vaidyaprabha Hindi Commentary by Indradev Tripathi and Dr. Daya Shankar Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2007, pg no. 415-416.

24. Yogratnakara, 2nd edition, Aseethivathaja roganam samkshipta chikitsa, sl 163 Text with Vaidyaprabha Hindi Commentary by Indradev Tripathi and Dr. Daya Shankar Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2007, pg no. 416-417.

25. Yogratnakara, 2nd edition, Aseethivathaja roganam samkshipta chikitsa, sl 164, Text with Vaidyaprabha Hindi Commentary by Indradev Tripathi and Dr. Daya Shankar Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2007, pg no. 417.

26. Bhavamisra, Bhavaprakasha, Vol 2, Third edition, Madhyamakhanda, amavathaadhikara, shad vimso adhyaya, sl. 50, Text with English Translation, Translated by Prof. K. R. Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 372.

27. Yogratnakara, 2nd edition, vata gulma chikitsa, sl 35 Text with Vaidyaprabha Hindi Commentary by Indradev Tripathi and Dr. Daya Shankar Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2007, pg no. 485.

28. Yogratnakara, 2nd edition. udara roga chikitsa, sl45Text with Vaidyaprabha Hindi Commentary by Indradev Tripathi and Dr.Daya Shankar Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2007, pg no. 550.
29. Yogratnakara, 2nd edition, sarvodareshu samanya vidhi, sl 120-121 Text with Vaidyaprabha Hindi Commentary by Indradev Tripathi and Dr.Daya Shankar Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2007, pg no. 557.
30. Yogratnakara, 2nd edition. udara roga chikitsa, sl170-172Text with Vaidyaprabha Hindi Commentary by Indradev Tripathi and Dr.Daya Shankar Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2007, pg no. 562.
31. Bhavamisra, Bhavaprakasha, vol2, Third edition, Madhyamakhanda, udararoga aadhikara, chatwarimshattama adhyaya, sl. 31, Text with English Translation. Translated by Prof.K.R.Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 519.
32. Bhavamisra, Bhavaprakasha, vol 2, Third edition, Madhyamakhanda, Udara roga aadhikara, Chatwarimshattama adhyaya, sl. 46 Text with English Translation. Translated by Prof. K. R. Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 521.
33. Kaviraj Kunjalal Bhishagratna. Susrutha samhita, Vol 1, 4th edition, Sutrasthana, Virechanadravyavikalpa vijnaneeya adhyaya, slo. no72-74. Text with English translation, Edited by Dr.Jyotir Mitra, Chowkhamba Prakashan, Varanasi, 2012, pgno 394-395.
34. Bhavamisra, Bhavaprakasha, Vol 2, Third edition, Madhyamakhanda, amavathaadhikara, shad vimso adhyaya, sl. 55 Text with English Translation Translated by Prof. K. R. Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 372.
35. Bhavamisra, Bhavaprakasha, Vol 2, Third edition, Madhyamakhanda, Vriddhi Bradhna adhikara, Trichatwarimshattama adhyaya, sl. 14-15 Text with English Translation. Translated by Prof. K. R. Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 532.
36. Bhavamisra, Bhavaprakasha, Vol 2, Third edition, Madhyamakhanda, Vriddhi Bradhna adhikara, trichatwarimshattama adhyaya, sl. 25Text with English Translation. Translated by Prof.K.R.Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 533- 534.
37. Bhavamisra, Bhavaprakasha, Vol 2, Third edition, Madhyamakhanda, Vriddhi Bradhna adhikara, Trichatwarimshattama adhyaya, sl. 34Text with English Translation Translated by Prof.K.R.Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 535.
38. Bhavamisra, Bhavaprakasha, vol 2, Third edition, Madhyamakhanda, Slipada adhikara, panchatwarimshattama adhyaya, sl. 15, Text with English Translation Translated by Prof. K.R.SrikanthaMurthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 547.
39. Yogaratnakara, 2nd edition, Kurandachikitsa, sl. 61-63, Text with vaidyaprabha hindi commentary by Indra dev Tripathi and Daya Shankar Tripathi, Choukhamba krishnadas academy, Varanasi, 2007, pgno. 581.
40. Yogaratnakara, 2nd edition, Slipadachikitsa, sl. 42- 43, Text with vaidyaprabha hindi commentary by Indra

dev Tripathi and Daya Shankar Tripathi, Choukhamba krishnadas academy, Varanasi. 2007, pgno. 598.

41. Saligrama vaishya, Saligrama nighantu, Saptama ashtama bhago Brhat nighantu ratnakara antargatau, Tailavarga, Choukhamba Prakashan, Varanasi. 2011, pg no 778.

42. Yogaratnakara, 2nd edition, Rasayanadhikar, sl. 36, Text with Vaidyaprabha Hindi commentary by Indra dev Tripathi and Daya Shankar Tripathi, Choukhamba Krishnadas Academy, Varanasi, 2007, pgno. 893.

43. Bhavamisra, Bhavaprakasha, vol 2, Third edition, Madhyamakhand, amavathaadhikara, shadvimso adhyaya, sl. 113Text with English Translation, Translated by Prof. K. R. Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 379.

44. Sri Narahari Pandit, Raj Nighantu, 6th edition, Chapter 8, Salmalyadi varga adhyaya, Text with English translation and Critical Commentary by Dr. Satish Chandra Sankhyadhar, Dr. Deepika Sankhyadar and Prof. KC. Chunekar, Chaukhambha Orientalia, Varanasi, 2012, p. 379.

45. Sahasrayoga, Dwiteeya Prakarana gutika yoga, Hindi translation by T. B Pandit rao, edited by Vaidya Mahendrapal Singh Arya. Kendriya Ayurveda Vijnan Anusandhan parishat. New Delhi, 2011, pgno 122.

46. Sahasrayoga, Triteeya Prakarana churna yoga, Hindi translation by T. B Pandit rao, edited by Vaidya Mahendrapal Singh Arya. Kendriya Ayurveda Vijnan Anusandhan parishat. New Delhi, 2011, pgno 200.

47. Sahasrayoga, Triteeya Prakarana churna yoga, Hindi translation by T. B

Pandit rao, edited by Vaidya Mahendrapal Singh Arya. Kendriya Ayurveda Vijnan Anusandhan parishat. New Delhi, 2011, pgno 202-203.

48. Bhavamisra, Bhavaprakasha, vol 2, Third edition, Madhyamakhand, Amavathaadhikara, Shadvimso adhyaya, sl. 131Text with English Translation, Translated by Prof. K. R. Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2005, pg no. 381.

49. Sahasrayoga,. Prathama Prakarana kashaya yoga, Hindi translation by T.B.Pandit rao, edited by Vaidya Mahendrapal Singh Arya. Kendriya Ayurveda Vijnan Anusandhan parishat. New Delhi, 2011, pgno 80.

50. Yogratnakara, 2nd edition, Amavatha chikitsa, sl 27, Text with Vaidyaprabha Hindi Commentary by Indradev Tripathi and Dr. Daya Shankar Tripathi, Chaukhambha Krishnadas Academy, Varanasi, 2007, pg no. 454.

51. Sahasrayoga, Prathama Prakarana kashaya yoga, Hindi translation by T. B Pandit rao, edited by Vaidya Mahendrapal Singh Arya. Kendriya Ayurveda Vijnan Anusandhan parishat. New Delhi, 2011, pgno 105.

52. Sahasrayoga. Prathama Prakarana kashaya yoga, Hindi translation by T. B Pandit rao, edited by Vaidya Mahendrapal Singh Arya. Kendriya Ayurveda Vijnan Anusandhan parishat. New Delhi, 2011, pgno 13.

53. Preeti KM, Verma AB, A Review on Ethnopharmacological Potential of Ricinus Communis, Pharma Tutor, 2 (3), 2014, 76-85 doi:10.4137/ LPI.S40233.Retrieved from <https://www.pharmatutor.org/articles/review-ethno->

- pharma cological-potential-ricinus-communis-linn. Accessed on 14. 02. 2018.
54. Dr. K. M. Nadkarni's, Indian material medica with Ayurvedic, Unani-Tibbi, Siddha, Allopathic, Homeopathic, Naturopathic & Home Remedies, Ricinus Communis, Linn. Vol 1, 3 rd edition, Popular Prakashan. Bombay, reprinted 1996, pg 1067.
55. Y. R. Chadha, The wealth of India A Dictionary of Indian raw materials & Industrial Products. Raw Materials, Vol. IX:Rh-So, Reprinted by National Institute of Science Communicating (CSIR), 1999, p. 37.
56. Y. R. Chadha, The wealth of India A Dictionary of Indian raw materials & Industrial Products. Raw Materials by, Vol. IX:Rh-So, Reprinted by National Institute of Science Communication (CSIR), 1999, p. 36-38.
57. Mohammad Moshiri, Fatemeh Hamid, and Leila Etemad (2015), Ricin Toxicity: Clinical and Molecular Aspects, Rep Biochem Mol Biol. 2016 April;4(2):60-65.PMCID:PMC4986263/. [Accessed on 26. 03. 2018].
58. Medscape, Drugs and diseases, Castor oil. Retrieved from <https://reference.medscape.com/drug/fleet-castor-oil-castor-oil-342010#10>. [Accessed on 20. 02. 2018].
59. Patricia M. Dowling, Western College of Veterinary Medicine, University of Saskatchewan, MSD Manual Veterinary Manual, Retrieved from <http://www.msdvetmanual.com/pharmacology/systemic-pharmacotherapeutics-of-the-digestive-system/cathartic-and-laxative-drugsmonogastric>. [Accessed on 20. 02. 2018].
60. Medscape, Drugs and diseases, Castor oil. Retrieved from <https://reference.medscape.com/drug/fleet-castor-oil-castor-oil-342010#10>. [Accessed on 20. 02. 2018].
61. Jitendra Jena, Ashish kumar gupta. Ricinus Communis linn: A Phytopharmacological Review, Int J Pharm PharmSci, Vol4, Issue4, 25-29. Retrieved from https://www.researchgate.net/publication/235417877_Ricinus_communis_linn_A_phytopharmacological_review [Accessed on Feb 08. 2018].
62. Shyamapada Mandal. Exploration of larvicidal and adult emergence inhibition activities of Ricinus communis seed extract against three potential mosquito vectors in Kolkata, India. Department of Zoology, Gurudas College, Narkeldanga, Kolkata Vol 3, Issue 8, August 2010. Retrieved from <https://www.science-direct.com/science/article/pii/S1995764510601472> [Accessed on Feb 08. 2018].
63. Manoj Kumar. A Review on Phytochemical Constituents and Pharmacological Activities of Ricinus communis. L. Plant, Department of Botany, Govt. College, Haryana. Retrieved from <http://impactfactor.org/PDF/IJPPR/9/IJPPR,Vol9,Issue4,Article3.pdf>. [Accessed on Feb 08. 2018].
64. Jitendra Jena, Ashish kumar gupta. Ricinus Communis linn: A Phytopharmacological Review, Int J Pharm PharmSci, Vol4, Issue4, 25-29. Retrieved from https://www.researchgate.net/publication/235417877_Ricinus_communis_linn_A_phytopharmacological_review [Accessed on Feb 08. 2018].
65. Tunaru, Sorin et al. "Castor Oil Induces Laxation and Uterus Contraction via Ricinoleic Acid Activating Prostaglandin EP3 Receptors." Proceedings of the National Academy of Sciences of the United States of

America 109. 23 (2012): 9179–9184. PMC. Web. 14 Mar. 2018.

66. Biren Shah and A. K. Seth, Text book of Pharmacognosy and Phytochemistry, Castor oil, 2010 Elsevier First Edition, Retrieved

from <https://www.scribd.com/document/363020100/Biren-Shah-Avinash-Seth-Textbook-of-Pharmacognosy-and-Phytochemistry-ElsevierIndia-2012>. [Accessed on 30. 1. 2018].

67. Medscape, Drugs and diseases, Castor oil. Retrieved from <https://reference.medscape.com/drug/fleet-castor-oil-castor-oil-342010#4>. [Accessed on 20. 02. 2018].

68. Medscape, Drugs and diseases, Castor oil. Retrieved from <https://reference.medscape.com/drug/fleet-castor-oil-castor-oil-342010#5>. [Accessed on 20. 02. 2018].

medscape. com/drug/fleet-castor-oil-castor-oil-342010#5. [Accessed on 20. 02. 2018].

CORRESPONDING AUTHOR

Dr Rakesh Kumar Pandey

Assistant Proffesor, Dept. Of Dravyaguna, Shubhdeep Ayurved Medical College & Hospital, Indore

Email: dr.r.k.pandey2012@gmail.com

Source of support: Nil

Conflict of interest: None Declared

Cite this article as

Dr Rakesh Kumar Pandey.: Review on Therapeutic Uses of Erand Taila (*Ricinus communis* Linn.); VIII(5): 2386-2396