



REVIEW ON YOGAS CONTAINING JAYAPALA (*CROTON TIGLIUM* LINN.)- A SAFETY ASPECT

<sup>1</sup>Tikoo Ajay

<sup>2</sup>Bhagiya Shital

<sup>3</sup>Gujarati Chirag

<sup>4</sup>Bhatt Nilesh

<sup>1</sup>Consultant, Department of Panchakarma, Govt. Ayurvedic Medical College, Jammu.

<sup>2</sup>Consultant, Department of Panchakarma, B.G. Garaiya Ayurveda college, Rajkot.

<sup>3</sup>Medical officer, Govt. of Gujarat, Gujarat.

<sup>4</sup>Panchakarma Physician, Dept. of Panchakarma, IPGT & RA, GAU, Jamnagar.

ABSTRACT

*Jayapala*(*Croton tiglium*Linn.) is described in *UpavishaVarga* in *Ayurveda*. It`s seeds are used in many formulations. The seed oil is purgative. It produces severe symptoms of toxicity when taken internally or applied externally to the skin. Safety monitoring of medicines in common use should be an integral part of clinical practice.However it is used after *Shodhana*. Seeds are having poisonous properties so it should be used carefully after proper *Shodhana*. This paper is to highlight the importance of Safety aspect of use of *Jayapala* as a medicinal drug as well as an ingredient in various *VirechanaYoga* (Purgative formulations).

**Keywords:** *Jayapala, Upavisha, Shodhana, Yoga.*

**INTRODUCTION :** *Acharya*Charaka has mentioned that a poison can be used as a medicine when it is used properly and on the contrary improperly used medicine can act as a poison.<sup>i</sup>*Jayapala* is an organic irritant vegetable (herbal) poison<sup>ii</sup>, explained under the category of *Upavisha*<sup>iii</sup>, The seeds of *Jayapala* are highly toxic due to the presence of tiglic acid, crotonic acid or quartenylic acid&crotonic acid.<sup>iv</sup> Anyhow there are many Ayurvedic formulations like *IcchabhediRasa, JwarariRasa, JalodariRasa* etc. that contains *Jayapala* as one of main ingredients. Recently the tendency of going back to natural medicine with a view that it is relatively safer than that of synthetic ones has raised its world demand.Ayurveda claims that the use of such poison in therapeutics is safe as they are processed with *Shodhana* procedure. Improper *Shodhana* procedure or improper use of such drugs can also lead to the manifestation of poisonous

signs & symptoms.Safety is the most important consideration before administration of such products. The knowledge and administration of proper antidote can be life-saving in circumstances of its toxicity & it may help to decrease the morbidity & health care costs. The widespread availability of an affordable antidote for such drugs would revolutionize the management of toxicity.

The concept of *Shodhana* in Ayurveda not only covers the process of purification and detoxification of physical as well as chemical impurities but also covers the minimization of side effects and improving the potency and therapeutic efficacy of the purified drugs.<sup>v</sup>*Jayapala* is used only after proper *Shodhana* for therapeutic purpose. *Shodana* of *Jayapala* is carried out with the help of *Go-Mutra* for soaking purpose and *Go-Ksheera* for *Swedana* procedure. In case of side ( ill ) effects or complications, the counter act medicines should be adminis-

tered and the repeated intake of *NimbuRasa* proves to be an excellent Antidote against the effect of *JayapalaBeejaTaila*(croton seed oil). All parts for *Jayapala* have potent purgative action. The skin irritant and tumour promoting diterpene esters of the tiglane type (phorbol esters) and toxins have been isolated from the seeds. In China, where the herb is employed for the treatment of gastrointestinal disturbances, the highest incidence of nasopharyngeal cancer has been reported.

its raphae and apply *Bhavana* (trituration) treatment with lemon juice. The phorbol content of the croton oil was reduced significantly due to *Swedana* process. It is also reported that the toxicity is reduced and pharmacological potency is increased.<sup>xix</sup> As safety is the inherent strength of Ayurvedic medicines, better safety/tolerability evaluation system is required to capture its extent. Moderate efficacy but excellent safety, which may be the case with several Ayurvedic medicines, may

Sr. No.	Name	Ingredients	Indication
1	<i>VirechanaGutika</i> <sup>vi</sup>	<i>Trivrit, Trikatu, Katuka, Trivrit, Vidanga, Jayapala, etc.</i>	<i>SamyakVirechana</i>
2	<i>Naracha Rasa</i> <sup>vii</sup>	<i>Kajjali, Tanakana, Maricha, Pippali, Shunthi, Jayapala</i>	<i>Adhmana, Udavarta</i>
3	<i>RecaniVati</i> <sup>viii</sup>	<i>Haritaki, Jayapala, SnuhiDugdha</i>	<i>Utkleda, Murchchha, Klama, Aamanashini</i>
4	<i>Virechana Churna</i> <sup>ix</sup>	<i>Swarnakshiri, Gulab, Triphala, Badam, Jayapala</i>	<i>Virechana</i>
5	<i>ShukhVirechaniVati</i> <sup>x</sup>	<i>Shatapushpa, Jayapala</i>	<i>SukhVirechana</i>
6	<i>Ashwakanchuki Rasa</i> <sup>xi</sup>	<i>Kajjali, Vatsanaba, Haratala, Triphala, Trikatu, Jayapala</i>	<i>Udararoga, Jwara, Gulma, Kushtha</i>
7	<i>Jalodarari Rasa</i> <sup>xii</sup>	<i>Pippali, Maricha, Tamra, Haridra, Snuhikshira</i>	<i>Jalodara</i>
8	<i>Ichchhabhedi Rasa</i> <sup>xiii</sup>	<i>Hingula, Tankana, Shunti, Pippali, Hemahva, Jayapala</i>	<i>Udararoga</i>
9	<i>Raja virechanaGutika</i> <sup>xiv</sup>	<i>Tiphala, Trikatu, Parada, Gandaka, GauriPashana, Tankana, Jayapala.</i>	<i>Sukha Virechana</i>
10	<i>Marichadigutika</i> <sup>xv</sup>	<i>Maricha, Tankana, Parada, Gandaka, Mahoushadha, Jayapala</i>	<i>Shotha, Gulma, Udara, Ashthila.</i>
11	<i>Mahavanhi Rasa</i> <sup>xvi</sup>	<i>Kajjali, Manahshila, Triphala, Haridra, Jayapala, Chitraka, Jiraka</i>	<i>Udarroga</i>
12	<i>Udarari Rasa</i> <sup>xvii</sup>	<i>Parada, Tuttha, Jayapala, Pippali, Aragwagha, Snuhikshira</i>	<i>Jalodara</i>

Phorbols (terpenoids) from nonvolatile oil are toxic.<sup>xviii</sup> Croton seeds were subjected to *Swedana* with cow's milk by using *DolaYantra* for three hours, after removing

suffice to maintain the control in long-term management of chronic disorders such as degenerative diseases.

### Properties of *Jayapala*.

*Rasa-Katu, Guna-Guru, Snigdha, Tikshna, Sara, Virya-Ushna, Vipaka-Katu, Karma-Pittahara, Kaphahara, TeevraVirechaka, Vishaghna, Swedajanana, Jwaraghna, Sothahara, Krimighna, Dipana*, etc. Dosage of Seed: 6-12 mg powder (API Vol. IV.) Fatal dose of seed is 4 seeds. A single seed is said to have produced severe symptoms of poisons. Fatal period of *Jayapala* seed is four to six hours or may be delayed for three to six days. Toxic effect of *Jayapala* seed is burning pain from mouth to stomach, salivation, vomiting, purging with severe griping pain and bloody stool followed by tachycardia, vertigo, great prostration, circulatory, respiratory collapse and death.<sup>xx</sup> Antidote is a substance which counteracts or neutralizes the effect of poisons.<sup>xxi</sup> Antidote for *Jayapala* seed is *NimbuSwarasa*.<sup>xxii</sup>

**DISCUSSION :** The oral use of unpurified seeds of *Jayapala* and oil is likely unsafe. It produces nausea and violent vomiting. Impure *Jayapalabeeja* produces vesicles with yellow exudation and urticaria of the abdominal skin. It can cause severe inflammation in intestines and lead to intense abdominal pain and cramps. Purified kernels may be useful for people with severe or chronic constipation, but the regular or frequent use of *ShudhdhaJayapala* is also unsafe. Its regular use may cause intestinal sluggishness and reduce natural peristalsis.

After *Shodhana* only *Jayapala* is used in the Medicinal preparations. By Soaking in *Go-Mutra* it accumulates its property into it and useful to remove the outer coating. Then it is subjected to *Swedana* procedure with *Go-Ksheera*. It is

used in various disease conditions both external and internal purpose. Maximum formulations containing *Jayapala* are indicated as *Rechaka* and in *Pandu, UdaraRoga*, etc. Common drugs added with *Jayapala* are like *Vatsanabha, Kajjali, Tankana*. Apart from these it is indicated as *Shoolaharain* Scorpion bite. However, this process reduces irritant effect and side effects of *JayapalaBeeja* and makes them suitable for human consumption, but they still have potent laxative action.

The toxicity of *JayapalaBeeja* may be due to the presence of phorbol esters and crotonoleic acid along with other constituents. These constituents are oil soluble and may be removed by cow milk during the process of *Śodhana*. When seeds are subjected to *Swedana* with the milk, the free crotonoleic acid may get bound with fatty acid of milk resulting in therapeutic property exhibition rather than poisonous effect and milk may also help in reducing the *Tikshna* and *UshnaGuna* of *Jayapala*.<sup>xxiii</sup> Reduction in the level of these constituents after the purification decreases the toxicity of *JayapalaBeeja*. Reduction in the oily content from the *JayapalaBeeja* during the purification process is also supported by the results obtained from the physiochemical parameters.<sup>xxiv</sup>

*Jayapala* can cause severe diarrhea and abdominal cramps along with burning sensation in the whole abdomen. 1 ml seed oil is usually fatal. *Vacharoot* ash is a good antidote to reduce its toxicity and symptoms occurring due to it. *Vacha* root ash powder should be taken in dosage of 500 to 1000 mg two to three times a day or as required to reduce the symptoms. The *TankanaBhasma* (250 mg) and *PravalPishti* (1000 mg)

should also be taken twice daily. If burning sensation is excess, then *PravalPishti* can be repeated for 3 to 6 times a day in higher dosage (1 g). If severe diarrhea with severe abdominal cramps occurs due to *Jayapala*, then antispasmodic and Oral Rehydration Therapy (ORT) may also require. Antidiarrheal drugs are ineffective in such case. In severe cases, Intravenous Fluid Resuscitation is also required. If there is excessive purgation then cold water should never be used to stop it. On the other hand, warm water will stop motions. Borax is an antidote of croton seed poisoning.<sup>xxv</sup>

**CONCLUSION:** Classical references of Ayurveda has many medicinal herbs indi-

**REFERENCES:**

1. Agnivesha, Charaka Samhita, Ayurveda Dipika commentary by Chakrapanidatta, edited by Yadavji Trikamji Acharya, New Delhi, Chaukhambha Sanskrit Sansthana, Reprint, 2016, Sutra Sthana, 1/126, p-23.
2. Jaising P Modi, A text book of medical Jurisprudence and toxicology, edited by K. Kannan and Dr. Karunakaram Mathiharana, Hariyana, 24<sup>th</sup> edition, 2012, Section 2, p-136, 137.
3. Pranacharya Sadananda Sharma, Rasatarangini, Commented by Sri Hari Datta Shastri, edited by Kashinath Shastri, New Delhi, Chaukhambha Sanskrit Sansthana, 11<sup>th</sup> edn, 2004, 24/6, p-648.
4. Bhavamishra, Bhavaprakasha Nighantu, Commentary by prof. K.C. Chunekar, edited by late Dr. G.S. Pandey, Chaukhamba Bharathi academy, Varanasi- 2010, p-387, 388.
5. Belge RS, Belge AR. Ayurvedic Shodhana treatments and their applied aspect with special reference to Loha. J Pharm Biol Sci., 2012, Vol-2, p-9.
6. K. Niteshwar, R. Vidyanath, Sahasrayogam, Chaukhambha Sanskrit Series Office, Varanasi, 1<sup>st</sup> edition, 2006, p-342.
7. Smt. Shailaja Srivastava, Sharangadhar Samhita Of Acharya Sharangadhar, Reprint 2015, Chaukhambha Orientalia, Madhyama Khanda, Chapter 12/138-139, p294.
8. Shah Nagindas, Bharata Bhaishajya Ratnakara. 3<sup>rd</sup> edition, 2012, New Delhi, B. Jain Publishers, part 4, p-346.
9. Rasatantra Sara & Sidhaprayogasangraha, 12<sup>th</sup> edition, Rajasthan, Krishnagopala Ayurveda Bhawan 2012, Part 2, p-16.
10. Rasatantra Sara & Sidhaprayogasangraha, 12<sup>th</sup> edition, Rajasthan, Krishnagopala Ayurveda Bhawan 2012, Part 1, p-161.
11. Rasatantra Sara & Sidhaprayoga sangraha. 12<sup>th</sup> ed. Rajasthan, Krishnagopala Ayurveda Bhawan; 2012, Part 1, p-161.
12. Kaviraj Ambikadatta Shastri, Bhaishajyaratnavali of Shri Govind Das, Reprinted 2016, Chaukhambha Prakashana, Varanasi, Udararogadhikara, Chapter 40/77, p-761.

cated in different Diseases in which *Upavisha* like *Jayapala* is one used with a combination of medicines to prepare formulations. To conclude it is better to manage a variety of diseases with an Herbal drug like *Jayapala* as an Ingredient by following respective procedures like *Shodhana* some formulations. The main aim of *Shodhana* of *Jayapala* seed is to reduce the oil content which is very purgative and harmful effect. Such preparations are held to be safe, efficacious even in minute doses, and, when manufactured and used following specified classical guidelines, not to lead to any significant untoward effects.

- 13.Smt. Shailaja Srivastava, Sharangadhar Samhita Of Acharya Sharangadhar, Reprint 2015, Chaukhambha Orientalia, Madhyama Khanda, Chapter 12/140-141, p-294.
- 14.K. Niteshwar, R. Vidyath, Sahasrayogam, Chaukhambha Sanskrit Series Office, Varanasi, 1<sup>st</sup> edition, 2006, p-342.
- 15.K. Niteshwar, R. Vidyath, Sahasrayogam, Chaukhambha Sanskrit Series Office, Varanasi, 1<sup>st</sup> edition, 2006, p-343.
- 16.KavirajAmbikadatta Shastri, Bhaisajyaratnavali of Shri Govind Das, Reprinted 2016, ChaukhambhaPrakashana, Varanasi, Udararogadhikara, Chapter 40/82-86, p-762.
- 17.KavirajAmbikadatta Shastri, Bhaisajyaratnavali of Shri Govind Das, Reprinted 2016, ChaukhambhaPrakashana, Varanasi, Udararogadhikara, Chapter 40/98, p-763.
- 18.C.P.Khare, Indian Medicinal Plants, An Illustrated Dictionary, SpringerScience Business Media publication, 2007, p-180.
- 19.Anonymous, The Ayurvedic Formulatory of India, Part II, second edition 2003, govt. of India, Delhi, Government Controller of Publications, p-396.
- 20.Jaising P Modi, A text book of medical Jurisprudence and toxicology, edited by K.Kannan and Dr. KarunakaramMathiharana, Hariyana, 24<sup>th</sup> edition, 2012, Section 2, p-136,137.
- 21.Dr.K.S.Narayana Reddy, The Essential of forensic medicine in toxicology,published by K.Sugunadevi, 29<sup>th</sup> edition, 2010, p-462.
- 22.Dr.K.M.Nadkarani, Indian materiamedica, Vol I, edited by late Dr.K.M. Nadkarani Revised by A.K.Nadakarni,foreword by R.N.Chopra, popular prakashana, 2010,p-398.
- 23.Sujatha K et al, analytical study on shodhana of Jayapala, Int. J. Res. Ayurveda Pharma., 2013, 4(6), p-805,808.
- 24.Prince Kumar Pal. et al, Detoxification of *Croton tiglium* L. seeds by Ayurvedic process of *Śodhana*, Anc Sci Life. 2014 Jan-Mar, 33(3), p-157,161.
- 25.BhaishajyakalpanaVijnana, Reddy Dr. Ramachandra, Chaukhamba Sanskrit Bhawan, Varanasi, 1<sup>st</sup> edition, 1998, p-537,538.

**Corresponding Author:**

Dr. Shital Bhagiya, Consultant, Department of Panchakarma, B.G. Garaiya Ayurveda college, Rajkot.

Email: shital1811@gmail.com

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