ABSTRACT

Jayapala (Croton tiglium Linn.) is described in Upavisha Varga in Ayurveda. Its 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 Virechana Yoga (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. Jayapala is an organic irritant vegetable (herbal) poison, explained under the category of Upavisha, The seeds of Jayapala are highly toxic due to the presence of tiglic acid, crotonic acid or quartenylic acid & crolonolic acid. Anyhow there are many Ayurvedic formulations like Icchabhedi Rasa, Jwarari Rasa, Jalodari Rasa 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. Jayapala is used only after proper Shodhana for therapeutic purpose. Shodhana 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 *Nimbu Rasa* proves to be an excellent Antidote against the effect of *Jayapala Beeja Taila* (croton seed oil). All parts for *Jayapala* have potent purgative action. The skin irritant and tumour promoting diterpene esters of the tigliane 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.

Phorbols (terpenoids) from nonvolatile oil are toxic. Croton seeds were subjected to *Swedana* with cow’s milk by using *Dola Yantra* for three hours, after removing 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.xix

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

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name</th>
<th>Ingredients</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Virechana Gutika\textsuperscript{v}</td>
<td>Trivrit, Trikatu, Katuka, Trivrit, Vidanga, Jayapala, etc.</td>
<td>Samyak Virechana</td>
</tr>
<tr>
<td>2</td>
<td>Naracha Rasa\textsuperscript{viii}</td>
<td>Kajjali, Tanakana, Maricha, Pippali, Shunthi, Jayapala</td>
<td>Adhma, Udavarta</td>
</tr>
<tr>
<td>3</td>
<td>Recani Vati\textsuperscript{xiii}</td>
<td>Haritaki, Jayapala, Snuhi Dugdha</td>
<td>Utkleda, Murchchha, Klama, Aamanashini</td>
</tr>
<tr>
<td>4</td>
<td>Virechana Churna\textsuperscript{xiv}</td>
<td>Swarnakshiri, Gulab, Triphala, Badam, Jayapala</td>
<td>Virechana</td>
</tr>
<tr>
<td>5</td>
<td>Shukh Virechani Vati\textsuperscript{v}</td>
<td>Shatapushpa, Jayapala</td>
<td>Sukh Virechana</td>
</tr>
<tr>
<td>6</td>
<td>Ashwakanchuki Rasa\textsuperscript{xv}</td>
<td>Kajjali, Vatsanaba, Haratala, Triphala, Trikatu, Jayapala</td>
<td>Udararoga, Jwara, Gulma, Kushtha</td>
</tr>
<tr>
<td>7</td>
<td>Jalodarari Rasa\textsuperscript{xvi}</td>
<td>Pippali, Maricha, Tamra, Haridra, Snuhikshira</td>
<td>Jalodara</td>
</tr>
<tr>
<td>8</td>
<td>Ichchhabhedi Rasa\textsuperscript{xvii}</td>
<td>Hingula, Tankana, Shunti, Pippali, Hemahva, Jayapala</td>
<td>Udararoga</td>
</tr>
<tr>
<td>9</td>
<td>Raja virechana Gutika\textsuperscript{xviii}</td>
<td>Tiphala, Trikatu, Parada, Gandaka, Gauri Pashana, Tankana, Jayapala.</td>
<td>Sukha Virechana</td>
</tr>
<tr>
<td>10</td>
<td>Marichadigutika\textsuperscript{xix}</td>
<td>Maricha, Tankana, Parada, Gandaka, Mahoushadha, Jayapala</td>
<td>Shotha, Gulma, Udara, Ashthila.</td>
</tr>
<tr>
<td>11</td>
<td>Mahavanhi Rasa\textsuperscript{xx}</td>
<td>Kajjali, Manahshila, Triphala, Haridra, Jayapala, Chitraka, Jiraka</td>
<td>Udaroga</td>
</tr>
<tr>
<td>12</td>
<td>Udarari Rasa\textsuperscript{xxi}</td>
<td>Parada, Tuttha, Jayapala, Pippali, Aragwagha, Snuhikshira</td>
<td>Jalodara</td>
</tr>
</tbody>
</table>
Properties of Jayapala.

*Rasa-Katu, Guna-Guru, Snigdha, Tiksna, 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 *Jayapalaseed* 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. xx Antidote is a substance which counteracts or neutralizes the effect of poisons. xxi Antidote for *Jayapala* seed is *NimbuSwarasa*. xxii

**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 *Shoolakaran* 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*. xxiii 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. xxiv

*Jayapalacan* cause severe diarrhea and abdominal cramps along with burning sensation in the whole abdomen. 1 ml seed oil is usually fatal. *Vacha* root 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.

CONCLUSION: Classical references of Ayurveda has many medicinal herbs indicated 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 Shodhanasome 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.

REFERENCES:


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