

**A REVIEW OVER THE MODE OF ACTION OF PHALATRIKADI  
DROPS IN THE MANAGEMENT OF NAVAJATA SHISHU KAMALA  
W.S.R. TO NEONATAL JAUNDICE**

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**ABSTRACT**

Neonatal jaundice is one of the many entities which may lead to severe morbidity or mortality in developing and underdeveloped countries. Among the etiology of neonatal jaundice, the occurrence of the physiological jaundice is 47 % because of their immaturity. Neonatal physiological jaundice, although is present in 60% of term infants and 85% of preterm infants, usually it starts on 3<sup>rd</sup> day and subsides within a week but sometimes when exceeding the limits may cause various complications. In our classical texts there is no direct description of navajata shishu kamala. But Acharya Kashayapa in vednaadhyaya has described signs and symptoms of kamala. Neonatal physiological jaundice is caused due to excessive destruction of RBCs and Ayurveda has considered pitta as mala of Rakta and accumulation of mala may

lead to kamla. In last few decades many Ayurvedic formulations have been worked out by various researchers. In the series of all these research work, present study is carried out with

“Phaltrikadi drops” for the management of Navjata Shishu kamala. It has predominately Tikta and Kashaya Rasa, Ruksha and Laghugunas and Madhuravipaka which pacifies the Pitta Dosha. These drugs also have Deepana, Pachana, Shrotoshodhana properties.

**KEYWORDS:** Neonatal jaundice, Navajata shishu kamala, Phaltrikadi drops, Drug action.

## 1. INTRODUCTION

Neonatal period is considered most vulnerable period due to high neonatal mortality rates in developing and under- developed countries. Due to physiological immaturity of newborn babies, jaundice is seen in nearly 60% of term and 80% of preterm babies. Physiological jaundice may provide useful protection to the baby against oxygen free radical triggered neonatal disorders because bilirubin is a potent antioxidant. Under normal circumstances, the level of indirect-reacting bilirubin in umbilical cord serum is 1-3 mg/dl and rise at a rate of < 5mg/dl/24 hrs; thus, Jaundice becomes visible on 2<sup>nd</sup> – 3<sup>rd</sup> day. Maximum intensity of jaundice is seen on 4<sup>th</sup> – 5<sup>th</sup> day of life, but serum bilirubin does not exceed 15 mg/dl and jaundice disappears by 10 – 14 days of life. There are no characteristic clinical features of physiological jaundice, and its diagnosis can't be made by examining the baby at one point of the time. Among preterm babies, age of onset of physiological jaundice is similar to term babies. It may manifest earlier but never before 24 hours of age. The maximum intensity of jaundice is reached on the 5<sup>th</sup> or 6<sup>th</sup> day, serum bilirubin may go up to 15 mg/dl and it may persist up to 14 days. Normal adult serum bilirubin level is 1mg/dl. Adults appears jaundice when serum bilirubin is more than 2mg/dl and newborn appears jaundice when serum bilirubin is more than 7mg/dl. Ayurvedic texts did not mention Navajata Shishu Kamala separately as a chapter. Acharya Kashyapa in “Vedanadhyaya” has described signs & symptoms of Pandu & Kamala.<sup>[1]</sup> According to Acharya Kashyapa Revati is one Graha that causes Kamala<sup>[2]</sup> while describing clinical features of child seized with Jataharini<sup>[3]</sup>, concept of Navajata Shishu Kamala may be inferred. Acharya Charaka has opined that intake of breast milk vitiated by pitta, may lead to discolouration which later end up with yellowish discolouration of eyes, nails & urine.<sup>[4]</sup> Neonatal physiological jaundice is caused due to excessive destruction of RBCs & Ayurveda has considered pitta as a mala of rakta & accumulation of mala may lead to Kamala.

## 2. DISEASE REVIEW - NAVJATA SHISHU KAMALA

### 2.1 Definition

जातंजातमपत्यंतुयस्याः सद्योविनश्यति ।

पिशाचीनामसाघोरांसादिजातहारिणी ।।<sup>[5]</sup>

While explaining the yasya Jataharini, Kashyapa explains jataharini by name Pishacha which kills the baby on the second day. This is very dangerous and having Pingla Varna. Pingla Varna can be taken as yellowish discoloration which is called as Navjata Shishu Kamla.

## 2.2 Causes

Pittaj dusht stanyasevana by neonate is one of the important causes of Navjata shishu Kamala.

पूर्ववत् कुपिते पित्ते दौर्गन्ध्यं क्षीरमृच्छति ।

पाण्डुवामयस्तत्पिबतः कामला च भवेच्छिशो ।।<sup>[6]</sup>

Milk vitiated by the Pitta gets discolored and acquires the bad smell with production of more waste metabolites. On consumption of same baby may develops Anemia and Kamla.

## 2.3 Samprapti

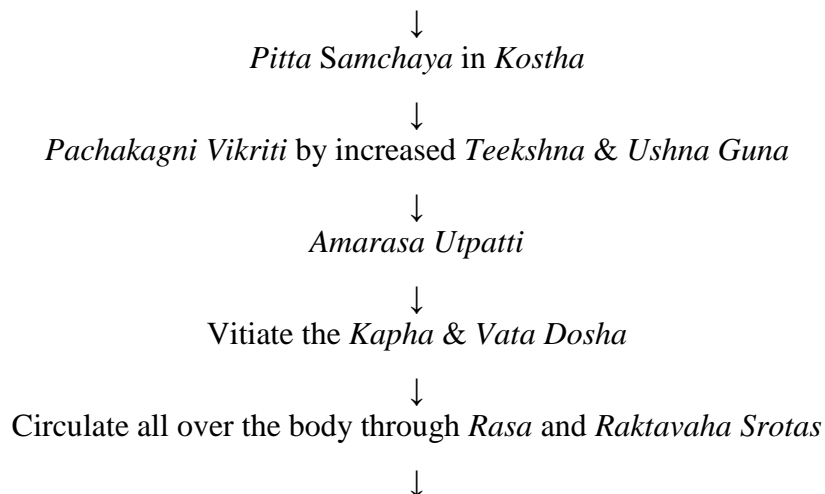
पाण्डुरोगी तु योऽत्यार्थपित्तलानिनिषेवते ।

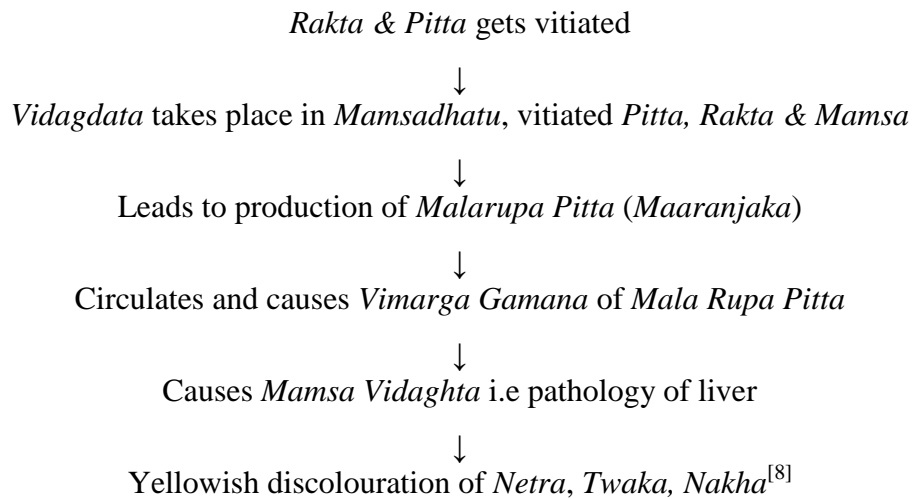
तस्यपित्तमासृग्मासंदग्धवारोगायकल्पते ।।<sup>[7]</sup>

In Charak Samhita Kamala has been explained as a sequel of Pandu Roga. When the patient who is already suffering from Pandu Roga indulges in diet such as Amla, Madhya and Apathya Ahara leads to the production of more quantity of Ranjaka Pitta immediately. The vitiated Ranjaka Pitta burns the blood and flesh giving rise to Pandu Vadana or Peeta Vadana i.e. pallor of face and Bheka Varna of skin.

## 2.4 Samprapti Chakra

*Pandu rogi* who indulges in intake of excessive *Pitta vardhaka Ahara* and *Vihara*





*Acharya Charaka* and *Vagbhata* have stated that *Kamala* is *Rakta pradoshajvyadhi*<sup>[9]</sup> and is due to *raktavaha srotodushti* respectively.<sup>[10]</sup>

## 2.5 Lakshna

*Brihatrayi* did not mention any description of lakshna of *Navajata Shishu Kamala*. Only *Acharya Kashyapa* in “*Vedanadhyaya*” has described signs & symptoms of *Navajata Shishu Kamala*.

पीतचक्षुर्नखमुखविण्मूत्रः कामलार्दितः ।

उभयत्र निरुत्साहो नष्टाग्निरुधिरस्पृहः ॥<sup>[11]</sup>

- पीतचक्षुर्नखमुखविण्मूत्र= (Yellowish coloured of eyes, nails, face, urine & stool)
- निरुत्साहो (Apathetic)
- नष्टाग्नि (Looses digestive capacity)
- रुधिरस्पृह (Desires for blood)

## 3. DRUG REVIEW

### 3.1 Criteria for selection of drug

In last few decades many *Ayurvedic* formulations have been worked out by various researchers. In the series of all these research work, present study is carried out with “*Phalatrikadi* drops” for the management of *Navajata Shishu kamala*.

*Phalatrikadi Kwath*, had been mentioned in the context of *Pandu* and *Kamala* in *Chakradatta*<sup>[12]</sup>, *Sharangdhar Samhita*<sup>[13]</sup>, *Bhaisajya Ratnavali*<sup>[14]</sup> and *Yoga Ratnakar*<sup>[15]</sup>, but is selected from ‘*Bhaisajya Ratnavali*’.

*Phalatrikadi Kwath* contains eight drugs which are predominantly useful in the treatment of *Navajata Shishu Kamala* / Neonatal jaundice, *Koshthashrit Kamala* / Hepatocellular jaundice, Cirrhosis of liver, Alcoholic hepatitis, Fatty liver and more likewise condition of liver.

In Ayurveda, drug that reverses or break the Samprapti without producing any side effect is ideal. It is often total effects of all the ingredients in the formulation rather than the action of individual drugs that plays a vital role in therapeutics. Drug combination is envisaged to serve synergistic action, combined action, toxicity neutralizing action and specific action. So *Phalatrikadi* drops used in research work.

### 3.2 Drug under trial - PHALATRIKADI DROPS

फलत्रिकामृतावासात्तिकाभूनिम्बजैः ।

क्वाथः क्षौद्रयुतो हन्यात् पाण्डुरोगं सकामलम् ।<sup>[16]</sup>

Sr. No	Name	Botanical name	Family	Part used
1	Amalaki	<i>Emblica officinalis</i> Gaertn	Euphorbiaceae	F.pericarp
2	Haritaki	<i>Terminalia chebula</i> Retz.	Combretaceae	F.pericarp
3	Bibhitaki	<i>Terminalia belerica</i> Roxb	Combretaceae	F.pericarp
4	Kutaki	<i>Picrorhiza kurroa</i> Royle ex Benth	Scrophulariaceae	Rhizome
5	Vasa	<i>Adhatoda vasica</i> Nees	Acanthaceae	Leaves
6	Kalmegh	<i>Andrographis paniculata</i> Nees	Acanthaceae	Whole plant
7.	Nimba	<i>Azadirachta indica</i> A. Juss	Meliaceae	Stem Bark
8.	Guduchi	<i>Tinospora cordifolia</i> Miers	Menispermaceae	Stem
9.	Madhu	Honey		

### 3.3 Method of preparation of drug

- Raw drugs were taken and cleaned properly, than made into Yavakuta form.
- Decoction of the drug was prepared according to Sharngadhara Samhita by putting sixteen times of boiled water and reduced to ¼<sup>th</sup> part and filtered properly.
- The boiling process was continued and reduced further to ½ part.
- After cooling, ¼<sup>th</sup> part of madhu by weight added and filtered in very fine mesh thrice.
- Again filterate obtained is filtered in muslin cloth.
- Preservatives - sodium benzoate 4% and propyl paraben 0.1% were added.
- Finally prepared material filled in clean, sterilized 50 ml bottles for dispensing as drops.

### 3.4 Mode of action of drug

The action of every drug is determined by the dominant pharmacodynamic factor in that particular drug and that may be anyone out of Rasa, Guna, Virya, Vipaka and Prabhava.<sup>[17]</sup> This is the principle of treatment in Ayurveda. The present research trial was conducted on Phaltrikadi drops, having ingredients Amalaki, Haritaki, Vibhitaki, Guduchi, Vasa, Katuki, Kalmegh and Nimba.

- **Amalaki** is a known hepatoprotective agent and its properties include Guru, Ruksha and Teekshnaguna, Sheetavirya, madhuravipaka and contains all Rasa except lavana. Due to its, Sheetavirya and Madhuravipaka it pacifies Pitta Dosha and being Kashaya Rasa in predominance, it also pacifies Pitta Dosha with its Sheetaguna. It has been already proved, Amalaki has antioxidant property and can protect biological membranes of liver which gets destroyed by free radical in pathological condition.<sup>[18]</sup>
- **Haritaki** have Laghu, Rukshaguna, Ushnavirya, Madhuravipaka, contains all Rasa with predominance of Kashaya Rasa except lavana. Due to its Laghuguna it acts as Deepana, Pachana and Srotoshodhana properties which pacifies Aruchi and Daha whereas Rukshaguna pacify Snehaguna of Pitta Dosha. Haritaki have mild purgative property due to its Ushnavirya. The line of treatment of Kamala Roga is Samshodhana with Mriduvirechana (mild purgative). Here Virechana is in the sense of Pitta Virechana. Therefore, it regresses the symptoms of disease.<sup>[19]</sup>
- **Bibhitaki** have Laghu, Rukshaguna, Kashaya Rasa, Ushnavirya and Madhuravipaka. Due to Kashaya Rasa it pacifies Pitta Dosha with its Sheetaguna. Being Ruksha, Laghuguna and Madhuravipaka it also pacifies Pitta Dosha and have Deepana, Pachana property. Bibhitaki contains 3,4,5- trihydroxy benzoic acid (Gallic acid) it has been proved for hepato protective activity. Administration of compound lead to significant reversal of majority of the altered parameters.<sup>[20]</sup>
- **Guduchi** have Snigdha, Guruguna, Ushnavirya, Tikta, Kashaya Rasa and Madhuravipaka. Due to Tikta and Kashaya Rasa it pacifies Pitta Dosha. Tikta Rasa is Agnideepaka and Aharapachaka and pacify Aruchi and Daha which are common symptoms of Kamala. It has been proved that Guduchi contains berberin which is effective in the prevention of fibrosis and stimulates the regeneration of hepatic tissue.<sup>[21]</sup> Guduchi is also established as an immune modulator, so it is useful in improving the immunity against infection therefore it is useful in autoimmune hepatitis induced Jaundice.<sup>[22]</sup>

- **Vasa** have Tikta, Kashaya Rasa, Ruksha, Laghuguna, Sheetaviryra and Katuvipaka. Due to Tikta and Kashaya Rasa, Rukshaguna, Sheetaviryra it pacifies the Pitta Dosha. Vasa contains adhotodic acid and it has been proved that it acts as a cholegogue and can be employed in Jaundice.<sup>[23]</sup>
- **Katuki** have Tikta Rasa, Ruksha and Laghuguna, Sheetaviryra and Katuvipaka. Due to Tikta Rasa, Sheetaviryra, Rukshaguna it pacifies the Pitta Dosha. Its root contains a glycoside called picrorrhizin. In small doses, it is a bitter, stomachic and laxative and in large doses, it is reputed as a cholagogue.<sup>[24]</sup> It has been proved that Katuki is one of the herbs that is recommended to support the liver not only in against viral infection, but it is also helpful in protecting against alcohol (liver).<sup>[25]</sup>
- **Nimba** have Tikta and Kashaya Rasa, Laghuguna, Sheetaviryra and katuvipaka. Due to Tikta and Kashaya Rasa it pacifies the Pitta Dosha. Being Laghuguna it acts as a Deepana, Srotoshodhana and made the drug to easily digest. It has proved anti-helminthic, anti-inflammation action and immune modulator action.<sup>[26]</sup>
- **Kalmegh** have Tikta Rasa, Ruksha and Laghuguna, Ushnaviryra and Katuvipaka. Due to Tikta Rasa and Rukshaguna it pacifies Pitta Dosha.
- **Madhu** due to Yogavahi property, moves to Sukshmasrotas and does Srotovishodhana. Thus, it helps in relieving the Sanga in Dhatuvaha Srotas. Madhu was also added for the palatability of the Aushadha, which is an important factor to be considered for administration to the children.
- Therefore, Phalatrikadi drops by virtue of properties of its ingredients helps to dissociate the pathogenesis of disease process and causes regression of symptoms.

#### 4. DISCUSSION

**4.1 Discussion on about disease review** - Neonatal period is considered most vulnerable period due to high neonatal mortality rates in developing and underdeveloped countries. Neonatal physiological jaundice although is present in 60 % of term infants and 85% of preterm infants, usually it starts on 3<sup>rd</sup> day and subsides within a week but some time when exceeding the limits may cause various complications. In Kamala, due to intake of ati Pittaprapakopaka Ahara and Vihara by mother during Garbhini awashta, there is pitta sanchaya in the koshta. It causes increase in the ushna and teekshna guna of pitta which cause Pachakagni vikruti. Agnivikruti causes aamotapatti which cause vitiation of kapha & vata. These vitiated doshas mixes with vitiated pitta and circulate all over the body through Rasa and Raktadhatu. Vitiated pitta viatiates Raktadhatu and they vitiate Mansadhatu. Dooshita

pitta mixes up with stanya during postnatal period leads to yellowish discolouration of netra, twaka, mutra and purisha of newborn who feed by doosta stanya. Therefore, from samprapti, it is very clear that, Navjat Shishu Kamala is a Pitta and Raktapradoshajvikara.

**4.2 Discussion on about mode of action of drug-** The mode of action of the drug can be understood by the properties of its basic physiochemical factors. These factors are Rasa, Guna, Virya, Vipaka and Prabhava of the drug. Considering the above facts, the combination of drugs has probably given desired effect. Phalatrikadi drops is a potent combination to treat Navjat Shishu Kamala Roga based on its properties and pharmacological action. It has predominately Tikta and Kashaya Rasa, Ruksha and Laghugunas and Madhuravipaka which pacifies the Pitta Dosha. These drugs also have Deepana, Pachana, Shrotoshodhana properties. Therefore, Phalatrikadi drops by virtue of properties of its ingredients helps to dissociate the pathogenesis of disease process and causes regression of symptoms.

## 5. CONCLUSION

Physiological jaundice is very common problem in newborns. It appears on 3<sup>rd</sup> day of life and disappears on 14<sup>th</sup> day of life. It can be correlated with Navjata Shishu Kamla. In our classical texts there is no direct description of navajata shishu kamala. But Acharya Kashayapa in vednaadhyaya has described signs and symptoms of kamala. It is a disease in which Pitta Dosha affect over Rakta and Mamsadhatu and ultimately leads to Navjata Shishu Kamla. The drugs are considered to act as a Deepana, Pachana and Pitta Prashamana (eliminate the vitiated doshas) As, the vitiated pitta is eliminated from the koshta, total serum bilirubin & the symptoms like Twakpitata decreases. The positive point observed during that, there were no side effects seen during the trail, which is really a good sign to the patients and is of vital importance in view of the global acceptance of Ayurveda.

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