



## Review Article

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# Evaluation of medicinal plants in North-East region relating to maternal and child health care

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## ABSTRACT

Maternal and child health care services are composed of specific segment in national health. Many medicinal plants mentioned in Ayurveda for maternal and child health are available in North-East region. In classics these medicinal plants are discussed in various groups like Garbhasthapak, Prajasthapan, Stanyajanan, Stanyasodhan, drugs are also available in the form of monthly regimen during pregnancy, during delivery, certain maternal disorders during pregnancy and after delivery. In context of child health care, foetal abnormality, neonatal care and in specific neonatal disorders drugs are also highlighted. Sushruta, hypothesized these drugs under Prithakparynadi, Pippalyadi gana. Study related to Shatavari reveals growth of mammary glands, alveolar tissue and acini in pregnant rat. Methanolic extract of Bala also exhibit fungal activity. The present study highlights all these drugs and reviewed the in-vitro and in-vivo application carried out previously. Data obtained thus emphasised these herbs propagation in National Health Mission for increasing Maternal and Child health care.

**Keywords:** Garbhasthapak, Prithakparynadi, Maternal and child health care.

## INTRODUCTION

Maternal and child health is one of the important elements of primary health care. According to WHO (1976) Maternal and child health services can be defined as promoting, preventing, therapeutic or rehabilitation facility or care for the mother and child. Medicinal plants continue to play a central role in the health care system. In North-East region many medicinal plants are found suitable in different components of Maternal and child health care. Maternal health care during Garbhini paricharya (Antenatal) & Sutika paricharya (Post natal) are well described in classics. In Ayurveda to get proper progeny nourishment of woman is stressed and emphasized even before conception. To highlight the concept of fertilisation as well as implantation; Garbhasthapak and Prajasthapan drugs are mentioned in Ayurveda. In addition to these, drugs of Stanyajanan, Stanyasodhan are mentioned which have the capacity to increase breast milk as well as to overcome abnormal or vitiated lactation, drugs mentioned during Masanumasik paricharya (monthly wise antenatal health care measures beneficial for mother and subsequent development of the foetus), drugs prescribed during Prasava (delivery) and Sutika paricharya (puerperium) are also mentioned in classics. In the context of Child health care; drugs beneficial for prevention and reduction of foetal abnormality, care of neonate and infant, and disorders of child as well as their treatment are well described. Apart from these Artavajanak, Garbha sankochak, Artava sankochak are also described in classics. Observing this importance the present research work aims to fulfill two aspects-

- 1) Evaluation of medicinal plants in Maternal and Child health care
- 2) Propagation for cultivation of available plants in North-East region.

## MATERIALS AND METHODS

- 1) Caraka, Sushruta and Vriddha Vagbhata are searched specifically for evaluation of the drugs.
- 2) Selected drugs are placed in Antenatal, Intranatal and Postnatal care for assessing Maternal health care.
- 3) Drugs are highlighted relating to foetal growth and foetal abnormality.
- 4) Analysis of previous work related to herbs are inquested.

## REVIEW AND DISCUSSION

Ayurveda plays a significant role in maintaining a safe pregnancy and preventing obstetric complications

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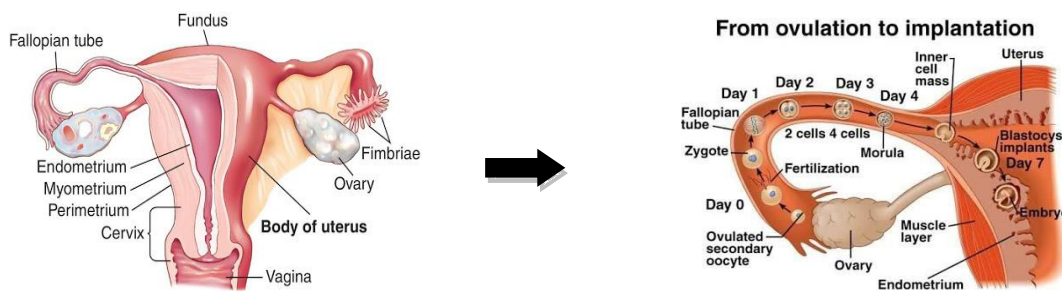
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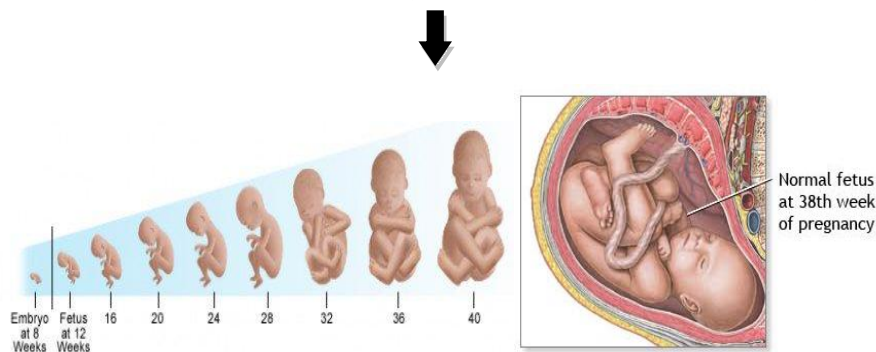
and protecting the health of both mother and baby. The various drugs mentioned in Brihatrayee essential for Maternal health care are grouped under the following headings:

Antenatal care	Intranatal care	Postnatal care
<ul style="list-style-type: none"> <li>• Garbhasthapak and Prajasthapan drugs (Beneficial for fertilization and implantation)</li> <li>• Drugs mentioned in Masanumasik garbhini paricharya (Beneficial for mother and subsequent development of the foetus)</li> <li>• Drugs mentioned in Garbhini vyadhi (General disorders during pregnancy)</li> </ul>	<ul style="list-style-type: none"> <li>• Drugs mentioned during Prasava (Delivery)</li> </ul>	<ul style="list-style-type: none"> <li>• Drugs prescribed during Sutika paricharya (Puerperium)</li> <li>• Stanyajanan drugs (Galactagogue)</li> <li>• Stanyasodhan drugs (Drugs prescribed for vitiated or abnormal lactation)</li> </ul>

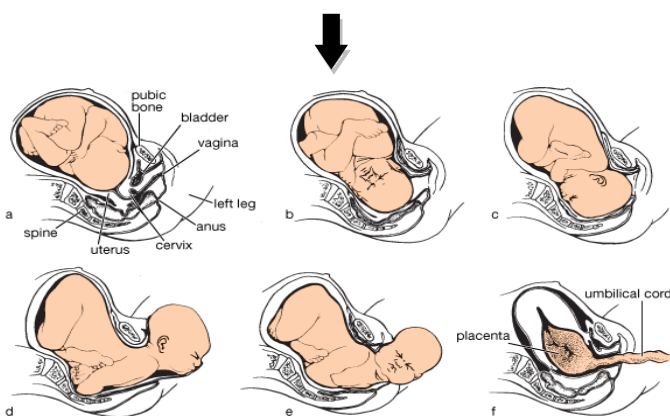
**Target Organ Flow Chart**



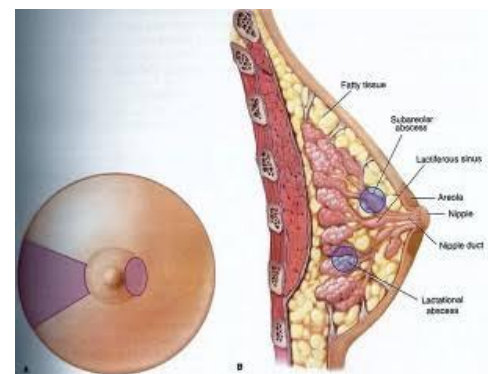
**Figure 1:** Beneficial for fertilization and implantation (Prajasthapan + Garbhasthapak drugs)



**Figure 2:** Beneficial for mother and subsequent development of the foetus (Masanumasik + Garbhasthapak drugs)



**Figure 3:** Drugs useful during Delivery (Prasava)



**Figure 4:** Drugs useful for vitiated or abnormal lactation (Stanyasodhan drugs)

**a) Garbhasthapak and Prajasthapan drugs (Beneficial for Fertilization and Implantation)**

Both Caraka and Vagbhata mentioned Garbhasthapak and Prajasthapan drugs which are beneficial for Fertilization and lodging of fertilized ovum in the uterus i.e Implantation. Cakrapani and Indu observes these drugs has importance to prevent Garbhopaghata kara

bhavas (factors influencing morbidity to foetus) and ensure a normal pregnancy. These drugs also help in maternal health during entire gestational period. These drugs are Brahmi (*Bacopa monnieri*), Aindri, Shatavari (*Asperagus racemosus*), Durva (*Cynodon dactylon*), Patala (*Sterospermum suaveolens*), Guduchi (*Tinospora cordifolia*), Haritaki (*Terminalia chebula*), Kutki (*Picrorrhiza kurroa*), Bala(*Sida cordifolia*) and Priyangu (*Callicarpa macrophylla*)<sup>[1,2]</sup>. Milk or ghrita processed with these drugs should be taken. In addition to these, use of Jivaniya gana drugs are also advised<sup>[3,4]</sup>. Apart from these; some drugs like Kshirivriksha [latex yielding plants like Nyagrodh (*Ficus bengalensis*), Udumbar (*Ficus racemosa*), Aswattha (*Ficus religiosa*), Plaksha (*Ficus lacor*), Parisa (*Thespesia populnea*)], Utpal (*Nymphaea stellata*), Kumud (A variety of utpal), Srngatak (*Trapa bispinosa*), Atibala (*Abutilon*

*indicum*) etc. are mentioned as Garbhasthapak<sup>[5]</sup>. While Saka beeja (*Tectona grandis*), Devadaru (*Cedrus deodara*), Asmantak (*Bauhinia racemosa*), Durva (*Cynodon dactylon*) are used in combination along with milk and ghrita to prevent Garbhasrava (habitual abortion)<sup>[6]</sup>. Intake of these drugs helps in the process of Fertilisation as well as subsequent development of foetus with competent body structure.

#### b) Drugs prescribed in Masanumasik garbhini paricharya (Beneficial for mother and subsequent development of the foetus)

Following the month wise diet and regimen is important for maintaining health, strength, nutrition and complexion of both the mother as well as baby.

**Table 1:** Showing drugs mentioned in Masanumasik paricharya

Month	Charaka	Sushruta	Vridhdha Vagbhata
1 <sup>st</sup>	-----	-----	First 12 days of pregnancy to take ghee extracted from milk and medicated with Shaliparni (Desmodium gangeticum) and Palasha (Butea monosperma) <sup>[7]</sup> . Same as Charak <sup>[9]</sup> .
2 <sup>nd</sup>	Milk medicated with madhur (sweet) drugs like Gokshur (Tribulus terrestris) <sup>[8]</sup>	-----	
3 <sup>rd</sup>	-----	-----	-----
4 <sup>th</sup>	-----	-----	-----
5 <sup>th</sup>	-----	-----	-----
6 <sup>th</sup>	Ghrita prepared from milk medicated with madhur drugs like Gokshur (Tribulus terrestris) <sup>[8]</sup>	Ghrita or rice gruel medicated with Gokshur (Tribulus terrestris) <sup>[10]</sup>	Same as Charak <sup>[9]</sup> .
7 <sup>th</sup>	Same as 6 <sup>th</sup> mth <sup>[8]</sup>	Ghrita medicated with Prithakparnyadi group of drugs like Vidarigandha (Desmodium gangeticum), Vidari (Pueraria tuberosa), Shatavari (Asperagus racemosus) <sup>[10]</sup>	Same as 6 <sup>th</sup> mth <sup>[9]</sup> .
8 <sup>th</sup>	-----	Asthapan basti with Bala, Atibala <sup>[11]</sup>	Anuvasan basti with oil prepared with Madhur drugs <sup>[12]</sup> .
9 <sup>th</sup>	Anuvasan basti with oil prepared with Madhur drugs <sup>[8]</sup>	-----	Same as 8 <sup>th</sup> month <sup>[13]</sup> .

#### c) Drugs mentioned in Garbhini vyadhi (General disorders during pregnancy)

In Brihatrayee, among all disorders during pregnancy, in Kikkisa drugs prescribed are like use of paste of Candana (*Santalum album*), Mrinala (*Nelumbo nucifera*), powdered stem bark of Sirisa (*Albizia lebeck*), flowers of Dhataki (*Woodfordia fruticosa*), Sarsapa (*Brassica campestris*) and Madhuyasti (*Glycyrrhiza glabra*) are advised. Again use of pestle bark of Kutaja (*Holarrhena antidyenterica*), seed of Arjaka (*Ocimum sanctum*), Musta (*Cyperus rotundus*) and Haridra (*Curcuma longa*) or pestle leaves of Nimba (*Azadiracta indica*), Kola (*Zizyphus jujuba*), Surasa (*Ocimum sanctum*) and Manjistha (*Rubia cordifolia*) are mentioned in classics. There should be gentle massage with oil boiled with leaves of Karavira (*Nerium odorum*) or Karanja (*Pongamia pinnata*)<sup>[8,14]</sup>.

#### d) Drugs mentioned during Prasava (delivery)

During delivery, after initiation of labour pains inhalation of some drugs in powder form like Kustha (*Saussurea lappa*), Ela (*Elettaria cardamomum*), Langali (*Gloriosa superba*), Vaca (*Acorus calamus*), Cavya (*Piper chaba*), Citraka (*Plumbago zeylanica*) and Cirabilva (*Holoptelea integrifolia*) are mentioned<sup>[15,16]</sup>. And tying of root of Hiranyapuspi (*Euphorbia thomsoniana*) in arms or legs is advised<sup>[17]</sup>.

#### e) Drugs prescribed during Sutika paricharya (Puerperium)

To regain the lost strength during child birth, Ayurveda focuses on both mother and new born upto 45 days so as to bring back the pre

pregnancy health and make the child strong and healthy. When the mother feels hungry she should be given powder of Pippali (*Piper longum*), Pippalimula (root of *Piper longum*), Cavya (*Piper chaba*), Citrak (*Plumbago zeylanica*), Shunthi (*Zingiber officinale*) along with ghrita or taila in the amount which she can assimilate easily<sup>[18,19]</sup>. After applying massage with Bala (*Sida cordifolia*) taila, the puerperal woman should be advised decoction of Bhadradaru (*Berberis aristata*) etc oral medications to alleviate vata. If some dosas or blood are still left inside then powdered Pippali (*Piper longum*), Pippalimula (root of *Piper longum*), Hasti pippali (Chavaka's fruit) and Citrak (*Plumbago zeylanica*) with warm jaggery water should be given. Following these, rice gruel prepared with Vidarigandhadi group of drugs should be given<sup>[20]</sup>. In context of Sutika roga like Makkalla sula (after pain), decoction of Virataradi gana drug should be given for drinking; powder of Pippalyadi gana drugs like Pippali, Brihat Ela (*Amomum subulatum*), Patha (*Cissampelos pariera*) with wine; or else Prithakparnyadi gana drugs with Bhadradaru (*Berberis aristata*) and Maricha (*Piper nigrum*) are given<sup>[21]</sup>.

#### f) Stanyajanan drugs (Galactogogue)

These drugs are Virana (*Vetiveria zizanioides*), Sali (*Oryza sativa*), Sastik (A variety of Sali), Ikshuvalika (*Asteracantha longifolia*), Darbha (*Imperata cylindrical*), Kusa (*Desmostachya bipinnata*), Kasa (*Saccharum spontaneum*), Gundra (*Typha elephantine*), Itkata (*Sesbania bispinosa*) and Katrina mula (*Cymbopogon citrates*)<sup>[22,23]</sup>. They may be used in the form of decoction. Again Kakolyadi gana drugs like Mashaparni (*Teramnus labialis*), Mudgaparni (*Phaseolus trilobus*) and use of Yava (*Hordeum vulgare*), Godhum (*Triticum aestivum*), Sali

(*Oryza sativa*), Shastik (variety of Sali), Lasuna (*Allium sativum*), Kaseruka (*Scirpus grossus*), Sringatak (*Trapa bispinosa*), Visa (*Nelumbo nucifera* leaf stalk), Vidarikanda (*Pueraria tuberosa*), Shatavari (*Asperagus racemosus*) are discussed as Stanyavardhak<sup>[24]</sup>. Herbal decoctions made from these drugs are useful in increasing breast milk. The Kakolyadi gana drugs pacifies vata, pitta and kapha, Jivaniya, Brimhaniya, Vrisya and increases lactation<sup>[25]</sup>.

#### g) Stanyasodhan drugs (Drugs prescribed for vitiated or abnormal lactation)

Drugs like Patha (*Cissampelos pariera*), Shunthi (*Zingiber officinale*), Devadaru (*Cedrus deodara*), Musta (*Cyperus rotundus*), Murva (*Marsdenia tenacissima*), Guduchi (*Tinospora cordifolia*), Fruit of Vatsaka (*Holarrhena antidysenterica*), Kiratatikta (*Swertia chirata*), Katurohini (*Picrorrhiza kurroa*) and Sariva (*Hemidesmus indicus*) are Stanyasodhak drugs<sup>[26,27]</sup>. While Bharngi (*Clerodendrum serratum*), Vasa (*Adhatoda vasica*), Ativisa (*Aconitum heterophyllum*), Devadaru (*Cedrus deodara*) and Mustadi gana drugs like Musta (*Cyperus rotundus*), Bhallatak (*Semecarpus anacardium*) are also Stanyasodhak<sup>[28]</sup>. Besides these, powder of Murva (*Marsdenia tenacissima*), Vyosa (Trikatu), Vara (Triphala), Kola (*Zizyphus jujuba*), stem bark of Jambu (*Syzygium cumini*), Sarsapa (*Brassica campestris*) and Patha (*Cissampelos pariera*) mixed with honey is prescribed to remove the dosas of the breast milk<sup>[29]</sup>.

#### Child Health Care

To protect the child and make free from diseases our classics have mentioned various drugs

or herbal medicines useful for child health care and are discussed under the following headings-

- During Antenatal care
- Drugs beneficial for prevention and reduction of Foetal abnormality
- Drugs prescribed in Care of the Neonate and Infant
- Drugs prescribed in Disorders of Infant and Children

##### a) During Antenatal care

Here Garbhasthapak and Prajasthapan drugs are included which are mentioned above.

##### b) Drugs beneficial for prevention and reduction of Foetal abnormality

The science enriched with the drugs required for development of foetus which enriched in the management of IUGR or IUD. Among the Garbhavyapat; Garbhasosha, Upasuska & Upavistak can be interpreted with IUGR. In Garbhasosha, milk treated with Madhuyasti (*Glycyrrhiza glabra*), Fruit of Kasmari (*Gmelina arborea*) and Sariva (*Hemidesmus indicus*) mixed with sugar should be prescribed<sup>[30]</sup>. And ghee medicated

with Jivaniya drugs like Jivaka (*Microstylis wallichii*), Mudgaparni, Masaparni; Brimhaniya drugs like Aswagandha (*Withania somnifera*), Kutki (*Picrorrhiza kurroa*), Bala (*Sida cordifolia*) and Vatahara medications like Bhadradaru (*Cedrus deodara*), Vidari (*Pueraria tuberosa*) should be administered for the treatment of Upavistak and Nagodar<sup>[31]</sup>. These may help in inhibiting germ cell morbidity which later develop different system. And Rakta Sali (*Oryza sativa*), Masa (*Teramnus labialis*), Tila (*Sesamum indicum*), unripe fruit of Bilva (*Aegle marmelos*) and Bala (*Sida cordifolia*) taila are prescribed in the context of Nagodar and Lina garbha<sup>[32]</sup>.

##### c) Drugs prescribed in Care of the Neonate and Infant

In Ayurveda certain drugs are mentioned which can be prescribed in different stages. For irrigation of the cut umbilical cord, Kustha (*Saussurea lappa*) taila is advised<sup>[33]</sup>. After massaging properly with Bala taila, cleaning of mother and baby should be done with luke warm decoction of Kshirivriksa [latex yielding trees like Nyagrodh (*Ficus bengalensis*)] or Sarvagandha (all fragrant) drugs like Caturjataka, Aguru (*Aquilaria agallocha*) or leaves of Kapittha (*Feronia limonia*)<sup>[34,35,36]</sup>. In context of diseases occurring after birth like Nabhipaka (Umbilical sepsis), drugs like Lodhra (*Symplocos racemosa*), Madhuka (*Glycyrrhiza glabra*), Priyangu (*Callycarpa macrophylla*), Devadaru (*Cedrus deodara*) and Haridra (*Curcuma longa*) are prescribed<sup>[37,38]</sup>. For cleaning of environment, Rakshoghna drugs like Khadira (*Acacia catechu*), Nimba (*Azadiracta indica*), Parushaka (*Grewia asiatica*), Sarsapa (*Brassica campestris*), Atasi (*Linum usitatissimum*) Vaca (*Acorus calamus*), Kustha (*Saussurea lappa*), Lasuna (*Allium sativum*) are mentioned<sup>[39,40,41]</sup>. All these are done to protect the mother and child from infective disorders. For increasing immunity and boosting mental health, drugs like Brahmi (*Bacopa monnieri*), Sankhapuspi (*Convolvulus pluricaulis*), Bala (*Sida cordifolia*), Shatavari (*Asperagus racemosus*) are advised<sup>[42]</sup>.

##### d) Drugs prescribed in Disorders of Infant and Children

In Brihatrayee, diseases like Balasosha, Krimiroga, Krimidanta and Gudabhramsa are mentioned where drugs were prescribed. For the treatment of Balasosha; Trikatu, Patha (*Cissampelos pariera*), Kadamba (*Anthocephalus indicus*), Asoka (*Saraca indica*) Badari (*Zizyphus jujube*), Dhataki (*Woodfordia fruticosa*) and Amlakhi (*Emblica officinalis*) are prescribed<sup>[43]</sup>. In context of Krimi roga except raktaja and purishaja; Surasadi gana drugs like Surasa (*Ocimum sanctum*), Vidanga (*Embelia ribes*), Nirgundi (*Vitex nigundo*) should be taken with honey<sup>[44]</sup>. In Krimidanta; lepa made of drugs of Bhadradarvadi and Punarnavadi gana are advised<sup>[45]</sup>. In Gudabhramsha; Changeri ghrita, Cavyadi ghrita are mentioned and an oil prepared with milk cooked with Brihat pancamula drugs like and other vata allaying drugs are applied through oral and local route<sup>[46,47]</sup>.

The North-East region is highly enriched along with horticultural aspect. In this present aspect we have observed good number of herbs useful for Maternal and child health care which are discussed below:

**Table 2:** Drugs available in North-East region for Maternal health care

Drugs	*Botanical name	*Distribution	Local Name (Assamese)
1) Brahmi	<i>Bacopa monnieri</i> Pennel.	Throughout Assam In Wet Damp And Marshy Places, Manipur	Brahmi
2) Shatavari	<i>Asperagus racemosus</i> Willd.	Throughout Assam, Manipur	Shatmul
3) Durva	<i>Cynodon dactylon</i> Pers.	Throughout Assam, Manipur	Dubori bon
4) Patala	<i>Stereospermum suaveolens</i> DC.	West Manipur	
5) Guduchi	<i>Tinospora cordifolia</i> Miers.	Assam, Manipur	Sagunilata
6) Haritaki	<i>Terminalia chebula</i> Linn.	Throughout Assam, Manipur, Tripura	Shilikha
7) Bala	<i>Sida cordifolia</i> Linn.	Common in Assam	Boriyal

8)	Priyangu	<i>Callicarpa macrophylla</i> Vahl.	Assam, NC hills, Khasi hills, Manipur	Banamala
9)	Nyagrodh	<i>Ficus bengalensis</i> Linn.	Common in Assam, Garo hills, Manipur	Borgach
10)	Udumbar	<i>Ficus racemosa</i> Linn.	Common in Assam	Jagna dimaru
11)	Aswattha	<i>Ficus religiosa</i> Linn.	Throughout Assam, Manipur	Ahat
12)	Plaksha	<i>Ficus lacor</i> Buch-Ham.	Assam, Khasi & Jaintia hills	Pakeri
13)	Padma	<i>Nelumbo nucifera</i> Gaertn.	Throughout Assam, Manipur	Padum/ Padma
14)	Utpal	<i>Nymphaea stellata</i> Willd.	Common in Assam, Khasi hills, Manipur	Nilapadum/ Khowamateka
15)	Shringatak	<i>Trapa bispinosa</i> Roxb.	Assam, Manipur	Shingeri
16)	Atibala	<i>Abutilon indicum</i> SW.	Common in Assam, Imphal	Japabandha
17)	Sali	<i>Oryza sativa</i> Linn.	Assam, Manipur	Dhan
18)	Ikshumula	<i>Saccharum officinarum</i> Linn.	Cultivated in Assam, Manipur	Kuhiyar
19)	Saka beeja	<i>Tectona grandis</i> Linn. f.	Cultivated in plain districts of Assam, Manipur	Segun
20)	Devadaru	<i>Cedrus deodara</i> Roxb.	Cultivated in Assam and Shillong	Devadaru
21)	Asmantak	<i>Bauhinia racemosa</i> Lamk.	Throughout Assam wild or cultivated	Boga kanchan
22)	Tila	<i>Sesamum indicum</i> Linn.	Cultivated in Assam, Manipur	Tila
23)	Manjistha	<i>Rubia cordifolia</i> Linn.	Khasi hills, Manipur	Majethi
24)	Vrikshadani	<i>Dendrophthoe falcate</i> Linn. f.	Assam	Raghumala
25)	Sariva	<i>Hemidesmus indicus</i> R. Br.	Grown here and there in Assam, Meghalaya, Manipur	Anantamula
26)	Padmaa	<i>Clerodendrum serratum</i> Linn.	Common in Assam, Manipur	Nangalbhangha
27)	Brihati	<i>Solanum indicum</i> Linn.	All over Assam, Khasi and jaintia hills, Manipur	Titabhoguri
28)	Kantakari	<i>Solanum surattense</i> Burm. F.	Assam, and Khasi and jaintia hills, Manipur	Birkulitita/ Katabengena
29)	Kasmari	<i>Gmelina arborea</i> Linn.	Common in Assam, Manipur	Gamari
30)	Prisniparni	<i>Uraria picta</i> Desv.	Assam	Shibarjata
31)	Sigru	<i>Moringa oleifera</i> Lam.	Assam, Manipur	Sajina
32)	Bilva	<i>Aegle marmelos</i> Corr.	„	Bael
33)	Patol	<i>Trichosanthes dioica</i> Roxb.	Assam	Potol
34)	Vidarigandha	<i>Desmodium gangeticum</i> Dc.	Assam, Manipur	Shalaparni
35)	Vidari	<i>Pueraria tuberosa</i> (Roxb ex Willd.) DC.	Throughout Assam and Khasi hills	Bhumikumra
36)	Viswadeva	<i>Grewia hirsuta</i> Vahl.	Throughout Assam, Khasi and Jaintia hills, Manipur	Shukta pat
37)	Sahadeva	<i>Sida rhombifolia</i> Linn.	Common in Assam, Manipur	Boriyal
38)	Prithakparni	<i>Uraria picta</i> Desv.	Assam	Biyonisapta
39)	Krishnasariva	<i>Cryptolepis buchanani</i> Roem & Schult.	Assam, NC hills, Garo & khasi hills	Krisna anantamula
40)	Mahasaha	<i>Teramnus labialis</i> Spreng.	Throughout Assam, Meghalaya	Mah
41)	Kshudrasaha	<i>Phaseolus trilobus</i> Ait.	„	Mug
42)	Punarnava	<i>Boerhavia diffusa</i> Linn.	Assam, Meghalaya, Manipur	Punarnava
43)	Eranda	<i>Ricinus communis</i> Linn.	Wild & cultivated in Assam, Manipur	Eragach
44)	Hamsapadi	<i>Adiantum lunulatum</i> Burm.	Common in wet hilly places	Bidyapat
45)	Vrischikali	<i>Tragia involucreta</i> Linn.	All over Assam, NC hills, Khasi & jaintia hills	Chorat
46)	Rishabhi	<i>Mucuna pruriens</i> Bak.	Assam, Manipur	Bandar kekowa
47)	Candan	<i>Santalum album</i> Linn.	Cultivated here and there in Assam, Manipur	Boga chandan
48)	Sirisa	<i>Albizia lebbeck</i> Benth.	All over Assam, Khasi hills, Manipur	Shirish
49)	Dhataki	<i>Woodfordia fruticosa</i> Kurz.	Assam	Dhaiphul
50)	Sarsapa	<i>Brassica campestris</i> Linn.	Cultivated throughout Assam, Meghalaya	Sariah
51)	Arjaka	<i>Ocimum sanctum</i> Linn.	Throughout Assam, Manipur	Tulashi
52)	Haridra	<i>Curcuma longa</i> Linn.	Cultivated in Assam	Haladhi
53)	Nimba	<i>Azadirachta indica</i> A. juss.	All over Assam, Manipur	Mahanim
54)	Badari	<i>Zizyphus jujube</i> Lamk.	Throughout Assam, Manipur	Bagari
55)	Manjistha	<i>Rubia cordifolia</i> Linn.	Khasi hills, Manipur	Majethi
56)	Karavira	<i>Nerium odorum</i> Linn.	Throughout Assam, Manipur	Karavira
57)	Langali	<i>Gloriosa superba</i> Linn.	Grown here and there in Assam, Manipur	Nangalbhangha
58)	Pippali	<i>Piper longum</i> Linn.	Cultivated in Assam, Khasi hills, rare in Manipur	Pipali
59)	Vaca	<i>Acorus calamus</i> Linn.	All over Assam, Manipur	Bach

60) Cirabilva	<i>Holoptelea integrifolia</i> Planch.	Assam, Garo hills	
61) Citrak	<i>Plumbago zeylanica</i> Linn.	Throughout Assam, Manipur	Boga agyachit
62) Adraka	<i>Zingiber officinale</i> Rosc.	widely cultivated in Assam, Manipur	Ada
63) Marica	<i>Piper nigrum</i> Linn.	Found in plains of Assam, Khasi hills	Jaluk
64) Brihat Ela	<i>Amomum subulatum</i> Roxb.	Cultivated in some places of Assam, Manipur	Bor elaichi
65) Indrayava	Seed of <i>Holarrhena antidysenterica</i> Wall.	Common in Assam, Manipur	Dudhkuri
66) Patha	<i>Cissampelos pariera</i> Linn.	„	Tuprilata
67) Mahanimba	<i>Melia azadirachta</i> Linn.	„	Ghora nim
68) Bharngi	<i>Clerodendrum serratum</i> Linn.	„	Nangalbhangha
69) Murva	<i>Marsdenia tenacissima</i> W. and A.	Assam	
70) Vidanga	<i>Embelia ribes</i> Burm. F.	Assam, Khasi & jaintia hills, Manipur	Bakullata
71) Kulattha	<i>Dolichos biflorus</i> Linn.	Cultivated throughout Assam, Manipur	Kulthi mah
72) Vetasa	<i>Garcinia pedunculata</i> Roxb.	„	Bor thekera
73) Daruharidra	<i>Berberis aristata</i> DC.	Khasi hills	Daru haridra
74) Yawani	<i>Trachyspermum ammi</i> Sprague	Cultivated in Assam, Manipur	Jain
75) Virana	<i>Vetiveria zizanioides</i> Nash.	Common grass in plains of Assam	Virina
76) Darbha	<i>Imperata cylindrica</i> Beauv.	Throughout Assam, Manipur	Ulu bon
77) Kusa	<i>Desmostachya bipinnata</i> Stapf.	Assam	Kush bon
78) Kasa	<i>Saccharum spontaneum</i> Linn.	Common grass in plains and hills, Manipur	Kahi bon
79) Gundra	<i>Typha elephantine</i> Roxb.	Assam	Hatir ghah
80) Itkata	<i>Sesbania cannabina</i> (Retz.) Pers.	„	Dhonsa / Khori gach
81) Vasa	<i>Adhatoda vasica</i> Nees.	Common in Assam, Manipur	Bagabahka
82) Yava	<i>Hordeum vulgare</i> Linn.	Cultivated in Assam and Meghalaya	Jabdhan
83) Godhum	<i>Triticum aestivum</i> Linn.	Throughout Assam	Ghehu
84) Lasuna	<i>Allium sativum</i> Linn.	Cultivated in Assam, Manipur	Rahun
85) Kala saka	<i>Corchorus capsularis</i> Linn.	Cultivated throughout Assam	Titamara pata
86) Tugakshiri	<i>Bambusa arundinacea</i> Willd.	Assam, Manipur	Bah
87) Padmaka	<i>Prunus cerasoides</i> D. Don	Khasi hills	
88) Kiratatikta	<i>Swertia chirata</i> Buch-Ham.	Cultivated in Assam and Khasi hills	Chirata
89) Saptaparna	<i>Alstonia scholaris</i> R. Br.	Common Throughout Assam, Manipur	Chatian
90) Jambu	<i>Syzygium cumini</i> Skeels.	„	Kala jam
91) Amalaka	<i>Emblia officinalis</i> Gaertn.	Throughout Assam, Manipur	Amlakhi
92) Vibhitaka	<i>Terminalia bellerica</i> Roxb.	„	Bhoira
93) Sarngesta	<i>Solanum nigrum</i> Linn.	Assam, Khasi hills	Pitkaicha
94) Bhallatak	<i>Semecarpus anacardium</i> Linn. F.	Assam, Khasi and Jaintia hills, Manipur	Bhela gach

**Table 3:** Drugs available in North-East region for Child health care

Drugs	*Botanical name	*Distribution	Local name (Assamese)
1) Fruit of Kasmari	<i>Gmelina arborea</i> Linn.	Common in Assam, Manipur	Gamari
2) Sariva	<i>Hemidesmus indicus</i> R. Br.	Grown here and there in Assam, Manipur	Anantamula
3) Mudgaparni	<i>Phaseolus trilobus</i> Ait.	Throughout Assam, Meghalaya	Mug
4) Masaparni	<i>Teramnus labialis</i> Spreng.	„	Mah
5) Vidari	<i>Pueraria tuberosa</i> (Roxb ex Willd.) DC.	Throughout Assam and Khasi hills	Bhumikumra
6) Bala	<i>Sida cordifolia</i> Linn.	Common in Assam	Boriyal
7) Tila	<i>Sesamum indicum</i> Linn.	Assam, Manipur	Tila
8) Bilva	<i>Aegle marmelos</i> Corr.	„	Bael
9) Nyagrodh	<i>Ficus bengalensis</i> Linn.	Assam, Garo hills, Manipur	Borgach
10) Aguru	<i>Aquilaria agallocha</i> Roxb.	Assam, Khasi hills, Manipur	Agaru
11) Priyangu	<i>Callycarpa macrophylla</i> Vahl.	„	Tong loti
12) Devadaru	<i>Cedrus deodara</i> Roxb.	Cultivated in Assam and Shillong	Devadaru
13) Haridra	<i>Curcuma longa</i> Linn.	Cultivated in Assam	Haladhi
14) Khadira	<i>Acacia catechu</i> Willd.	Assam	Khoira

15) Parushaka	<i>Grewia asiatica</i> Linn.	Cultivated in Assam	Phalsa
16) Nimba	<i>Azadiracta indica</i> Linn.	Assam, Manipur	Nim
17) Brahmi	<i>Bacopa monnieri</i> Pennel.	Throughout Assam in wet damp and marshy places.	Brahmi
18) Vaca	<i>Acorus calamus</i> Linn.	All over Assam, Manipur	Bach
19) Sarsapa	<i>Brassica campestris</i> Linn.	Assam	Sariyah
20) Atasi	<i>Linum usitatissimum</i> Linn.	Assam, Manipur	Tisi
21) Lasuna	<i>Allium sativum</i> Linn.	"	Rahun
22) Shatavari	<i>Asperagus racemosus</i> Willd.	"	Satmul
23) Marica	<i>Piper nigrum</i> Linn.	Found in plains of Assam	Jaluk
24) Pippali	<i>Piper longum</i> Linn.	Cultivated Khasi hills	Pipali.
25) Sunthi	<i>Zingiber officinale</i> Rosc.	Widely cultivated Assam, Manipur	Ada
26) Sarngesta	<i>Solanum nigrum</i> Linn.	Assam, Khasi hills	Pitkaicha
27) Patha	<i>Cissampelos pariera</i> Linn.	Assam, Manipur	Tuparilata
28) Kadamba	<i>Anthocephalus indicus</i> A. Rich.	Common in Assam, Manipur	Cadamba
29) Asoka	<i>Saraca indica</i> Linn.	"	Asoka
30) Badari	<i>Zizyphus jujuba</i> Lam.	"	Bagari
31) Dhataki	<i>Woodfordia fruticosa</i> Kurz.	"	Dhaiphul
32) Amlakhi	<i>Emblica officinalis</i> Gaertn.	"	Amlakhi
33) Surasa	<i>Ocimum sanctum</i> Linn.	"	Tulashi
34) Vidanga	<i>Embelia ribes</i> Burm.f.	Assam, Khasi and Jaintia hills, Manipur	Bakullata
35) Nirgundi	<i>Vitex nigundo</i> Linn.	Throughout Assam, Manipur	Pachatiya
36) Punarnava	<i>Boerhavia diffusa</i> Linn.	"	Punarnava
37) Changeri	<i>Oxalis corniculata</i> Linn	"	Chengai tenga

\*In table 1 & 2 see references 69, 70, 71 and 72.

While going through previous work some studies are performed highlighting the efficacy of different herbs in experimental study. Active principle like saponin glycoside are observed systematically in different work.

**Table 4:** showing some drugs and their pharmacological activities

Drugs	Pharmacological activities
1) Shatavari	a) Anti abortifacient activity of Saponin glycoside A <sub>4</sub> produces specific & competitive blockade of Pitocin induced contraction & spontaneous motility <sup>[48]</sup> . b) Enhancing folliculogenesis & ovulation, preparing womb for conception, preventing abortions <sup>[49]</sup> . c) After administration of alcoholic extracts of <i>A. racemosus</i> a significant increase in milk yield has been observed along with increased growth of the mammary glands, alveolar tissues and acini <sup>[50]</sup> .
2) Bala	Methanolic and aquatic extract exhibited more inhibitory activity on gram negative bacteria than gram positive bacteria. Better fungal activity was observed with aquatic extract equivalent to fluconazole <sup>[51]</sup> .
3) Priyangu	Ethanollic (SEE) and aqueous (SAE) stem bark extracts of <i>C. macrophylla</i> against some gram positive and gram negative strains was done using Kirby bauer agar disc diffusion assay techniques. SEE showed moderate growth inhibitory activity against all the bacterial strains, but SAE was exceptionally inactive against all strains except <i>Salmonella typhimurium</i> <sup>[52]</sup> .
4) Durva	The plant extract checks uterine bleeding, strengthens the uterus, averts abortion and augments of foetal growth <sup>[53]</sup> .
5) Shringatak	The hydroethanol extract of leaves of <i>T. bispinosa</i> shows fertility activity in albino mice <sup>[54]</sup> .
6) Gokshur	A nutritive estimation of Gokshur ( <i>Tribulus terrestris</i> ) kshirapaka shows high nutritive value in pregnant women <sup>[55]</sup> .
7) Nimba	External application of Nimba taila shows its significant impact on Kikkisa during pregnancy <sup>[56]</sup> .
8) Karanja	External application of karanja patra siddha taila shows its significant efficacy in the preventive and curative aspect of Kikkisa <sup>[57]</sup> .
9) Langali	Uterotonic assessment in in-vitro and in-vivo of aqueous extract of <i>G. superba</i> was carried out in rats. Oxytocin was used as the standard uterotonic. Both the oxytocin and the extract produced dose dependant contractions <sup>[58]</sup> .
10) Pippalimula	Pippalimula shows oxytocic action on the term uterus to initiate and stabilize the uterine contractions <sup>[59]</sup> .
11) Pippali	An aqueous suspension of <i>P. longum</i> root powder shows significant NSAID type of analgesia <sup>[60]</sup> .
12) Citrak	a) Plumbagin and chloroform extracts of <i>P. zeylanica</i> root showed antibacterial activity against <i>E. coli</i> , <i>Salmonella typhi</i> and <i>Staphylococcus aureus</i> <sup>[61]</sup> . b) Methanolic extract of <i>P. zeylanica</i> shows significant wound healing activity in wistar albino rats <sup>[62]</sup> .
13) Patha	The methanolic extract showed significant anti-inflammatory activity similar to Ibuprofen and Indomethacin <sup>[63]</sup> .
14) Yastimadhu	Inhibit chromosomal aberration <sup>[64]</sup> .
15) Vidari	Effective in IUGR <sup>[65]</sup> .
16) Haridra	Haridradi taila is effective in the management of Nabhi paka (Umbilical sepsis) in neonates <sup>[66]</sup> .
17) Vidanga	Seeds of Vidanga shows marked Anthelmintic activity against ascaris, taenia & hook worms <sup>[67]</sup> .
18) Sariva	Screening of antibacterial activity of <i>H. indicus</i> methanolic and ethanolic root extract and <i>V. zizanoides</i> were tested against five human

## CONCLUSION

After going in details the present study reveals that a huge number of drugs are available in Ayurveda specially Brihatrayee for managing different aspects of Maternal and Child health care. It is interesting to note that in this present work 132 herbs are found efficacious in this field. Among them 94 are for maternal care whereas 38 are for child health care. The study include Assam, Manipur and Meghalaya where rest five states biodiversity are yet to observe. Drugs like Shatavari, Bala, Priyangu, Vidari are grown easily in this environmental and geographical condition. The present study thus help in creating mass awareness regarding the need for cultivation of these drugs along with its propagation as well as its distribution within the North-East region in a proper planned way.

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