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Relevance and assessment of *Dravya* (herbs) used in *Masanumasa Chikitsa* for prevention of *Garbhasrava* - A Review

Review Article

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Abstract

Every woman goes through several physiological and psychological storms throughout her life. Giving birth to a baby is a most glorious moment if proper care is taken during the time of pregnancy. In Ayurveda, before conception postnatal care has been explained elaborately for good progeny. The negligence in conducting proper *Garbhini Paricharya* (~Ante-natal care/ideal diet and Lifestyle during pregnancy) may lead to a dangerous outcome like *Garbhasrava* (~Miscarriage) or *Garbhapata* (~Abortion). For preventing the episodes of Miscarriage/Abortion *Masanumas kashayas* (MK) have been explained by *Sushruta* and *Vagbhata*. Modern-day research lacks evidence of the use effectiveness of these *Kashayas*, even though the prevalence of abortion is increasing despite development in the medical sciences. There is the occurrence of spontaneous miscarriage in India has been reported to be around 10%. However, it is observed in 32 % of Indian women. Thus, here is an attempt to review the *Masanumas kashayas* explained in *Sushruta* in the interest of the *Dravyas* mentioned in it. This article will include a review of these drugs from the point of Ayurveda and modern pharmacology.

Keywords: *Garbhasrava; Garbhapata; Garbhini Paricharya; Garbhopaghatakar bhava; Masanumasa Kashaya*.

Introduction

Every woman goes through several physiological and psychological storms throughout her life. But, giving birth to a new individual is undoubtedly the most glorious moment in every woman's life. At the same time, this is the most vulnerable process and may lead to an unwanted outcome, if proper care is not taken during the time of pregnancy. The entire process of pregnancy and its outcomes including the products of conception along with post-natal care is extensively elaborated in Ayurvedic texts. *Vagbhata* has given a simile referring that the *Garbhini* (~pregnant female) should be taken care of like an earthen pot filled with oil, which states that pregnancy is an important event in a woman's life, and *Garbhini* should be treated with the utmost care (1). The negligence in conducting proper *Garbhini Paricharya* (~Ante-natal care/ideal diet and Lifestyle during pregnancy) may lead to a dangerous outcome like *Garbhasrava* (~Miscarriage) or *Garbhapata* (~Abortion) (2). There is the occurrence of spontaneous miscarriage in India has been reported to be around 10%. However, it is observed in 32 % of Indian women (3).

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Also, because of the increasing incidence of faulty lifestyles, women are unknowingly exposed to factors which are highly dangerous and contraindicated during the period of pregnancy. Therefore, the percentage of occurrence of miscarriages is increasing nowadays. *Ayurveda* has also considered such factors under the heading of *Garbhopaghatakarbhava* or those factors that harm the pregnancy (4) At the same time, various treatment principles are elaborated to deal with such conditions to maintain a healthy pregnancy. *Sushruta* has given seven specific *Kashayas* (~herbal decoctions) in the *Sharirasthana,* which are intended to use up to the seventh month of pregnancy to avoid *Garbhasrava* (~Miscarriage or Abortion) (5) Modern-day research lacks evidence of the use effectiveness of these herbs, even though the prevalence of abortion is increasing despite development in the medical sciences. The modern-day problems may have their solution already imbibed in the ancient sciences themselves. Thus, here is an attempt to review the *Masanumas chikitsa* explained in *Sushruta* in the interest of the *Dravyas* mentioned in it. This article will include a review of these drugs from the point of Ayurveda and modern pharmacology.

Materials and Methods

The areas of the present review include Ayurveda classics like *Sushrut Samhita, Ashtang Hridaya* along with their commentaries and various *Nighantu Grantha* like *Bhav Prakash Nighantu, Kaiyadeva Nighantu, Dhanwantari Nighantu* and *Raja Nighantu*. *Sushruta Samhita* and *Ashtang Hridaya* were studied for contents

of *Masanumas Kashaya* (MK) and various *Nighantu* were referred to derive properties of individual drugs mentioned in each *Kashaya*. *Nibandh sangraha* commentary of *Dalhana* and *Sarvangasundara* commentary of *Arundatta* were also considered for the identification of controversial drugs mentioned in the *Kashayas*.

Observations

Literature study shows that Sushruta Samhita has first elaborated the concept of Masanumasa chikitsa for the management of Garbhasrava and Garbhapata (~Miscarriage and abortions) in the Sharira Sthana.(5) Though the concept is not adopted by Charak Samhita, Ashthang hridaya has elaborated the same in the second chapter of Sharira Sthana with same *Dravyas* explained by Sushrut Samhita (6). There are a total 25 Dravya as mentioned for management of Garbhasrava which are to be consumed with Milk as *Anupana* (~Vehicle of drug delivery)(7)

Ayurveda has elaborated the theory of cause-effect relationship under the heading of *Karyakaran Siddhanta*. Thus ancient texts have also explained causative factors of *Garbhasruti* (~Miscarriage) as well as *Garbhopaghatakar Bhava* (~teratogenic activity) Several researches established the rationale behind these *Garbhopaghatakar Bhava*. This can be enlisted as follows-

Table 1: *Garbhopaghatakar bhavas* and their effects

Garbhopaghatakar Bhava (8)	**Outcome**(9)	**Probable rationale**
1. Teekshna ushna padartha sevana (~Intake of hot and pungent food)	*Garbha-Srava* (~Miscarriage), *Garbha-Marana* (~Intra-uterine death), *Akala-Prasava* (~Premature delivery), *Garbha-Shushkata*(~Intra uterine growth retardation)	Contains chemical and nitrates which works adversely with RBC and thereby reducing its oxygen carrying role leading to reduce utero-placental flow.(10)
2. Shushka, ruksha, paryushita anna-sevana (~Intake of dry, stale food)	*Garbhashushka, garbhamarana, akalaprasava*	Inadequate calorie intake before pregnancy appears to magnify the effect of malnutrition during pregnancy and is also associated with lower birth weight in infants' leads to an impaired foetal growth.(11)
3. Vidahi anna-sevana (~Intake of spicy food)	*Garbhashosha, akalaprasava*	E.g. Caffeine crosses the placenta and enters the fetal circulation and thereby leads to adverse effects. Tannin present in the tea interferes with the iron absorption.(12)
4. Guru padartha sevana & ati-tarpana (~Intake of heavy food which is difficult to digest)	-	Overeating is one of the causes for pregnancy toxaemia. Use of over satiation may excessively increase the bodyweight of the mother and foetus. Overweight of the foetus may cause difficulty in labour.(13)
5. Madyanityata (~Regular intake of alcohol)	*Trishnalu* (~Excessive thirst) , *Alpa-smriti* (~Memory retardation), *anavasthita-chittata* (~Anxiety).	Drinking alcohol during pregnancy can cause abnormal foetal development &FAS (Foetal Alcohol Syndrome).(14)
6. Mamsasevana(Especially *Varahmamsa)* (~Excessive intake of meat)	*Raktaksha* (~Redness of eyes), *Ati-parusharoma* (~Dry body hair)	Pig can harbour a range of parasites e.g. Toxoplasma gondii, an intracellular protozoan parasite. If mother is having this type of meat during pregnancy, there will be higher risk to get this type of infection. Maternal-to-foetal-transmission-occurs almost when the primary infection is acquired during pregnancy. (15)
7. Nitya matsyasevan (~Excessive intake of fish or marine animals)	*Stabdhaksha, Chiranimesha* (~Ophthalmic pathologies)	Eating fish is the main source of mercury exposures in humans and some fish may contain enough mercury to harm the developing nervous system of an embryo or foetus, sometimes leading to learning disabilities. (16)
8. Nitya Ati Madhura aharasevana (~Excessive intake of sweet foods)	*Prameha* (~Congenital diabetes melitus), *Sthaulya* (~Obesity)	There is direct relationship between the level of maternal glucose and macrosomia. The carbohydrate surplus available to the foetus leads to increased insulin secretion and foetal hyperinsulinemia. (17)
9. Nitya lavana rasa atisevana (~Excessive intake of salty foods)	*Sheeghravali, Palita-khalitya* (~Early loss and greying of hair)	Once the balance of sodium, potassium is broken, sodium content will increase and cause harm. It will not only cause nutritional metabolism of hair loss, but also cause earlier greying of hairs by leading protein metabolism disorder & influence the formation of protein in hair to make brown. It will increase the sodium content in body and cause water loss in facial cells and skin aging so causing earlier wrinkles on face. (18)

10. Nitya katu rasa atisevana (~Excessive intake of Pungent foods)	*Shosha* (~Malnutrition), *Alpashukra* (~Loss of libido)	Contains irritants, chemical and nitrates which works adversely with RBC, thereby reducing its Oxygen, carrying role leading reduced utero-placental flow. (19)
11. Uttanashayana	Umbilical cord encircles the neck of foetus	Low back pain, swelling of feet and Supine position can cause pressure on intestine and large veins (inferior venacava), which can disrupt the foetal circulation and even mother, can affect the blood pressure and increase blood pressure can cause pre-eclampsia and foetal distress and hence may lead to abortion or death. (20)
12. Utkatasana (~ Chair position)	*Garbhasrava, akalaprasava*	Prolonged squatting and abnormal postures may influence placental and uterine blood flow and even though the uterine muscles are largely under hormonal control, sympathetic innervations may cause uterine contraction and vasoconstriction. Increase intrauterine pressure causing miscarriage or premature labour. (21)
13. Ati-vyayama and ati-vyavaya (~Excessive exercise and coitus)	*Alasya-santan* (~Excessive lethargy)	Factors those which produce physical strain such as exercise etc. even though normal coitus and exercise are beneficial, however their excessive use or physiological strain may precipitate abortion especially in ladies prone for the same. There may be chances of early rupture of membranes so this may increase the risk of infection because there won't be any protective barrier.(22)
14. Bhaya, krodha, shoka, kalaha Sheela, Irsha (~Psychological disturbances)	*Garbhasrava, Marana*	All *Manasika* (Psychological factors) Bhavas of mother will influence their character and effect on manas of the foetus, thus disturbed status of mother's psychology must have adverse effects on the physiology of foetus. (23)

Table 2: Number of *Dravyas* mentioned in each *Kashaya* by *Sushruta* (5)

Number of months	Number of *Dravya* mentioned
1. First	4
2. Second	5
3. Third	4
4. Fourth	5
5. Fifth	5
6. Sixth	5
7. Seventh	6

Table 3: *Dravya* mentioned in the *Kashaya*

Number of months	Name	Botanical name	Part used	*Rasa*	*Veerya*	*Vipaka*	*Guna*	Specific *Karma*
Pratham (First)	*Yashtimadhu* (24)	*Glycerhyiza glabra* L	Stem (*Kanda*)	*Madhur*	*Sheeta*	*Madhur*	*Guru, Snigdha*	Mentioned in *Shushka Garbha Chikitsa* (~Management of IUGR)
	Shaka Beej (25)	*Tectona grandis* L.F.	(*Beeja*) Seeds	*Kashaya*	*Sheeta*	*Katu*	*Snigdha*	*Garbha-sthairyakar Garbha-sandhankarak* (~Maintains progeny)
	Shatavari (26)	*Asparagus racemosus* WILLD.	*Panchanga* (Whole plant)	*Madhura*	*Sheeta*	*Madhur*	*Guru, Snigdha*	*Vayastambhi* (~Controls ageing) *Pushti balaveeryavardhini* (~Nourishes body tissues)
	Suradaru (27)	*Cedrus deodara* (ROXB.) LOUD.	Stem (Kanda)	*Tikta*	*Ushna*	*Katu*	*Laghu, Snigdha*	*Streemitra* and used in *Sutikaparicharya* (~Beneficial in gynaecological disorders and also in post-natal management)
Dwitiya (Second)	*Ashmantak* (28)	*Bauhinia racemose* LAM.	Bark	*Kashaya*	*Sheeta*	*Katu*	*Ruksha, Laghu*	*Bhootajita* (~Anti-microbial)
	Krishna tila (29)	*Sesamum indicum* L.	Seeds	*Madhur, Kashaya, Tikta*	*Ushna*	*Madhur*	*Guru, Snigdha*	*Balya* (~Give nourishment to body tissues)

	Tamravalli (Manjishtha) (30)	*Rubia cordifolia* L.	Stem	*Tikta, Kashaya, Madhur*	*Ushna*	*Katu*	*Guru, Ruksha*	*Yonirujahara* (~Useful in vaginal pain)
	Shatavari	*Asparagus racemosus* WILLD.	Roots (Mula)	*Madhur, Tikta*	*Ushna*	*Madhur*	*Guru.*	*Vayastambhi* (~Controls ageing) *Pushti balaveeryavardhini* (~Nourishes body tissues)
Tritiya (Third)	*Vrikshadani*	?	-	-	-	-	-	-
	Payasya (31)	*Pueraria tuberosa* (ROXB. EX.WILLD.) DC.	Root	*Madhur*	*Sheeta*	*Madhur*	*Guru, Snigdha*	*Vayastambhi* (~Controls ageing) *Pushti balaveeryavardhini* (~Nourishes body tissues)
	Lata (32)	*Hemidesmus indicus*(L.) SCHULT.	Roots	*Madhur, Tikta*	*Sheeta*	*Madhur*	*Guru, Snigdha*	*Asrapradarnashana* (~ Controls menorrhagia)
	Utpalsariva (33)	*Cryptolepis buchanana* ROEMER & SCHULTES	*Roots*	*Madhur, Tikta*	*Sheeta*	*Madhur*	*Guru, Snigdha*	Same as like *Sariva*
Chaturtha (Fourth)	*Ananta*	?	-	-	-	-	-	-
	Sariva	*Hemidesmus indicus* (L.) SCHULT.	Roots	*Madhur, Tikta*	*Sheeta*	*Madhur*	*Guru, Snigdha*	*Asrapradarnashana* (~ Controls menorrhagia)
	Rasna (33)	*Pluchea lanceolata*OLIVER& HIERN.	Root	*Tikta*	*Ushna*	*Katu*	*Guru*	*Vaat-haranam shreshtha* (~Best in alleviating *Vata* disorders)
	Padma (34)	*Nelumbo nucifera* GAERTN.	Flower	*Madhur*	*Sheeta*	*Madhur*	*Guru, Snigdha*	*Vishtambhi* (~Checks bleeding), *Rakta-pittaghna* (~Useful in management of blood disorders)
	Madhuk	*Glycyrrhiza glabra* L.	Stem	*Madhur*	*Sheeta*	*Madhur*	*Guru, Snigdha*	Mentioned in *Shushkagarbha chikitsa* (~Management of IUGR)
Panchama (Fifth)	*Bruhati* (35)	*Solanum anguivi* LAM.	*Panchanga* (Whole plant)	*Katu, Tikta*	*Ushna*	*Katu*	*Laghu, Ruksha, Tikshna*	*Hridya* (~Beneficial for cardiovascular system), *Jwaraghna* (~Anti-pyretic)
	Kantakari (36)	*Solanum virginianum* L.	*Panchanga* (Whole plant)	*Katu, Tikta*	*Ushna*	*Katu*	*Laghu, Ruksha, Tikshna*	*Visheshat-garbhakarini* (~Especially helps in increasing fertility)
	Kashmari (37)	*Gmelina arborea* L.	Root	*Tikta, Kashaya, Madhur*	*Ushna*	*Katu*	*Guru*	Used in *Shushka Garbhachikitsa* (~Management of IUGR)
	Kshiri shunga (38)	*Ficus bangalensis* L.	Terminal buds	*Kashaya*	*Sheeta*	*Katu*	*Guru, Ruksha*	*Garbhasthapanarth* (~For maintenance of progeny)
	Kshiritwacha	*Ficus bangalensis*L.	Bark	*Kashaya*	*Sheeta*	*Katu*	*Guru, Ruksha*	
Shashtha (Sixth)	*Prishniparni* (39)	*Uraria picta* DESV.	*Panchanga* (Whole plant)	*Madhur, Tikta*	*Ushna*	*Madhur*	*Laghu, Snigdha*	*Tridoshaghna* (~Alleviates all three *Doshas*), *Vrushya* (~Aphrodisiac)
	Bala (40)	*Sida cordifolia* L.	*Panchanga* (Whole plant)	*Madhur, Tikta*	*Sheeta*	*Madhur*	*Guru, Snigdha*	*Garbhini-shoolachikitsa* (~Useful in management of labour pain)
	Shigru (41)	*Moringa oleifera* LAM.	Bark	*Katu, Tikta*	*Ushna*	*Katu*	*Laghu, Ruksha, Tikshna*	*Shukrala* (~Aphrodisiac), *Shothahar* (~Anti-inflammatory), *Vidradhinashan* (~Useful in management of boils)

	Shwadanshtra (42)	*Tribulus terrestris* L.	Fruit	*Madhur*	*Sheeta*	*Madhur*	*Guru, Snigdha*	*Bruhan* (~Nourishes muscles), *Rasayan* (~Rejuvenator), *Balaprada* (~Improves vitality)
	Madhuparni	*Glycyrrhiza glabra* L.	Stem	*Madhur*	*Sheeta*	*Madhur*	*Guru, Snigdha*	Mentioned in *Shushkagarbha chikitsa* (~Management of IUGR)
Saptama (Seventh)	*Shringatak* (43)	*Trapa natans* (ROXB.) NAKIN	Rhizome	*Madhur, Kashaya*	*Sheeta*	*Madhur*	*Guru, Ruksha*	*Vrushya* (~Aphrodisiac)
	Bisa (44)	*Nelumbo nucifera*GAERTN.	Stem	*Kashaya, Madhur, Tikta*	*Sheeta*	*Madhur*	*Laghu, Snigdha, Picchila*	*Garbhsthapanam-uttamam* (~Useful in maintenance of progeny) *Garbhapaat-nivarakyoga* (~In management of Abortion and miscarriage)
	Draksha	*Vitis vinifera* L.	Fruit	*Madhur*	*Sheeta*	*Madhur*	*Guru, Snigdha*	*Garbhshoolahar* (~Management of pain during pregnancy)
	Kasheruk (45)	*Scirpus grossus*L.F.	Rhizome	*Madhur, Kashaya*	*Sheeta*	*Madhur*	*Guru, Ruksha*	*Shukrala* (~Increases semen), *Vrushya* (~Aphrodisiac), *Stanyakara* (~Increases breast milk)
	Madhuka	*Glycyrrhiza glabra*L.	Stem	*Madhur*	*Sheeta*	*Madhur*	*Guru, Snigdha*	Mentioned in *Shushka-garbha chikitsa* (~Management of IUGR)
	Sita (46)	*Saccharum officinarum* L.	Extract	*Madhur*	*Sheeta*	*Madhur*	*Guru, Snigdha*	*Vrushya* (~Aphrodisiac), *Raktapittahara* (~Checks blood disorders)

Table 4: Cumulative analysis of *Rasapanchaka* of *Dravya* mentioned in *Masanumas Kashaya* (According to the *Bhavaprakash Nighantu*)

Number of drugs having respective *Veerya*.

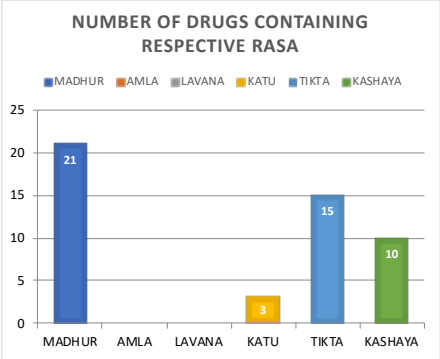
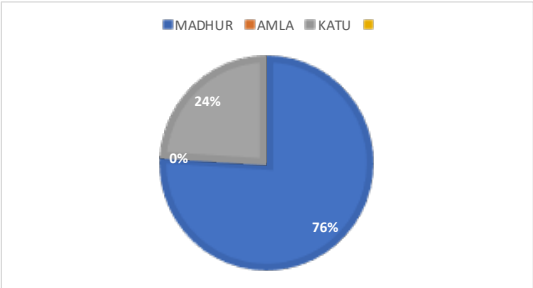
Figure no 1- Number of drugs containing respective *Rasa*	**Figure no 2- Number of drugs having respective *Vipaka***	***Veerya***	**Number of *Dravya* containing the *Veerya***
		*Sheeta*	15
		Ushna	10

Table 5: Commentaries on *Dravyas* mentioned in *Masanumas Kashaya*

Name of *Dravya*	***Dalhana (NibandhSangraha)*(47)**	***Arundatta (Sarvangasundara)* (48)**
Shaaka	*MahavrukshaKarshapatra*	-
Payasya	*Arkapushpi, Ksheervidari, Ksheerkakoli*	-
Ashmantak	*Kovidarsadrushamlapatra, Amlalotak*	*Yamalpatrak*
Tamravalli	*Ramtaruni, Manjishtha*	*Ramtaruni, Manjishtha*
Lata	*Priyangu*	*Gandhapriyangu Gaur sariva*
Ananta	*Utpalsariva*	-
Utpalsariva	-	*Krishna sariva*
Padma	*Padmacharini, Bharangi*	-
Bruhatyau	*Sthulaphala and Chanakbruhati*	-
Kshirishunga	*Vatadinamavikasitapravala*	*Nyagrodhadinam shunga*
Madhuparni	*Madhuyashtika*	-

Table 6: Probable modern pharmacological action of some drugs mentioned in *Masanumaskashaya*

Dravya	Uses
Yashtimadhu (49)	*Balya, Madhur Rasa*, best mucolytic –helps to maintain proper lubrication in fallopian tubes as it contains glabrin and glabridin which acts like estrogen and promotes lubrication, anti-oxidant, anti –inflammatory, anti-pepsin effect, weight gain, estrogenic activity, containsglabridin – improves cognitive functions of the brain.
Shakbeej (50)	Contains 15 proteins which helps to improve endometrial thickness. Thin endometrium is cause of infertility, anti-oxidant, diuretic activity
Shatavari (51)	It provides nutrition to endometrium, Balance hormonal levels, promote digestibility, works as stimulant of endometrium and ovariantissues, balance the hormone level TSH , estrogen ,FSH , LH , anti –dyspepsia,
Devdaru (52)	Is antioxidant (contains matairesinol, nortrachelogenin and dibenzylbutyrolactollignan)
Krishan tila (53)	Contains antioxidants (sisemin&sisemolin)-good source of folic acid (protects neural tube defects), anti – inflammatory, antithrombotic
Manjistha (54)	Antioxidant-improves liver function (prevents intra hepatic cholestasis of pregnancy which occurs in 60% of ANC)- Keeps check on blood sugar level.
Vrushadani (55)	Unidentified and controversial herb
Sariva (56)	Improves the skin glow of the foetus, has strength to alter deformities associated with chromosomal abnormalities, Antioxidant, Prevents Gestational diabetes.
Utpalsariva (57)	Antioxidant – mild anti glycaemic action, prevents Gestational diabetes
Kamal pushpa (58)	Prevents hypertension- provide nutrition to foetus, Antioxidant, anti- inflammatory, prolonged estrous cycle, property to inhibit the estrogen surge for implantation, antiestrogenic nature, reduction in protein content of the female genital tract suggests an inhibition of Estrogen production
Bruhati (59)	Prevents urinary tract infections, hepatoprotective, antioxidant, source of minerals – calcium, sodium, potassium,zinc and iron – antioxidant
Kashmari (60)	Immunomodulator, Antioxidant – anti-inflammatory – analgesic
Vatankur (61)	Improves foetal circulation through placenta, -protects from bacterial infections
Prushniparni (62)	Prevents renal infection- has anti-bacterial properties
Bala (63)	Limits oedema, antibacterial, anti-oxidant, anti-diabetic
Shigru (64)	Antioxidant – rich source of calcium, iron , proteins , copper , B complex vitamins
Gokshur (65)	Prevents hypertension in pregnancy. contains protodioscine (alkaloid)- helps to increase muscle mass of the foetus
Shrungatak (66)	Analgesic, anti-inflammatory, antidiabetic, antimicrobial, cytotoxic, antiulcer, neuroprotective, and immunomodulatory activity.
Kamal beeja (67)	Helps foetal nutrition and maternal health –source of calcium, iron and zinc
Draksha (68)	Antioxidant, antiviral, antiplatelet, anticholinergic, anti-sunburn, anti-inflammatory, and wound-healing activities, source of vitamin B, B2, B6 and C.
Kaseru (69)	Contains progesterone – helps in maintaining pregnancy

Discussion

Management of any disorder in Ayurveda is mainly dependent upon two factors; either *Nidan parivarjana* (~prevention of causative factors) or *Prakriti Vighata* (~Reversal of pathology). Need to avoid the *Garbhopatakar bhavas* for prevention of *Garbhasrava as a Nidan parivarjana*. Decoctions of some drugs have been mentioned in *Sushrut Samhita* and *Ashtang Hriday* for the prevention of possible *Garbhasrava* (Miscarriage and abortion) due to unavoidable factors i.e. *Garbhopaghatakarbhava*. These decoctions are known as *Masanumas Kashaya* and fulfils the first aim of Ayurveda given as *Swasthsya Swasthya Rakshanam* i.e. maintenance of homeostasis. Though the 34 *Dravyas* enlisted in seven *Kashaya*for seven months but some *Dravyas*are repeated so that the actual number of drugs is 25 [Table-1]. *Dalhana* and *Arundatta* have explained the 10 and 5 *Dravya* in their commentary respectively [Table no 5]. Commentaries are helpful for confirmation of some controversial plant species. *Vrukshadani is a* controversial *Dravya* reference of it neither found in commentaries [Table no 5] nor accepted botanical source available for this plant [Table no 3]. Thus, it can be inferred that it is controversial since ages. However, accepted botanical sources are available for rest of all plants mentioned in *Masanumas Kashaya*. The *Rasapanchaka* (Pharmaocodynamic properties) and useful parts of these drugs are not mentioned neither by *Sushruta* nor *Vagbhata,* thus *Nighatus* can be referred for the same.

Garbhopaghatakar bhavas (potential causes of miscarriage and abortion) and their teratogenic effect have been mentioned in table no.1. The dravya of *Madhura, Sheeta* and *Snigdha guna* from *Masanumas Kashaya* counteracts on *Teekshna, Ushna, Shushka, ruksha, Vidahiguna* of harmful factors as well as alleviates the *Vata* responsible for miscarriage. Excessive intake of *Madhura* and *GuruAhara*also having adverse effect on foetus so that there are some *Dravya* in *Masanumas chikitsa* with *Katu, Kashaya* and *Tikta* Rasa [Table no 4]. These are balancing the equilibrium of *Dosha-Dhatu Samurchana* for better development and stability of foetus.

At first month *Kalal* formation (soft structure with inarticulate tone) takes place as per Ayurveda. Modern science also stated that after fertilisation, development of morula takes place from embryoblast. Morula contains multicellular mass and fluid. Amniotic sac, placenta developed for nutritive and excretory functions. Morula get transformed into blastocyst. Blastocyst gives rise to three germ layers-1) Endoderm 2) Ectoderm 3) Mesoderm. All tissues of the body are derived from one or more of these layers.(70) Same thing mentioned very before in Ayurveda that all

body parts and organs are present in *Kalal* in very tiny form stated by Charaka. *Yashtimadhu, Shakabeeja, Shatavar i*and *Deodaru* these are the herbs indicated for first month which provide the nutrition and stability to embryo [table-3]. Herbs mentioned in *Pratham masa Kashaya* are mainly having *Madhur, Tikta Rasa, Madhur Vipaka*, and *SheetaVeerya*, which mainly alleviates *Vata-pitta Dosha* and maintains *Kapha* which may facilitate the process of implantation. *Yashtimadhu* contains glabrin and glabridin which act like oestrogen and hence maintain proper lubrication in the fallopian tube. *Shakbeej* contains various proteins, which are responsible for the maintenance of endometrial thickness. *Shatavari* provides nutrition to the endometrium, balances hormonal levels, and works as a stimulant of the endometrium and ovarian tissues. *Devdaru* is the only drug in *Pratham* mas *Kashaya* which is having different *Rasapanchak*. But it contains Matairesinol, Nortrachelogenin, and dibenzylbutyro lactollignan which are having anti-oxidant properties(71), thus these are implicated for protection from *Garbhasrava* in the first month.

During pregnancy there is high demand of nutrition to maintain the health of pregnant women and the foetus. *Shatavari* is an herb in second month of MK to meet the needs of pregnancy (Table no 3). It balances hormones, works as general tonic to enhance female health as well as powerful adaptogenic herb, that support women through all stages of the female reproductive cycle i.e. menarche to menopause. *Shatavari* has been reported to maintain FSH-LH balance, also maintain oestrogen level, and have anti – dyspeptic effect. *Manjishtha, Ashmantaka*and *Krushna Tila* are the other contents of second month. *Manjishtha* is having *Raktashodhaka* (~Blood purifier) action so it may enhance foetal blood circulation and help in development of foetal heart. *Manjishtha* is also helpful for *Yonishula* (~vaginal pain) which can convert into uterine spasm. *Asmantaka* prevents the any kind of infection during second month as it is *Bhootajita* (Anti-microbial). In second month central nervous system, sensory organs and digestive system of foetus start to develop. Branching of nerve cells in foetal brain results into formation of early neural pathways(72). *Krishna Tila* contains sisemin and sisemolin which are a rich source of folic acid and thus help in reducing chances of neural tube defect of foetus(73). At the other hand reproductive system is under the control of *Apana vata*, *Krishna Tila* helpful for prevent and control the aggravation of *Vata* may resulted into miscarriage and increases the strength of *Garbhashaya* (Uterus). Thus these herbs may prove beneficial in preventing possible miscarriage in the second month of ANC.

Vrikshadani, *Payasya, Lata (Sariva)* and *Utpal sariva* are the herbs of third month MK. Payasya gives the nourishment and strength to *Garbhashaya* (Uterus) and foetus as well. *Sariva* and *Utpala Sariva* both are benefited in *Raktastrava* (Hemorrhage) hence it is included in *Garbhanishkraman yoga*(74). Development of skin, nails and hairs takes place in third month. Hence *Varnya karma* (~complexion enhancer action) of *Lata* and *Utpal sariva* will improve the complexion of foetus and have the strength to alter deformities associated with chromosomal abnormalities. It is having anti-oxidant properties and is also reported to prevent gestational diabetes.(74) Thus these herbs are used in the later stage of the first trimester for preventing the possible miscarriage.

Fourth month MK having *Ananta, Sariva, Padma, Rasna* and *Yashtimadhu*. As a *Medhya dravya* (~Cognitive enhancer) *Yashtimadhu* is good for foetal brain because during this month midbrain developed and memory starts to develop. *Ananata, Sariva*, *Padma* are *Raktapradara Nashaka*(~Control uterine bleeding) and *Rasna* is the best *Vatanashaka dravya* so prevents the *Raktastrava* (~Haemorrhage) and aggravation of *Vata* respectively, which might be responsible for miscarriage. *Padma* has been reported to provide nutrition to foetus. It prevents hypertension, prolonged oestrous cycle, property to inhibit the oestrogen surge for implantation, antiestrogenic nature, reduction in protein content of the female genital tract suggests inhibition of oestrogen production. It possesses Antioxidant and anti-inflammatory action(75).

Bruhati, *Kantakari*, *Kashmari* and tender leaves and bark of *Kshir iVruksha*(*Vata*) are included in 5th month's *Kashaya. Bruhati*, *Kantakari*, *Kashmari* are *shothahara* (~Anti-inflammatory) and *vedanasthapaka* (Analgesic). *Shweta pushpa kantakari* is good for foetus as it has *Garbhasthapana Karma* (~Foeto-protective ability). Fruits of *Kashmari* have been used by Charaka in the management of *Shushkagarbha* (~case of IUGR), even modern-day researches have proven its anti-oxidant and immunomodulatory activity (76), which will reduce the chances of infection. *Vata* is said to have *Garbhasthapana* property (~promoting conception and implantation of an embryo) as per *Shodhal Nighantu*. In modern researches, it is seen that the tender roots of *Vata* (*Vatankur*) improve foetal circulation through the placenta, and also protect the mother from bacterial infections, thus reducing chances of abortion due to TORCH like infections (77). *Kashaya Rasatmaka Kshirivruksha* prevents the *Raktastrava* (Haemorrhage) that causes due to *Garbhopatakarabhava* (~Teratogenic aetiologies).Hence *Bruhati, Kantkari, Kashmari, Vatatwak*, and *Vatankur* are advised to take in the 5th month of the ANC period [Table no 3].

Prishanparni, Bala, Shigru, Shwadanstra, and *Yashtimadhu* are the drugs of 6thmonth *Kashaya*. As this period in the early stage of the third trimester, all these drugs are required to have nourishment of foetus and giving the strength to the uterus. Except *Shigru*, all other herbs are having the potential to enhance the functioning of body tissues through their *Rasayan* (~Rejuvenating), *Balya* (~Strength enhancer), and *Bruhan* (~Bulk promoting) properties. *Prushniparni* having anti-bacterial property and balances the equilibrium of *Tridosha* can prevents the miscarriage/ abortion. *Bala* reduces the chances of diabetes by increasing pancreatic efficacy. *Shigru* is a potent anti-oxidant drug and it is also a rich source of calcium, iron, proteins, copper, B complex vitamins, thus provides required medication to the mother as well as the foetus. [78] *Shigru* is a *Shoolaprashamana Dravya*

(~~Analgesic) can prevents the spasm which might responsible for miscarriage in 6th month(78). *Gokshura* is said to have the ability to prevent hypertension in pregnancy and it also increases foetal muscle mass. Thus these drugs reduce the chances of *Garbhasrava* mainly due to undernutrition of the mother as well as the foetus(79).

Shrungatak, Bisa, Draksha, Kaseru, Madhuk, and Sita are the drugs mentioned in the Seventh month *Kashaya* (table no.3). All these drugs are highly praised by various Ayurvedic scholars for their foeto-protective activity. All these drugs possess *Bruhan* (Bulk promoting) and *Balya* (Strength enhancer) properties. *Bisa* is used by *Sodhal* in *Garbhasravaharayoga* (~Prevention of Miscarriage and abortion) and also in *Parisravi Garbhachikitsa*(80). It is a rich source of calcium, iron, and zinc and improves foetal nutrition. *Shrungatak* and *Draksha* possess analgesic, anti-inflammatory, antidiabetic, antimicrobial, cytotoxic, antiulcer, neuroprotective, and immunomodulatory activity (81,82). Thus their *Rasayana* (~Rejuvenating) effect helps to improve the overall health of the mother and hence reduces chances of *Garbhasrava* (~Miscarriage and abortion) due to excessive physical as well psychological stress on the mother. *Kaseru* contains a significant amount of Progesterone helps in maintaining pregnancy(83). No studies are available on the medicinal use of Sita in the ANC period. All the drugs mentioned in *Saptama Masa Kashaya* are having similar *Rasapanchak* i.e. *Madhur rasa, Madhur vipaka*, and *Sheetaveerya*. Thus they alleviate *Trioshas* and improve the quality of *Kaphadosha* which is important for the proper growth of the foetus.

The maximum *Dravya* which are included in *Masanumaskashaya* are of *Madhura Rasa* (43%), *Madhura Vipaka* and *Sheeta Veerya*. *Madhura Rasa* is *Ajanmasatmya* hence gives nourishment and stability to foetus and mother during pregnancy. 31% *Tikta Rasatmak Dravya* has been included in *Masanumas Kashaya* which are *Amapachaka, Raktashodhaka, Krumighna*. These *Dravya* prevents the infection, any complication due to *Ama* and aggravated *Pitta*. 6% *Katu dravya* are helpful for proper ignition of *Dhatwagni* for proper nourishment and prevent *Margavarodha*. *Kashaya Rasatmaka Dravya* (20%) give strength to uterus and prevents the probable bleeding responsible for miscarriage (table no 4).

Conclusion

Garbhiniparicharya (~antenatal care) advised for preventing the miscarriage, disease conditions like Pregnancy induced hypertension, Gestational diabetes mellitus, Hyperemesis gravidarum etc. during pregnancy. It is reflecting on quality and health of the progeny. In this *Paricharya*, mentioned *Masanumas Kashaya* give the nourishment, proper development of foetus as well as strengthening the uterus which can tolerate the *Garbhopatkar Bhavas* (~teratogenic activities) protect the early expulsion of foetus resulted into miscarriage / abortion. Thus, use of *Masanumas Kashaya* in *Garbhini Paricharya*, will not only subside the causes of miscarriage and abortion, but also will assist to produce healthy progeny.

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