



Ethnomedicinal studies of postpartum recipes used by rural and tribal women of Southern Rajasthan, India

Khushboo Kumawat¹, Sunita Jain^{2*}, Asha Arora³

^{1,2}Department of Botany, BN University, Udaipur (Raj.), India

³Department of Biotechnology, BN University, Udaipur (Raj.), India.

Abstract: The postpartum period is defined as the period after delivery of conceptus when maternal physiological and anatomical changes return to the non-pregnant state. The postpartum period, also known as puerperium, starts following the placenta's expulsion until the complete physiological recovery of various organ systems. Rural and tribal peoples of Southern Rajasthan practice unique dietary therapeutic recipes for a holistic approach to cure and rejuvenate new mother's pregnancy-based maladies. Ethno-medicinal survey reveals 12 recipes/ formulations that deploy the medicinal herbs that have been time tested and align with modern biochemical evaluations conducted on animal models and humans.

Keywords: Batisa; Galactagogue; Postpartum recipes; Southern Rajasthan

Introduction

Womanhood goes with many specific cycles. Childbirth forms the most critical phase as both mother and infant are in various developmental stages and are prone to various diseases. The postpartum period refers to a time of regeneration for women to recover, rejuvenate and take on new roles. It is also referred to as a precarious period in many cultures. It renders the new mother vulnerable to illness, and specific traditional practices are observed to ensure recovery and avoid ill health later. Great strides in antepartum and intrapartum care have been dealt in Western or 'modern' cultures indicated by lowered maternal and infant mortality rates, there has been a comparative lack of attention to postpartum period. This may be due to clinical subdue in western postpartum care targeting mainly the physical health of mothers and their respective infants through clinical and technological interventions.

Postpartum practices in western 'technocentric' cultures do not typically extend beyond the first few days postpartum. By contrast, 'ethnokin-

ship' cultures (East Asia, South Asia, and the Middle East) emphasize social support rituals for a more protracted postpartum period (AbuSaad and Fraser, 2010). Given these cross-cultural differences, it would be valuable to explore the potential positive and negative effects these extended postpartum practices may have on mothers' physical and mental health. Furthermore, considering increasing migration rates between countries and the resulting cultural diversity among childbearing women in many healthcare settings, it is essential to understand traditional postpartum practices and how they may influence perinatal healthcare provision. This understanding promotes the provision of culturally competent perinatal services. At present, there is no comprehensive, cross-cultural examination of postpartum practices documented in the literature. Therefore, the study's objective is to assemble accounts of the existing practices associated with the postpartum period in rural and tribal communities of Southern Rajasthan.

*Corresponding Author:

Dr. Sunita Jain,

E-mail: sunitajain130799@gmail.com

Materials and Methods

For the documentation of various formulations, field surveys were carried out worldwide from 2018 to 2020 in various tribal, rural, and sub-rural pockets. Various localities of Southern Rajasthan (District Udaipur, Dungarpur, and Banswara) were selected to unearth the information. For recording and documentation, field interviews were made from different ladies and practitioner's, i.e., mid-wives, ritual therapists, herbalists, grain diviner, priest, and ancestral practitioners through local transcend to avoid language ambiguity, and data were recorded in information retrieval form. As per CBD guidelines, prior informant consent (PIC) was inscribed for usage, dose, mode of dose, tenure/ time interval, etc.

To determine the authenticity of information collected during the field visit, data were cross-checked with published data of the same array and region. Data was also authenticated in a criss-cross manner by interviewing other informants. Plant specimens were collected, and herbarium sheets were prepared with all related information. Plants were identified up to species level through the flora of the region and prior work. Herbarium sheets were deposited in Department for further reference.

Result and Discussion

Confinement is to protect and save the new mother and her infant from various illnesses because both are considered vulnerable after birth (Kim-Godwin, 2003). As a treatment, it involves staying at home, avoiding harsh physical work including housework, proper sanitation, and hygiene, proper balanced nutrition, avoiding cold food, eating hot food, etc. Indian traditions offer a detailed therapeutic timetable for postpartum care of the mother so that her anatomy and physiology can be completely rejuvenated by following simple household nutrition to strengthen the mind and body. These diet therapies are traditionally

known to prevent disorders such as depression, insomnia, and indigestion etc. Indian system of medicine also mentioned special lifestyle and food habits for puerperal women up to 40-45 days after delivery.

"Batisa" or a formulation of 32 ingredients, is considered the most important postpartum recipe as it rejuvenates the entire biological system and cures postpartum-associated maladies (Monterrosa, 2017; Dudi and Singh, 2018). The choice of ghee for various preparation goes with preferably cow ghee, but its unavailability of commercial ghee or clarified butter is used. In batisa except ghee 37 ingredients are used, among which *Asparagus racemosus* is used as a galactagogue, *Trigonella foenum-graecum* is used for general debility, and three ingredients are used as adjuncts to help proper digestion (*Saccharum officinarum* and *Trachyspermum ammi*), suppress bitter taste (*Saccharum officinarum*) and binding base (*Triticum aestivum*) of 32 herbs i.e. *Aegle marmelos*, *Anogeissus latifolia*, *Anethum graveolens*, *Areca catechu*, *Butea frondosa*, *Chlorophytum borivillianum*, *Cinnamomum zeylanicum*, *Cocus nucifera*, *Curculigo orchioides*, *Curcuma amada*, *Embelia ribes*, *Euryale ferox*, *Grewia tenax*, *Litsea glutinosa*, *Mesua ferrea*, *Mimosa pudica*, *Mucuna pruriens*, *Myrica esculenta*, *Myristica fragrans*, *Piper retrofractum*, *Quercus infectoria*, *Rubia cordifolia*, *Salmalia malabarica*, *Sida cordifolia*, *Smilax glabra*, *Symplocos racemosa*, *Terminalia chebula*, *Tribulus terrestris*, *Vitex negundo*, *Vitis vinifera*, *Withania somnifera* and *Zinziber officinale*. The addition of dry fruits to this batisa goes optional and is used to choose nursing mothers as dry fruits are added in other postpartum recipes (Table).

Therapeutic ingredients added in these formulations are meant to deal holistically with the cure, rejuvenation, and proper functioning of all systems as many of the plants used in the postpartum period possess high total phenolic content and are potent antioxidants with

promoting free radical scavenging activity (Jain et al. 2011).

Asparagus racemosus acts as lactagogue, and gastric anomalies specifically related to the emptying of the stomach (Dalvi et al. 1990; Goyal et al. 2003), Seeds of *Anethum graveolens* relieves stomachache, indigestion, and flatulence (Monsefi et al. 2006; Bahramikia and Yazdanparast, 2009; Kaur and Arora, 2010), *Piper longum* stimulates both digestive and respiratory system and also adds thermogenic response (Srinivasan, 2007; Singletary, 2010). *Symplocos racemosa* procures hormonal imbalance and excessive bleeding (Bhutani et al. 2004; Acharya et al. 2016).

Childbirth also comes with a high degree of muscular tearing resulting in various types of inflammations and aches. To deal with such muscular maladies, many herbs are incorporated for healing as *Anogeissus latifolia* (Govindarajan et al. 2004); *Myristica fragrans* (Grover et al. 2002); *Quercus infectoria* (Kaur et al. 2004; Umachigi et al. 2008; Aroonrerk and Kamkaen, 2009), *Areca catechu* (Azeez et al. 2007; Bhandare et al. 2010); *Litsea glutinosa* (Devi and Meera, 2010); *Vitex negundo* (Adnaik et al. 2009; Chawla et al. 1992; Dharmasiri et al. 2003) and *Desmodium gangeticum* (Govindarajan et al. 2007a, 2007b).

Cinnamomum zeylanicum is used for various maladies as uterine hemorrhage, stomachache, antiseptic, and an astringent (Jayaprakasha et al. 2003; Niphade et al. 2009). Piperine from Piper species is a bio-enhancing principle for many bioactive molecules. It inhibits the significant drug-metabolizing enzyme CYP3A4 and the drug transporter P-glycoprotein (Bhardwaj et al. 2002). Embelin is a potent inhibitor of transcription factors NF- κ B activation, which makes it a potentially effective suppressor of tumor cell survival, proliferation, invasion, angiogenesis, and inflammation (Ahn et al. 2007; Iwashita et al. 2007).

Scoparone and scopolatin are the groups of the chemical constituents from *Aegle marmelos* responsible for various anti-inflammatory purposes. Apigenin, luteolin, and hentriacontanol from *Gmeliana arborea* show anti-inflammatory activity. *Terminalia chebula* and *Litsea glutinosa* are potent angiotensin-converting enzyme (ACE) inhibitors; hence they possess antihypertensive action (Dev, 2006).

Many ingredients show antioxidant and free radical scavenging activity as *Areca catechu*, *Cocos nucifera*, *Desmodium gangeticum*, *Gmelina arborea*, *Litsea glutinosa*, *Rubia cordifolia*, *Smilax chinensis*, and *Vitex negundo* (Amrutha and Bhaskar, 2010). Jappayke laddu is among second essential therapeutic recipes for postpartum period for new mothers. It differs from batisa basically as the critical ingredients in laddu are the essential kitchen ingredients whereas in batisa special herbs are used. Secondly, in Jappayke laddu khairgoond (*Acacia senegal*) and dry fruits are preferred over dhawadgoond (*Anogeissus latifolia*) in batisa. Additionally, in Jappayke laddu, singhada (*Trapa natans*) flour is used as base material over wheat flour, so overall, besides basic therapeutic advantages, they are designed with flavor (Table I-1.2).

Poshtikdudh or Nutritional milk also finds an important place in postpartum diet. Though milk is a complete food, some of the ingredients as *Papaver somniferum* and *Phoenix sylvestris* are added to make it fortified. This milk often causes bloating and floating, which is rid of *Saccharum officinarum* (Table I-1.3).

Jeeray ka pani, meethikeladoo, harira, halua and gondpak are used by all studied communities. They are used for various purposes as Jeeray ka pani to maintain a good appetite; meethi ke laddo as a tonic to get rid of general weakness; harirapak and gond for healing purpose and muscular strength, while halua is

enriched with many pharmacological properties from general debility to muscular reformations (Table I-1.4-1.12). Goond or gum play an essential role as gum of all the species i.e Acacia, Anogeissus and Butea are considered to be wound healing (Sumitra et al. 2005), imparts biomechanical strength to bones (Bhargavan et al. 2009), and possesses osteogenic activity (Maurya et al. 2009). *Zingiber officinale* is given for warmth and gastrointestinal complaints. Ginger is considered as an analgesic, anti-inflammatory, and hypoglycaemic (Butt and Sultan, 2011).

In the same lineage the healing properties of Curcuma cannot be ignored as Curcumin from Curcuma species possesses anti-inflammatory and anticancer properties. Curcumin suppresses prostaglandin synthesis by affecting cyclooxygenase (COX) (Aggarwal et al. 2006). Among all the ingredients used in whichever form, ajwain (*Trachyspermum ammi*) forms important parts; it specifically helps in cleaning the uterus and avoiding stomach problems. Postpartum foods are highly rich in fat which can further cause cardiovascular system complications in the latter age. Therefore, *Trachyspermum ammi* is consumed in high

quantities as it possesses significant antihyperlipidemic activity (Bairwa et al. 2012). In addition to *Trachyspermum ammi*, embelin, the bioactive molecule of the plant Embeliaribes is a powerful antihyperlipidemic agent and lowers blood glucose level and blood pressure and therefore, it is also used for the same (Bhandari et al. 2008). *Solanum indicum* is used to release hypertension (Bahgat et al. 2008).

Gastric / Intestinal problems are more prone in nursing mothers due to change in metabolic milieu and ingestion of diversified herbs with almost all with high thermogenic nature so to smoothen the digestion, many digestive herbs as *Syzygium aromaticum* (Agbaje, 2008) and *Elettaria cardamomum* (Gilani et al. 2008) are used.

Ingestion of so many herbs by nursing mothers has beneficial additions to both mother and child. Plant extracts used in postpartum periods are cited as helping to expel the lochia, lessen mild postpartum hemorrhage, contract the uterus, aid in physical recovery, augment lactation, give the mother strength and treat illness in infants (Boer and Lamxay 2009).

Table I: Enumeration of Recipes' used in postpartum period by women's of various tribal and non-tribal communities of Southern Rajasthan

Botanical name; Family (Local name) Plant part/s used. (Acc. No)	Amount	Preparation methodology
Ghee based Batisa (Amount is for the preparation of two kgs)		
<i>Aegle marmelos</i> (L.) Corr. Serr.; Rutaceae (Bel) Fruit pulp (Bot/BNU/18-19/185)	50 gm	All ingredients except wheat flour, ghee, and khopra / nariyal are grinded. Wheat flour is roasted in ghee and aside jaggery is hammered and melted by using a small amount of ghee. Subsequently, all the grinded ingredients are added and a small ladoo of around 30 to 35 gms are binded and ingested twice a day by nursing mothers.
<i>Anogeissus latifolia</i> (Roxb.ex DC) Wall. ex Guill. & Perr.; Combretaceae (Dhawda) Gum (Bot/BNU/18-19/55)	150 gm	
<i>Anethum graveolens</i> L.; Apiaceae (Suwa) Fruits (Bot/BNU/18-19/14)	50 gm	
<i>Areca catechu</i> L.; Arecaceae (Supari) Nut (Bot/BNU/18-19/29)	100 gm	
<i>Asparagus racemosus</i> Willd.; Asparagaceae (Shatavari) Roots (Bot/BNU/18-19/35)	100 gm	
<i>Butea frondosa</i> Roxb.; Fabaceae (Kamarkas) Bark (Bot/BNU/18-19/87)	10 gm	
<i>Chlorophytum borivilianum</i> Sant. & Fern.; Asparagaceae (Dholimusli) Tubers (Bot/BNU/18-19/36)	25 gm	

<i>Cinnamomum zeylanicum</i> Garcin ex Blume; Lauraceae (Dalchini) Bark (Bot/BNU/18-19/115)	25 gm
<i>Cocos nucifera</i> L.; Arecaceae (Nariyal) Endosperm (Bot/BNU/18-19/30)	50 gm
<i>Curculigoorchioides</i> Gaertn.; Hypoxidaceae (Kalimusli) Tubers (Bot/BNU/18-19/112)	25 gm
<i>Curcuma amada</i> Roxb.; Zingiberaceae (Ambahaldi) Rhizomes (Bot/BNU/18-19/215)	25 gm
<i>Embeliaribes</i> Burm.f.; Myrsinaceae (Vaivadang) Fruits (Bot/BNU/18-19/132)	25 gm
<i>Euryale ferox</i> Salisb.; Nymphaeaceae (Makhana) Pop-corned seeds (Bot/BNU/18-19/136)	25 gm
<i>Grewia tenax</i> (Forssk.) Fiori.; Tiliaceae (Gengchi) Fruits (Bot/BNU/18-19/210)	25 gm
<i>Litsea glutinosa</i> (Lour.) CB Rob.; Lauraceae (Medalakdi) Stem and Bark (Bot/BNU/18-19/116)	25 gm
<i>Mesua ferrea</i> L.; Calophyllaceae (Nagkesar) Flowers (Bot/BNU/18-19/47)	25 gm
<i>Mimosa pudica</i> L.; Fabaceae (Lajvanti) Roots (Bot/BNU/18-19/100)	25 gm
<i>Mucuna pruriens</i> (L.) DC.; Fabaceae (Kemach/Kevach) Seeds (Bot/BNU/18-19/101)	25 gm
<i>Myrica esculenta</i> Buch-Ham ex Don; Myricaceae (Kayfal) Bark (Bot/BNU/18-19/130)	25 gm
<i>Myristica fragrans</i> Hoult.; Myristicaceae (Jaifal) Seeds (Bot/BNU/18-19/131)	25 gm
<i>Piper retrofractum</i> Vahl.; Piperaceae (Chotipippal) Fruits (Bot/BNU/18-19/148)	25 gm
<i>Quercus infectoria</i> Oliv.; Fagaceae (Majufal) Cones (Bot/BNU/18-19/110)	25 gm
<i>Rubia cordifolia</i> L.; Rubiaceae (Manjishta) Roots (Bot/BNU/18-19/183)	25 gm
<i>Saccharum officinarum</i> L.; Poaceae (Gud) Jaggery Stem juice (Bot/BNU/18-19/164)	500 gm
<i>Salmaliamalabarica</i> (DC.) Schott & Endl.; Bombaceae (Mochras) Bark (Bot/BNU/18-19/28)	25 gm
<i>Sida cordifolia</i> L.; Malvaceae (Bala) Roots (Bot/BNU/18-19/121)	25 gm
<i>Smilax glabra</i> Roxb.; Smilacaceae (Chopchinni) Roots (Bot/BNU/18-19/194)	25 gm
<i>Symplocos racemosa</i> Roxb.; Symplocaceae (Lodha) Wood and Bark (Bot/BNU/18-19/205)	25 gm
<i>Terminalia chebula</i> Retz.; Combretaceae (Choti/kali harar) Fruits (Bot/BNU/18-19/58)	25 gm
<i>Trachyspermum ammi</i> L. Sprague ex Turrill; Apiaceae (Ajwain) Seeds (Bot/BNU/18-19/18)	50 gm
<i>Tribulus terrestris</i> L.; Zygophyllaceae (Gokhru) Seeds (Bot/BNU/18-19/219)	50 gm
<i>Trigonella foenum-graecum</i> L.; Fabaceae (Methi) Seeds (Bot/BNU/18-19/107)	25 gm
<i>Triticum aestivum</i> L.; Poaceae (Ghuen) Kernels (Bot/BNU/18-19/168)	150 gm
<i>Vitex negundo</i> L.; Verbenaceae (Nirgundi/ negad) Seeds (Bot/BNU/18-19/212)	25 gm
<i>Vitis vinifera</i> L.; Vitaceae (Munnaka) Fruits (Bot/BNU/18-19/214)	25 gm
<i>Withaniasomnifera</i> (L.) Dunal; Solanaceae (Ashwagandha) Roots (Bot/BNU/18-19/202)	25 gm
<i>Zinziber officinale</i> Roscoe.; Zingiberaceae (Sonth) Rhizomes (Bot/BNU/18-19/218)	25 gm

	Ghee	2 kg	
Jappayke laddu (Amount is for the preparation of two kgs)			
	<i>Acacia senegal</i> (L.) Willd.; Fabaceae (Khair) Gum (Bot/BNU/18-19/85)	250 gm	Ghee is taken in a wide-mouth vessel and heated, and the gum acacia is deep-fried in the ghee until it appears as popcorn. The singhada flour is roasted in 100 gms of ghee. The remaining ghee and all ingredients, including raw sugar powder or jaggery are poured into the vessel and mixed thoroughly. A small portion, approximately 50 gms of the mixture is taken in hand and rolled to form a ball, called laddoo. The prepared laddoos are kept in an airtight container. The shelf-life of laddoos is considered of 60 days. One laddoo per serving is given twice a day.
	<i>Areca catechu</i> L.; Arecaceae (Supari) Nuts (Bot/BNU/18-19/29)	15 gm	
	<i>Asparagus racemosus</i> Willd.; Asparagaceae (Shatavari) Roots (Bot/BNU/18-19/35)	15 gm	
	<i>Chlorophytum borivillianum</i> Sant. & Fern.; Asparagaceae (Dholimusli) Roots (Bot/BNU/18-19/36)	30 gm	
	<i>Coriandrum sativum</i> L.; Apiaceae (Dhaniya) Seeds (Bot/BNU/18-19/15)	100 gm	
	<i>Cucumis melo</i> L.; Cucurbitaceae (Kakli) Seeds (Bot/BNU/18-19/67)	30 gm	
	<i>Dactylorhiza hatagirea</i> (D. Don) Soo.; Orchidaceae (Parand) Tuber (Bot/BNU/18-19/139)	15 gm	
	<i>Elettaria cardamomum</i> (L.) Maton; Zingiberaceae (Elaichi) Seeds (Bot/BNU/18-19/217)	20 gm	
	<i>Papaver somniferum</i> L.; Papaveraceae (Afim) Seeds (Bot/BNU/18-19/142)	50 gm	
	<i>Piper longum</i> L.; Piperaceae (Pippali) Fruits (Bot/BNU/18-19/146)	15 gm	
	<i>Piper nigrum</i> L.; Piperaceae (Kali mirch) Seeds (Bot/BNU/18-19/147)	15 gm	
	<i>Pistacia vera</i> L.; Anacardiaceae (Pista) Fruits (Bot/BNU/18-19/11)	100 gm	
	<i>Prunus dulcis</i> (Mill.) D.A. Webb.; Rosaceae (Badam) Seeds (Bot/BNU/18-19/181)	100 gm	
	<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	300 gm	
	<i>Smilax chinensis</i> L.; Smilacaceae (Chopchinni) Roots (Bot/BNU/18-19/193)	30 gm	
	<i>Symplocos racemosa</i> Roxb.; Symplocaceae (Lodha) Wood and Bark (Bot/BNU/18-19/205)	20 gm	
	<i>Trachyspermum ammi</i> (L.) Sprague ex Turrill; Apiaceae (Ajwain) Seeds (Bot/BNU/18-19/18)	75 gm	
	<i>Trapa natans</i> L.; Lythraceae (Singhada) Flour of dried kernels (Bot/BNU/18-19/119)	500 gm	
	<i>Withania somnifera</i> (L.) Dunal.; Solanaceae (Ashwagandha) Roots (Bot/BNU/18-19/202)	40 gm	
	<i>Zingiber officinale</i> Roscoe.; Zingiberaceae (Adrak) Rhizomes (Bot/BNU/18-19/218)	50 gm	
	Ghee	400 gm	
PoshtikDudh			
	<i>Papaver somniferum</i> L.; Papaveraceae (Khuskhus) Seeds (Bot/BNU/18-19/142)	25 gm	25 gm khuskhus and 4-5 dates pulp are boiled in one and half glass milk at low flame for 15 minutes, and then one spoon of ghee and jaggery is added and given thrice a day to lactating mothers.
	<i>Phoenix sylvestris</i> (L.) Roxb.; Arecaceae (Khajoor) Fruit pulp (Bot/BNU/18-19/31)	4-5	
	<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	-	
Lehya/Lai			
	<i>Erythrina stricta</i> Roxb.; Fabaceae (Koorvi) Bark (Bot/BNU/18-19/97)	10 gm	Equal quantities of the anantmul outer root bark, bark of koorvi and dried flowers of sarjua are crushed along with equal quantity of kaddiyo leaves and decoction is prepared
	<i>Hemidesmus indicus</i> (L.) R.Br.; Periplocaceae (Anantmul) Roots (Bot/BNU/18-19/145)	10 gm	
	<i>Leucas aspera</i> Willd. Link; Lamiaceae (Kaddiyo) Leaves (Bot/BNU/18-19/113)	5 gm	

	<i>Moringa concanensis</i> Nimmo; Moringaceae (Sargua) Flowers (Bot/BNU/18-19/128)	10 gm	as one tablespoon in one glass of water and boiled till it is concentrated to half and same is ingested daily.
Ajma Gud			
	<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	500 gm	Carom seeds are either roasted mildly or used as raw and added to jaggery and melted clarified butter/ghee mixture and is given to feeding mothers
	<i>Trachyspermum ammi</i> (L.) Sprague ex Turill; Apiaceae (Ajwain) Seeds (Bot/BNU/18-19/18)	300 gm	
Sonthkeladoo /Sonth			
	<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	500 gm	Wheat flour is roasted in pure ghee and kept aside, followed by roasting dried ginger powder in ghee. After cooling to room temperature, both these ingredients are mixed with jaggery and binded as ladoo which are given to nursing mother in early morning for seven days.
	<i>Triticum aestivum</i> L.; Poaceae (Gehun) Kernels (Bot/BNU/18-19/168)	500 gm	
	<i>Zingiber officinale</i> Roscoe.; Zingiberaceae (Adrak) Rhizomes (Bot/BNU/18-19/218)	250 gm	
Jeeray ka Pani			
	<i>Cuminum cyminum</i> L.; Apiaceae (Jeera) Seeds (Bot/BNU/18-19/16)	100 gm	Jeera powder is boiled in water and subsequently, jaggery and little amount of ghee and black pepper is added to it.
	<i>Piper nigrum</i> L.; Piperaceae (Kali mirch) Seeds (Bot/BNU/18-19/147)	10 gm	
	<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	20 gm	
	Ghee	-	
Dhaniya - saunfkeladoo			
	<i>Coriandrum sativum</i> L.; Apiaceae (Dhaniya) Seeds (Bot/BNU/18-19/15)	50 gm	Dhaniya powder along with saunf powder are mixed in ghee, roasted wheat flour and subsequently, jaggery is added and the mixture is binded as ladoo which is ingested by breastfeeding mothers.
	<i>Foeniculum vulgare</i> Mill.; Apiaceae (Saunf) Seeds (Bot/BNU/18-19/17)	50 gm	
	<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	200 gm	
	<i>Triticum aestivum</i> L.; Poaceae (Gehun) Kernels (Bot/BNU/18-19/168)	200 gm	
	Ghee	200 gm	
Methikeladoo			
	<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	200 gm	Methi seeds are soaked overnight in milk. In the morning the milk is rinsed and seeds are coarsely grinded and thereafter roasted in ghee. In another utensil, the wheat flour is roasted and the grinded methi is added with jaggery and ladoo are prepared which are consumed as one or two for forty days.
	<i>Trigonella foenum-graecum</i> L.; Fabaceae (Methi) Seeds (Bot/BNU/18-19/106)	100 gm	
	<i>Triticum aestivum</i> L.; Poaceae (Gehun) Kernels (Bot/BNU/18-19/168)	200 gm	
	Ghee	200 gm	
Harira			
	<i>Curcuma longa</i> L.; Zingiberaceae (Haldi) Rhizomes (Bot/BNU/18-19/216)	25 gm	Ghee is melted, jaggery and turmeric powder is added with glass of water and is allowed to boil on low flame till harira comes in semi-solid form. This mixture is prepared daily and utilized early morning.
	<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	100 gm	
	Ghee	50 gm	

Gond Pak			
<i>Acacia senegal</i> (L.) Willd.; Fabaceae (Khair) Gum (Bot/BNU/18-19/85)	100 gm	Acacia gum and few black peppers are fried in ghee. Ghee roasted wheat flour, jaggery or sugar, grated dried coconut, watermelon seeds, and crushed dates are added to pepper and fried gum. All these ingredients are mixed and ladoos are made. These ladoos are considered high in calories and therefore meet the extra calories needed by a new mother while breastfeeding the newborn.	
<i>Cocos nucifera</i> L.; Arecaceae (Nariyal) Endosperm (Bot/BNU/18-19/30)	100 gm		
<i>Phoenix sylvestris</i> (L.) Roxb.; Arecaceae (Khajoor) Fruit pulp (Bot/BNU/18-19/31)	100 gm		
<i>Piper nigrum</i> L.; Piperaceae (Kali mirch) Seeds (Bot/BNU/18-19/147)	25 gm		
<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	100 gm		
<i>Triticum aestivum</i> L.; Poaceae (Gehun) Kernels (Bot/BNU/18-19/168)	200 gm		
Ghee	200 gm		
Halua/Halwa			
<i>Asparagus racemosus</i> Willd.; Liliaceae (Shatavari) Roots (Bot/BNU/18-19/35)	50 gm	Wheat flour is roasted in ghee and subsequently, water is added to make a perfectly thick consistency. Grinded and ghee roasted negad seeds, shatawari and sonth powder, dry fruits like pista and badam are added with super soaked khus seeds. Water is substituted by milk in some communities and is freshly consumed.	
<i>Cocos nucifera</i> L.; Arecaceae (Nariyal) Endosperm (Bot/BNU/18-19/30)	100 gm		
<i>Papaver somniferum</i> L.; Papaveraceae (Khuskhus) Seeds (Bot/BNU/18-19/142)	50 gm		
<i>Pistacia vera</i> L.; Anacardiaceae (Pista) Fruits (Bot/BNU/18-19/11)	50 gm		
<i>Prunus dulcis</i> Mill.; Rosaceae (Badam) Seeds (Bot/BNU/18-19/181)	50 gm		
<i>Saccharum officinarum</i> L.; Poaceae (Gud) Stem juice (Bot/BNU/18-19/164)	150 gm		
<i>Triticum aestivum</i> L.; Poaceae (Gehun) Kernels (Bot/BNU/18-19/168)	150 gm		
<i>Vitex negundo</i> L.; Verbenaceae (Nirgundi/ negad) Seeds (Bot/BNU/18-19/212)	50 gm		
<i>Zingiber officinale</i> Rosc.; Zingiberaceae (Adrak) Rhizomes (Bot/BNU/18-19/218)	50 gm		
Ghee	150 gm		

References

1. Abu-Saad K and Fraser D. Maternal nutrition and birth outcomes. *Epi. Rev.* 32 (2010): 5-25.
2. Acharya N, Acharya S, Shah U, Shah R, Hingorani L. A comprehensive analysis on *Symplocos racemose* Roxb.: Traditional uses, botany, phytochemistry and pharmacological activities. *Journal of Ethnopharmacology.* 181(2016): 236-51.
3. Adnaik RS, Pai PT and Sapakal VD, Naikwade NS, Magdum CS. Anxiolytic activity of *Vitex negundo* Linn. in experimental models of anxiety in mice. *International Journal of Green Pharmacy.* 3 (2009): 243-47.
4. Agbaje EO. Gastrointestinal effects of *Syzgium aromaticum* (L) Merr. and Perry (Myrtaceae) in animal models. *Nigerian Quarterly Journal of Hospital Medicine.* 18(2008): 137-41.
5. Aggarwal BB, Ichikawa H, Garodia P, Weerasinghe P, Sethi G, Bhatt ID. From traditional Ayurvedic medicine to modern medicine: identification of therapeutic targets for suppression of inflammation and cancer. *Oncology, Endocrine, and Metabolic.* 10(2006): 87-118.
6. Ahn KS, Sethi G and Aggarwal BB. Embelin, an inhibitor of X chromosome-linked inhibitor-of-apoptosis protein, blocks the nuclear factor- κ B (NF- κ B) signaling pathway leading to suppression of NF- κ B-regulated antiapoptotic


- and metastatic gene products. *Molecular Pharmacology*. 71(2007): 209-19.
7. Amrutha VA and Bhaskar VSC. Antioxidative and Antimicrobial Activity of Methanol and Chloroform Extracts of *Gmelina arborea* Roxb. *International Journal of Biotechnology & Biochemistry*. 6(2010):141-46.
 8. Aroonrerk N and Kamkaen N. Anti-inflammatory activity of *Quercus infectoria*, *Glycyrrhiza uralensis*, *Kaempferia galanga*, and *Coptis chinensis*, the main components of thai herbal remedies for aphthous ulcer. *Journal of Health Research*. 23(2009):17-22.
 9. Azeez S, Amudhan S, Adiga S, Rao N, Rao N, Udupa LA. Wound healing profile of *Areca catechu* extracts on different wound models in wistar rats. *Kuwait Medical Journal*. 39(2007): 48-52.
 10. Bahgat A, Abdel-Aziz H, Raafat M, Mahdy A, El-Khatib AS, Ismail A. 2008. *Solanum indicum* sp. *distichum* extract is effective against l-NAME-induced hypertension in rats. *Fund. and Clinical Pharmacology* 22(2008): 693-99.
 11. Bahramikia S and Yazdanparast R. Efficacy of different fractions of *Anethum graveolens* leaves on serum lipoproteins and serum and liver oxidative status in experimentally induced hypercholesterolaemic rat models. *American Journal of Chinese Medicine*. 37(2009):685-99.
 12. Bairwa R, Sodha RS and Rajawat BS. *Trachyspermum mammi*. *Pharmacognosy Review*. 6.11(2012): 56-60.
 13. Bhandare AM, Kshirsagar AD, Vyawahare NS, Hadambar AA, Thorve VS. Potential analgesic, anti-inflammatory and antioxidant activities of hydroalcoholic extract of *Areca catechu* L. *Food and Chemical Toxicology* . 48 (2010): 3412-17.
 14. Bhandari U, Jain N, Ansari MN, Pillai KK. 2008. The beneficial effect of *Embeliaribes* ethanolic extract on blood pressure and glycosylated hemoglobin in streptozotocin-induced diabetes in rats. *Fitoterapia*. 79 (2008): 351-55.
 15. Bhardwaj RK, Glaeser H, Becquemont L, Klotz U, Gupta SK, Fromm MF. "Piperine, a major constituent of black pepper, inhibits human P-glycoprotein and CYP3A4". *Journal of Pharmacology and Experimental Therapeutics*. 302(2002): 645-50
 16. Bhargavan B, Gautam AK, Singh D, Kumar A, Chaurasia S, Tyagi AM. Methoxylated isoflavones, cajanin and isoflavanone, have non-estrogenic bone forming effect via differential mitogen-activated protein kinase (MAPK) signaling. *Journal of Cellular Biochemistry*. 108(2009): 388- 99.
 17. Bhutani KK, Jadhav AN and Kalia V. Effect of *Symplocos racemosa* Roxb. on gonadotropin release and ovarian histology. *Journal of Ethnopharmacology*. 94(2004): 197-200.
 18. Boer H and Lamxay V. 2009. Plants used during pregnancy, childbirth and postpartum healthcare in Lao PDR: A comparative study of the Brou, Saek and Kry ethnic groups. *Journal of Ethnobiology and Ethnomedicine*. (2009)5: 25.
 19. Butt MS and Sultan MT. Ginger and its health claims: molecular aspects. *Crit Rev Food Sci Nutr*. 5.5 (2011):383-93.
 20. Chawla S, Sharma AK and Handa SS. Chemical investigation and anti-inflammatory activity of *Vitex negundo* seeds: Part 2. *Journal of Natural Products*. 55 (1992):163-67.
 21. Dalvi SS, Nadkarni PM and Gupta KC. Effect of *Asparagus racemosus* (Shatavari) on gastric emptying time in normal healthy volunteers. *Journal of Postgraduate Medicine*. 36(1990):91-94.
 22. Dev S. A Selection of Prime Ayurvedic Plant Drugs, Ancient-Modern concordance. Anamaya publishers, New Delhi. 2006.
 23. Devi P and Meera R. Study of antioxidant, anti-

- inflammatory and wound healing activity of extracts of *Litsea glutinosa*. Journal of Pharmaceutical Sciences and Research. 24. 2 (2010):155-63.
24. Dharmasiri MG, Jayakodi JR, Galhena G, Liyanage SS, Ratnasooriya WD. Anti-inflammatory and analgesic activities of mature fresh leaves of *Vitex negundo*. Journal of Ethnopharmacology. 87 (2003):199-206.
25. Dudi A and Singh D. Medicinal Plants used During Traditional Postnatal Care Practices in Rajasthan, India Ethno Med. 12.4 (2018): 212-20.
26. Gilani AH, Jabeen Q, Khan AU, Shah AJ. Gut modulatory, blood pressure-lowering, diuretic and sedative activities of cardamom. Journal of Ethnopharmacology. 115 (2008): 463-72.
27. Govindarajan R, Asare-Anane H, Persaud S, Jones P, Houghton PJ. Effect of *Desmodium gangeticum* extracts on blood glucose in rats and on insulin secretion in vitro. Planta Medica. 2007a; 73:427-32.
28. Govindarajan R, Vijayakumar M, Rao CV, Shirwaikar A, Kumar S, Rawat AK. Anti-inflammatory and antioxidant activities of *Desmodium gangeticum* fractions in carrageenan-induced inflamed rats. Phytotherapy Research. 21 (2007b):975-79.
29. Govindarajan R, Vijayakumar M, Rao CV, Shirwaikar A, Mehrotra S, Pushpangadan P. Healing potential of *Anogeissus latifolia* for dermal wounds in rats. Acta Pharmaceutica. 54(2004):331-38.
30. Goyal RK, Singh J, Lal H. *Asparagus racemosus* - an update. Indian Journal of Medical Sciences. 57 (2003):408-14.
31. Grover JK, Khandkar S, Vats V, Dhunnoo Y, Das D. Pharmacological studies on *Myristica fragrans* - antidiarrheal, hypnotic, analgesic and haemodynamic (blood pressure) parameters. Methods and Findings in Experimental and Clinical Pharmacology. 24 (2002):675-80.
32. Iwashita M, Oka N, Ohkubo S, Saito M, Norimichi N. Piperlongumine, a constituent of *Piper longum* L., inhibits rabbit platelet aggregation as a thromboxane A2 receptor antagonist. European Journal of Pharmacology. 570 (2007):38-42.
33. Jain N, Goyal S and Ramawat KG. Evaluation of antioxidant properties and total phenolic content of medicinal plants used in diet therapy during postpartum. Int J Pharm Pharm Sci. 3.3 (2011):248-53.
34. Jayaprakasha GK, Rao LJM, and Sakariah KK. Volatile Constituents from *Cinnamomum zeylanicum* Fruit Stalks and Their Antioxidant Activities. Journal of Agricultural Food Chemistry. 51(2003):4344-48.
35. Kaur G, Hamid H, Ali A, Alam MS, Athar M. Anti-inflammatory evaluation of alcoholic extract of galls of *Quercus infectoria*. Journal of Ethnopharmacology. 90(2004):285-92.
36. Kaur GJ and Arora DS. Bioactive potential of *Anethum graveolens*, *Foeniculum vulgare* and *Trachyspermum ammi* belonging to the family Umbelliferae - Current status. Journal of Medicinal Plants Research. 4(2010): 87-94.
37. Kim-Godwin YS. Postpartum Beliefs and Practices among Non-Western Cultures. The American Journal of Maternal/Child Nursing. 28(2003):74-78.
38. Monsefi M, Ghasemi M and Bahaoddini A. The effects of *Anethum graveolens* L. on female reproductive system. Phytotherapy Research. 20(2006):865-868.
39. Monterrosa E. The Socio-cultural Drivers of Food Choices: Formative research among pregnant and lactating women in Rajasthan. Sight and Life. 31.2(2017):27-35.
40. Maurya R, Yadav DK, Singh G, Bhargavan B, Narayan MPS, Sahai M. Osteogenic activity of constituents from *Butea monosperma*. Bioorg Med Chem Letters. 19 (2009):610-13.
41. Niphade SR, Asad M, Chandrakala GK, Toppo E, Deshmukh P. Immuno-modulatory activity

- of *Cinnamomum zeylanicum* bark. *Pharmaceutical Biology*. 121 (2009):1168-73.
42. Singletary K. Black pepper: an overview of health benefits. *Nutrition Today*. 45(2010): 43-47.
43. Srinivasan K. Black pepper and its pungent principle-piperine: a review of diverse physiological effects. *Critical Reviews in Food Science and Nutrition*. 47 (2007): 735-48.
44. Sumitraa M, Manikandana P and Suguna L. Efficacy of *Butea monosperma* on dermal wound healing in rats. *The International Journal of Biochemistry & Cell Biology*. 37(2005):566-73.
45. Umachigi SP, Jayaveera KN, Kumar ACK, Kumar GS, Vrushabendraswamy BM, Kumar KDV. Studies on Wound Healing Properties of *Quercus infectoria*. *Tropical Journal of Pharmaceutical Research*. 7 (2008): 913-19.

Cite this article as:

Khushboo Kumawat, Sunita Jain, Asha Arora. Ethnomedicinal studies of postpartum recipes used by rural and tribal women of Southern Rajasthan. *Annals of Plant Sciences*. 10.2 (2021) pp. 4151-4161.

 <http://dx.doi.org/10.21746/aps.2021.10.2.2>

Source of support: Nil; **Conflict of interest:** Nil.