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Systematic Review

Medicinal plants used to induce abortion in India-a systematic review

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ABSTRACT

Traditional practice of use of plant resources for treating various human diseases have played foremost role throughout the world. Several plants have been tested for their activity through pharmacological studies. The use of plants to induce abortion which have been practiced in different regions of India. And still today the people or communities reside in remote and distant places are mostly rely upon the plants to induce abortion. Even after a advancement in allopathic medicine, the belief still strong towards plant medicines due to its side effects. In present review 50 research publications are considered which include total 136 plants. While plant part/s used for preparation of formulations, 99 underground parts, 49 medicinal preparations made by using leaf, fruit 35, whole plant 25, bark 13, stem 11, stembark 4, flower 8 and 3 by using aerial parts. Most used method of preparation was paste, 112 formulations, which is followed by extract 59 and decoction 38. While mode of administration is concerned, 272 formulations are given orally, 25 formulations are prescribed internally and 7 for external applications.

Keywords: Medicinal plant, Abortifacient, Induce abortion, India

INTRODUCTION

The word "abortion" denotes to any premature expulsion of a human foetus, whether naturally spontaneous, as a miscarriage or artificially persuaded as in a surgical or chemical abortion.[1] Abortion must be performed at initial in pregnancy, as early as 3 weeks and no more than 7 to 8 weeks pregnancy.[2] Since Vedic period women's reproductive disorders are being treated through traditional systems of medicine in India.

India has a rich source of traditional knowledge about medicinal plants and its use is since time immemorial. Even today in remote and distant regions, most of the people are relying on plant-based medicines for primary health care. The acquaintance of use of plants as a source of medicine is known since Ayurvedic, Siddha and Unani medicine and has been considered as an important element of the health care system in India.[3] Plants and humans have a close relationship since the time immemorial and have evolved parallelly cooperating and depending upon each other for their survival. Aboriginal people who acquired the knowledge of medicinal properties of the plants by trial-and-error method and transferred the same by oral means from one generation to other. Over 7500 species of plants are estimated to be used by the people for treating various ailments and diseases of humans as well as pet animals in India.[4]

In India, about 70% of the population is dependent on the traditional system of medicines, particularly the people or communities reside in remote and distant regions or residing in forests or its adjoining areas are maintaining their health by utilizing plant-based medicines.[5] Several plant-based preparations are utilized as contraceptives and abortion stimulants, emmenagogues, and oxytocic

agents.[6] Traditionally the rural women prefer plant medicines rather much than modern allelopathic medicines for different gynecological disorders such as, conception disorders, menstrual trouble, birth control practices, abortion, infertility, etc.

The aim of present review is to bring together information of data medicinal plant those are used as abortifacient or to induce abortions. The scientific name, family, Sanskrit or Hindi name wherever possible, plant part, mode of preparation, administration and doses provided. Valid botanical has been given in case of synonyms used in publications.

METHODS

Data collection for present review is done by using google, online research papers based on studies conducted in India are gathered using the key words abortifacient plants or plants used to induce abortion or plants used to spoil pregnancy or plants used for termination of pregnancy.

Besides this the titles such as, plants used to treat gynecological disorders or plants used to treat women's disorders are also considered. Some information/data have been collected offline from institutional library. Papers collected were further analysed, as part used to induce abortion, mode of preparation of medicine, mode of administration of medicine, doses, etc by using excel.

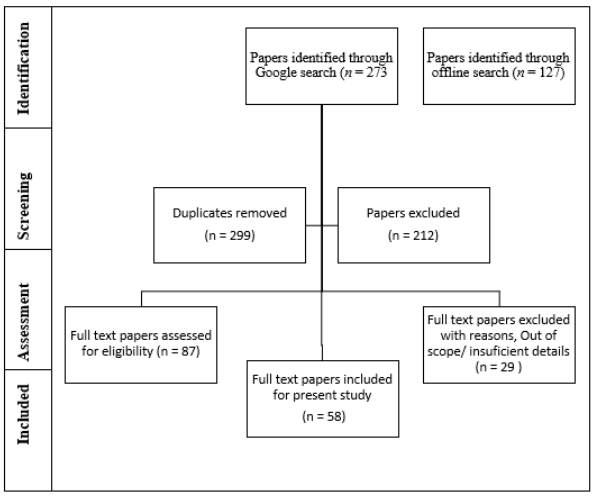

Figure 1: Flow chart of papers identified, screening and assessment done and included.

Inclusion criteria

Included the published literature sources that include the titles, abortifacient plants, plants used to induce abortion or terminating pregnancy or spoiling pregnancy and the papers on plants used for gynaecological disorders which reports the abortifacient plants. Total 58 research papers on studies conducted in different areas of India have been considered.

Exclusion criteria

The study excluded all published literature sources that addressed general gynaecological purposes and disorders which does not include information about abortifacient plants, plants used to induce abortion, etc. The published literature sources based on studies conducted outside India are also excluded.

RESULTS

Medicinal plants used to induce abortion are enumerated as botanical name and family in parenthesis, local name 'sanskrit' and Hindi name (in parenthesis), habit, plant part/s used, method of preparation of medicine, mode of administration and dose/s are provided (Table 1).

Present review includes medicinal herbs used to induce abortion, the information/data of total 136 plant species have been provided, of which 58 are herbs, 37 are tree species, 26 shrubs, 6 undershrub, 8 climbers and 1 liana (Figure 2).

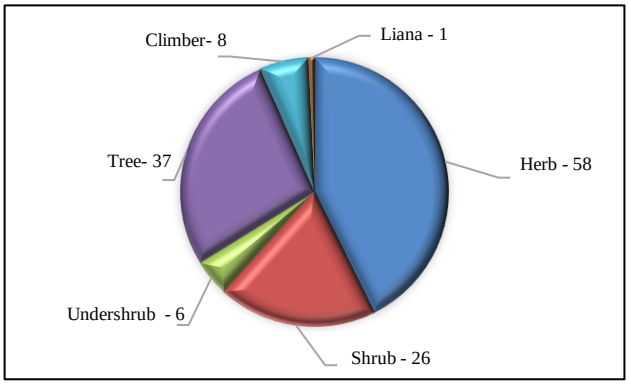

Figure 2: Habit wise breakup of number of plant species used.

Table 1: Details of plants used to induce abortion.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
***Abrus precatorius L.* (Fabaceae)**	Gunja (Gunchi)	Climber	Sd	Paste/Poultice	External	Applied on genitalia	Khan et al[7]; Mali et al[8]
			Sd	Powder	Oral	20 gm with glass of luke-	Mitra et al[9]; Rajeshwari et al[57];

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
						warm water on empty stomach.	Murugesh et al[57]; Rajeshwari et al[2]; Murty et al[10]
			Wp	Extract	Oral	Given	Gupta et al[11]
			Rt	Decoction	Oral	Once a day on empty stomach for 3 days	Panduranga et al[12]; Tarafder et al[13]
***Acacia catechu (L.f.) Willd.* (Fabaceae)**	Khadira (Khair)	Tree	Bk	Juice	Oral	3-5 ml given during first 3 months	Ajesh et al[14]; Komaraiah et al[4] Rajeshwari et al[57]; Rajeshwari et al[2]; Saravanan et al[15]
***Achyranthes aspera L.* (Amaranthaceae)**	Chirchitaa (Latjira)	Herb	Rt	Paste	Oral	Given	Ghosh et al[16]
			Rt	Paste	Oral	15 gm with lukewarm water given	Mitra et al[9]; Murty et al[10]; Rajeshwari et al[2]; Vineeta et al[17]
			Rt	Paste	External	Applied on abdomen	Mali et al[8]
			Rt	-	Internal	Vaginal insertion for 2-3 hours	Terangpi et al[18]
			Inflo	Decoction	Oral	Given twice a day for 3 days	Khan et al[7]
***Aegle marmelos (L.) Corr. Ex Roxb.* (Rutaceae)**	Bilva (Bel)	Tree	Lf	Extract	Oral	Given	Jillelamudi et al[19]
***Aerva lanata (L.) Juss. ex Shult.* (Amaranthaceae)**	Astmabayota (Chaya)	Herb	Rt	-	Internal	Vaginal insertion-Fresh root about 9 cm made as stick	Murty Vankaiah et al[10]; Panduranga et al[12]; Rajeshwari et al[2]
***Alangium salviifolium (L.f.) Wang* (Cornaaceae)**	Ankola (Akola)	Tree		Extract	Oral	100mg/kg body weight for eight days	Tripathi et al[20]
***Aloe vera (L.) Burm f.* (Liliaceae)**	Ghritakumari	Herb	Lf	Pulp	Oral	Given once a day for 7 days	Adhikari et al[21]; Khan et al[7]
			Wp	-	Internal	Vaginal insertion-A piece of whole plant is used	Rajeshwari et al[2]
***Alternanthera philoxeroides (Mart.) Griseb.* (Amaranthaceae)**	Garundi	Herb	Twig	-	Internal	Vaginal insertion piece of fresh plant (about 9 cm) used as a stick	Mitra et al[9]
***Amaranthus spinosus L.* (Amaranthaceae)**	Tanduliya (Kataili)	Herb	Wp	Decoction	Oral	30 ml given empty stomach trice a day for 5-8 days	Khan et al[7]; Mali et al[8]
***Ananas comosus (L.) Merr.* (Bromeliaceae)**	(Ananas)	Undershrub	Fr	-	Oral	One tender fruit on empty stomach for 3 days	Ajesh et al[14]; Rajeshwari et al[2]; Terangpi et al[18]; Tripathi et al[20]
			Lf	Paste	Oral	10 gm fresh leaves paste with 7 black peppers given	Mitra et al[9]; Murty et al[10;] Rajeshwari et al[2]
***Anethum graveolens L.* (Apiaceae)**	(Sowa)	Herb	Rt	Paste	Oral	Given twice a day for 5 days	Khan et al[7]
Angelica	Bhojraj	Herb	Rt	Decoction	Oral	Given	Tripathi et al[20]

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
***archangelica L.* (Apiaceae)**							
***Annona reticulata L.* (Annonaceae)**	Ramphal	Tree	Sd	Paste	Oral	Given empty stomach for 3-5 days	Ajesh et al[14]; Komaraiah et al[4]; Murty et al[10]; Rajeshwari et al[2]; Saravanan et al[15]
			Sd	Powder	Oral	3 gm with powder of black pepper for 3 months	Behara et al[23], Dash et al[5]; Mitra et al[9]; Rajeshwari et al[2]
			Fr	Paste	Oral	With lukewarm water given twice a day for 5 days	Shende et al[24]
***Annona squamosa (L.) Merr.* (Annonaceae)**	Sharifa (Sitaphal)	Tree	Sd	Powder	Oral	Given with water for 3-4 days	Singh et al[25]
			Rt	Powder	Oral	Given	Shrivastawa et al[26]
			Sd	Powder	Oral	With water given for 3-4 days	Sahu et al[27]
			Fr	-	Oral	Ripened fruit given	Komaraiah et al[4]
			Rt	Powder	Oral	Given with water	Balamurugan et al[28]
			Sd	Powder	Oral	Given thrice a day for 3 days	Khan et al[7]
			Sd	Powder	Oral	Given empty stomach for 5 days	Mali et al[8]
			Rt	Powder	Oral	5 gm taken once empty stomach for 3 months	Behara et al[23]
			Rt	Powder	Oral	5 gm taken once empty stomach for 3 months	Dash et al[5]
			Sd	Paste	External	Applied on vagina	Patel et al[29]
			Sd	Powder	Oral	Given with water for 3-4 days	Singh et al[25]
***Arctium lappa L.* (Asteraceae)**	(Jangli kunth)	Herb	Lf, Rt	Decoction	Oral	Given	Jain et al[30]
***Aristolochia bracteolata Retz.* (Aristolochiaceae)**	Dhumrapatra (Kiramar)	Herb	Wp	Paste	Oral	Given (10 gm) twice a day for 3 days	Mali et al[8]
***Aristolochia indica L.* (Aristolochiaceae)**	Ishwarimul (Hukka-bel)	Herb	Rt	Paste	Oral	With ferula asa-foetida (Hing) given	Mitra et al[9]
			Rt	Paste	Oral	10gm given	Murty et al[10]
			Rt	-	Internal	Vaginal insertion-Fresh root is used	Rajeshwari et al[2]
***Aristolochia tagala Cham* (Aristolochiaceae)**	Belikol	Shrub		Extract	Oral	100 mg/kg given	Tripathi et al[20]
***Artemisia martima L.* (Asteraceae)**	Gadadhari (Kirmala)	Shrub	Lf	-	Oral	Boiled and steeped leaves	Sharma et al[31]

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
						applied over abdomen	
***Artemisia vulgaris L.* (Asteraceae)**	Nagdamini (Nagdona	Shrub	Wp	Extract	Oral	1 teaspoon per cup of water, 3 cups per day	Tripathi et al[20]
***Asparagus racemosus Willd* (Liliaceae)**	Shatmuli (Shatawar)	Herb	Rt	Paste	Oral	Given	Shukla et al[32]
***Avera lanata (L.) Juss. ex Schult.* (Amaranthaceae)**	Astmabayota	Herb	Rt	-	Internal	Vaginal insertion-fresh root (about 9 cm) used as a stick	Mitra et al[9]
***Avicennia marina (Forssk.) Vierch.* (Acanthaceae)**	Sagrobhutah	Shrub	Lf	Extract	Oral	Given with lukewarm goat milk	Mitra et al[9]; Murty et al[10], Saravanan et al[15], Rajeshwari and Ran et al[2]
***Azadirachta indica A. Juss.* (Meliaceae)**	Nimba (Nim)	Tree	Lf	Extract	Oral	Given orally up to a concentration of 10%	Tripathi et al[20]
***Balanites aegyptiaca (L.) Delile* (Balanitaceae)**	Ingudi (Hingan)	Tree	Fr	Extract	Oral	30 ml/kg as per body weight.	Tripathi et al[20]
Barleria cristata L. (Acanthaceae)	(Vajradanti)	Herb	Rt	Extract	Oral	10 gm with alcohol obtained from Madhuca latifolia flowers given	Mitra et al[9]; Murty et al[10]
***Bauhinia racemosa Lam* (Caesalpiniaceae)**	Shvetkanchagna (Kachnal)	Tree	Stbk	Paste	Oral	Given twice a day for 7 days	Mali et al[8]
***Boerhavia diffusa (L.f.) Willams* (Nyctaginaceae)**	Punarnawa (Sant)	Herb	Rt	Paste	Oral	Given twice a day for 7 days	Khan et al[7]; Sahu et al[27]
			Rt	Powder	Oral	2gm given with water	Chouhan et al[33]
***Bombax ceiba L.* (Bombacaceae)**	Salmali (Semul)	Tree	Sd	Paste	Oral	30gm seed powder paste with sugar molasses given	Mitra et al[9]; Murty et al[10]; Shende et al[24]; Rajeshwari et al[57]
			Fr	Latex	Internal	Vaginal insertion	Terangpi et al[18]
***Borassus flabellifer L.* (Arecaceae)**	Tal	Tree	Fr	Extract	Oral	Given for 5 days	Bora et al[34]
***Buddlegia asiatica Lour.* (Scrophulariaceae)**	Neemda	Shrub	Rtbk	Decoction	Oral	One tea cup given	Kirtikar et al[35]
			Lf, Fl	Paste	Oral	Given	Vineeta et al[17]
***Butea monosperma (Lam.) Taub.* (Fabaceae)**	Palasha (Palas)	Tree	Sd	Powder	Oral	1 pill given after meal during night	Shende et al[24]
***Cacabela thevetia (L.) Lippold* (Apocynaceae)**	Kanher	Shrub	Sd	Paste	Oral	Seeds with sugar molasses given	Murty et al[10]
***Caesalpinia crista (Jacq.) Willd* (Caesalpiniaceae)**	Putikaranja (Karnju)	Tree	Sd	Extract	Oral	Seeds ground with sesamum oil given	Murty et al[10]
Caesalpinia pulcherima (L.) Swartz.	Ratnagandhi (Gulutora)	Tree	Bk	Juice	Oral	Given on empty stomach for 2-3 months	Ajesh et al[14]; Komaraiah et al[4]; Rajeshwari et al[5];

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
(Caesalpiniaceae)							Saravanan et al[15]
			Lf	Infusion	Oral	1 cupful is given empty stomach	Mitra et al[9]; Murty et al[10]; Rajeshwari et al[2]
			Sd	Paste	Oral	Given after meal during night for 7 days	Shende et al[24]
***Calamus thwaitessi Becc.* (Arecaceae)**	Chural	Liana	Fr	Powder	Oral	Mixed with honey, pills made & given	Ajesh et al[14]; Ajesh et al[22]
***Calotropis gigantea (L.) R. Br. Ex Ait.* (Asclepiadaceae)**	Arka (Aak)	Shrub	Lf	-	Internal	Vaginal insertion	Rekha et al[36]
			Rt	Paste	Oral	20gm one a day for 3 days	Mali et al[8]
***Calotropis procera (Ait.) R.Br.* (Asclepiadaceae)**	Alkara (Akada)	Shrub	Rt	Paste	Oral	15gm once a day for 3 days	Khan et al[7]; Mali et al[8]
			Rt	Extract	Oral	250mg/kg given.	Tripathi et al[20]
***Cardiospermum helicacabum L.* (Sapindaceae)**	Karnasphota (Kanphuti)	Climber	Wp	Extract	Oral	250mg/kg as per body weight /day for 7 days	Tripathi et al[20]
***Carica papaya L.* (Caricaceae)**	Papita (Papeeta)	Tree	Fr	Latex	Oral	10-15 ml given once a day for 3 days.	Ajesh et al[14]; Bora et al[34]; Khan et al[7]; Komaraiah et al[4]; Mali et al[8]; Patel et al[29]; Rajeshwari et al[5]; Saravanan et al[15]; Terangpi et al[18]
			Rt	Extract	Oral	Given 20-30ml	Sharma et al[31]
			Rt	Decoction	Oral	Given thrice a day	Ajesh et al[14]; Ajesh et al[22]
			Wp	Latex	Oral	Given	Prasad et al[37]
			Sd	Paste	Oral	Latex crushed with 10 seeds given	Murty et al[10]
			Fr, Sd	Pulp	Oral	Given	Patel et al[29]
***Cassia fistula L.* (Caesalpiniaceae)**	*Suvarnaka*	Tree	Sd	Extract	Oral	100 and 200 mg/kg body weight	Tripathi et al[20]
			Fr	Paste	Oral	With root extract of Plumbago indica & garlic made & given	Murty et al[10]; Rajeshwari et al[57]
***Caulophyllum thalictroides (L.) Michx.* (Berveridaceae)**	-	Shrub	rt	Decoction	Oral	Simmer 20-30 min. 1/2 to 1 cup 3-4 times a day	Tripathi et al[20]
***Celosia argentea L.* (Amaranthaceae)**	Vithuna (Safedmurga)	Herb	Rt	Paste	Oral	Given once a day for 6 days	Mali et al[8]
***Chenopodium album L.* (Chenopodiaceae)**	Bethusag	Herb	Wp	Extract	Oral	20 ml given twice a day for 2 days	Khan et al[7]
***Chrysanthemum parthenium (L.) Bth.* (Asteraceae)**	(Genda)	Herb	Lf	Decoction	Oral	Given empty stomach	Panduranga et al[12]
***Actaea racemosa L.* (Ranunculaceae)**	-	Herb	Rt	Decoction	Oral	1-4 Tbsp, 3-4 times a day	Tripathi et al[20]

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
***Cinnamomum zeylanicum Breyn.* (Lauraceae)**	Tamalpatra (Dalchini)	Tree	Bk, Rt	Decoction	Oral	With cow milk	Paul et al[38]; Vineeta et al[17]
***Citrullus colocynthis (L.) Schrad.* (Cucurbitaceae)**	Mahendravaruni (Indrayan)	Climber	Rt	Paste	External	Applied on abdomen	Shende et al[24]
			Rt	Extract	Oral	Given	Khan et al[7]
***Cocos nucifera L.* (Areaceae)**	Narikela (Nariyal)	Tree	Fr	-	Oral	Given	Gupta et al[11]
***Costus speciosus (Koeing) Sm* (Costaceae)**	Kebuka (Keu)	Herb	Rh	Paste	Oral	Given	Murty et al[10]
***Croton tiglium L.* (Euphorbiaceae)**	Jayapala		Sd	Paste	Oral	Given for 3 days	Terangpi et al[18]
***Curculago orchioides Gartn.* (Hypoxidaceae)**	Mushali (Kalimusali)	Herb	Tu	Paste	Oral	Given on empty stomach	Ajesh et al[14]; Komaraiah et al[4]; Rajeshwari et al[2]
***Cuscuta reflexa Roxb.* (Cuscutaceae)**	Amarvela	Herb	Wp	Decoction	Oral	With black pepper given empty stomach for 3 days	Khan et al[7]; Mitra et al[9]; Murty et al[10]
***Cyanodon dactylon (L.) Pers.* (Poaceae)**	Hariali	Herb	Lf	Paste	Oral	Given twice a day for 15 days	Shende et al[24]
			Wp	Extract	Oral	20-30 ml given once a day for 6 days	Mali et al[8]
***Cyclea peltata Hook. f. & Thoms* (Menispermaceae)**	Patha	Shrub	Rt	Extract	Oral	200 and 400 mg/kg body weight	Tripathi et al[20]
***Datura metel L.* (Solanceae)**	Sadahdhatura	Shrub	Rt	Decoction	Oral	Given for 5 days	Shende & Dalal[24]
			Sd	-	Oral	Soaked in cow milk for overnight & given	Ajesh et al[14]; Ajesh et al[22]
***Daucus carota L.* (Apiaceae)**	Shikhamula (Gajar)	Herb	Sd	Paste	Oral	A teaspoon of crushed seeds	Patel[29]; Tripathi et al[20]
			Sd	Paste	External	Applied on genitalia	Shende et al and Dalal et al[24]
			Lf	Extract	Oral	Given twice for 3 days	Khan et al[7]
***Dendrocalamus hamiltonii Nees & Arn. ex-Munro* (Poaceae)**	Kagshibans	Shrub	St	Extract	Oral	3 ml with root extract of *Mimosa pudica* given	Terangpi et al[18]
***Dendrocalamus strictus Roxb.* (Poaceae)**	Vansha (Bans)	Shrub	Lf	Paste	Oral	With *Hibiscus cannabinus* made in to paste & given	Murty et al[10]
***Dendrophthoe falcata (L.f.) Ettingsheausen* (Loranthaceae)**	Vanda (Banda)	Undershrub	St	Paste	Oral	With black pepper & *Plumbago indica* L. root given on empty stomach.	Mitra et al[9]; Murty et al[10]; Rajeshwari et al[2]
***Dillenia indica L.* (Dilleniaceae)**	Bharija (Chalta)	Tree	Lf	Paste	Oral	Given for 3 days	Bora et al[34]
***Dioscorea bulbifera L.* (Dioscoraceae)**	Ralalu	Herb (Vine)	Wp	Paste	Oral	Given 2 teaspoon full for 4-5 days	Shende et al[24]
Dolichos trilobus	Nishpava	Undershrub	WP	Juice	Oral	Given first 3	Ajesh et al[14];

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
***L.* (Fabaceae)**						months	Rajeshwari et al[2]
***Drosera burmannii Vahl* (Droseraceae)**	(Mukhajali)	Herb	Wp	Paste	Oral	3 gm with tubers of *Gloriossa superba* made into paste and given	Murty et al[10]
***Drymaria cordata Willd.* (Caryophyllaceae)**	(Pithpapra)	Herb	Lf	Juice	Oral	Given for 3-4 days	Bora et al[34]
			Wp	Juice	Oral	Given with milk for 4-5 days	Bora et al[34]
***Ficus religiosa L.* (Moraceae)**	Ashwathapipala (Pipal)	Tree	Lf	Extract	Oral	Given twice a day for 7 days	Khan et al[7]
Gloriosa superba L. (Liliaceae)	Langli (Karihari)	Climber	Rt/ Tu Wp	Paste Extract	Oral	20g with 7 black pepper seeds. Paste given at the bed time.	Ajesh et al(a)[14]; Komaraiah et al[4]; Mali et al[8]; Mitra et al[9]; Murty et al[10]; Rajeshwari et al[2]
					Oral	Given	Selvi et al[45]
***Gossypium arboreum L.* (Malvaceae)**	Kapas (Rui)	Herb	Rtbk	Extract	Oral	Taken sips throughout the day	Tripathi et al[20]
			Sd	Paste	Oral	Given for 5 days	Khan et al[7]
***Gossypium harbaceum L.* (Malvaceae)**	Kapas (Rui)	Herb	Rtbk	Decoction	Oral	Given	Yadav et al[41]
***Guaiacum officinale L.* (Zygophyllaceae)**	(Kosha)	Shrub	Aerial parts	Extract	Oral	480.75 mg/kg	Tripathi et al[20]
***Heliotropium indicum L.* (Boraginaceae)**	Bhurundi (Hattajauri)	Herb	Fl	Decoction	Oral	Given	Tripathi et al[20]
***Hibicus cannabinus L.* (Malvaceae)**	Nalita (Ambari)	Shrub	Fl, Sd	Paste	Oral	Given	Murty et al[10]
***Hibiscus rosa-sinensis L.* (Malvaceae)**	Japa (Jasut)	Shrub	St	Paste	Oral	15ml given for 7 days	Tripathi et al[20]
			Rtbk	Paste	Oral	100g along with seeds of black pepper. Paste with water given.	Mitra et al[9]; Murty et al[10]; Rajeshwari et al[2]; Saravanan et al[15]; Saranya et al[46]
			Stbk	Paste	Oral	15gm given for 5 days	Mali et a[l8]; Prasad et al[37]; Sarkhel et al[47]
			Rt	Extract	Oral	Given twice a day for 3 days	Khan et al[7]
			Fl	Paste	Oral	Given empty stomach for 3 days	Shende et al[24]
***Holoptelia integrifolia (Roxb.) Planch* (Ulmaceae)**	Chirabivla (Kanju)	Tree	Rtbk	Paste	Oral	With bark of Plumbago zeylanica paste is given	Murty et al[10]
***Indigofera trifoliata L.* (Fabaceae)**	Janglimethi	Herb	Lf	Decoction	Oral	Abortifacient	Dabhadkar et al[48]
***Jatropha gossypiifolia L.* (Euphorbiaceae)**	Bharenda (Ratanjyoti)	Shrub	Fr	Powder	Oral	Given	Chaudhury et al[49]

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
			Fr	Powder	Oral	Given	Vineeta et al1[7]
***Justicia adhatoda L.* (Acanthaceae)**	Vasaka (Arusha)	Shrub	Rt	Powder	Oral	1gm powder given twice a day	Panduranga et al[12]
***Kaemferia galanga L.* (Zingiberaceae)**	Chandramulika	Herb	Rh	Extract	Oral	10ml given	Terangpi et al[18]
***Lablab purpureus (L.) Sweet* (Fabaceae)**	Phali	Herb	Rt	Extract	Oral	6ml given	Terangpi et al[18]; Terangpi et al[50]
***Laurus nobilis L.* (Lauraceae)**	Gopnam	Tree	Lf	Extract	Oral	Given	Jillelamudi et al[19]
***Lawsonia innermis L.* (Lythraceae)**	Mendika (Mehndi)	Shrub	RT	Paste	Oral	With rice water given	Hemadri et al[40]
			Lf	Paste	Oral	Given once a day for 5 days	Mali et al[8]
***Lepidium sativum Wall.* (Brassicaceae)**	Chandrashura (Halim)	Herb	Rt	Extract	Oral	Given twice a day for a week	Khan et al[7]
***Leucas aspera Link.* (Lamiaceae)**	Chota halkusa	Herb	Rt	-	Internal	Vaginal insertion-20minutes	Shende et al[24]
***Linum usitatissimum L.* (Linaceae)**	Atasi (Alsi)	Herb	Sd	Paste	Oral	Given thrice a day for 3 days	Khan et al[7]
***Mentha pulegium L.* (Lamiaceae)**	Pudina	Herb	Aerial parts	Extract	Oral	20 drops of extract in a cup of hot water	Tripathi et al[20]
***Meyna spinosa Roxb. ex-Link* (Rubiaceae)**	Pinditaka (Maniphal)	Shrub	Fr	Paste	Oral	Fruit pulp with 2-3 bulbs of garlic, paste made into pills given	Mitra et al[9]; Murty et al[10]
			Fr, Sd	Paste	Internal	Vaginal insertion - With 2-3 bulb of Alliumsativum Linn. pills kept overnight	Rajeshwari et al[2]
***Michelia champaca L.* (Magnoliaceae)**	Sonchampa	Tree	Rt	Extract	Oral	Given once a day for 7 days	Khan et al[7]
***Mimosa pudica L.* (Mimosaceae)**	Lajja (Lajwanti)	Herb	Rt	Paste	Oral	Given	Shende et al[24]
***Momordica charantia L.* (Cucurbitaceae)**	Sushavi (Karela)	Climber	Fr	Juice	Oral	Given twice a day for 5 days first three months.	Ajesh et al[14]; Khan et al[7]; Komaraiah et al[4]; Rajeshwari et al[2]; Saravanan et al[15]
			Rt	Powder	Oral	Given 2gm once a day for one week	Pattanayak et al[51]
Moringa oleifera Lam. (Moringaceae)	Shobhanjana (Munga)	Tree	Fl	Powder	Oral	10gm given thrice a day for 5 days	Mali et al[8]
			Rt, Bk	Powder	Oral	Given	Mahesha N et al[52]
			Lf	Extract	Oral	-	Sethi et al[53]
***Musa balbisiana Colla* (Musaceae)**	Athiyakol	Tree	Rh	Extract	Oral	5ml given thrice a day for 2 days	Bora et al[34]; Terangpi et al[18]
***Musa ornate Roxb.* (Musaceae)**	Ramnigi kula	Herb	Lf	Juice	Oral	Given	Murty et al[10]

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
***Nerium indicum Mill.* (Apocynaceae)**	Karavira (Kaner)	Tree	Lf	Decoction	Oral	20ml given twice a day for 4 days	Mali et al[8]
***Nigella sativa L.* (Ranunculaceae)**	Mugrela (Kalongi)	Herb	Sd	Paste	Oral	Given twice a day for 7 days	Khan et al[7]
Ocimum sanctum L. (Lamiaceae)	Ajaka (Ramtulas)	Herb	Lf	Extract	Oral	100mg/kg given	Tripathi et al[20]
***Paederia foetida L.* (Rubiaceae)**	Prasarani (Gandhali)	Climber	St	-	Internal	Vaginal insertion - Tender stem used	Bora et al[34]; Terangpi et al[18]
***Papaver somniferum L.* (Papaveraceae)**	Ahifena (Afim)	Herb	Rt	Paste	Oral	Given with water	Saravanan et al[15]; Tripathi et al[20]
			Tu, Lf	Decoction	Oral	Given	Murty et al[10]; Sikarwar et al[56]
			Fr	Latex	Oral	3ml given twice a day for 3 days	Terangpi et al[18]
***Pergularia daemia (Forsk.) Chiov.* (Asclepiadaceae)**	Akasan	Shrub	Rt	Extract	Oral	A dose of 600, 400 and 200 mg/kg body weight	Tripathi et al[20]
***Persicaria hydropiper (L.)* Delabre**	(Jangli palak)	Herb	Lf/ Wp	Decoction	Oral	Given for 4-5 days	Jan et al[54]; Niyaz et al[55]
***Petroselinum crispum (Mill.) Airy-sahw* (Apiaceae)**	Ajwayan	Herb	Rt, Lf	Decoction	Oral	Given	Tripathi et al[20]
***Phyllantus amarus Schum. & Thrn.* (Euphorbiaceae)**	Jaramla	Herb	Rt	Paste	Oral	Pills made and given	Murty et al[10]
***Piper betle L.* (Piperaceae)**	Nagvalli (Pan)	Climber	St	Decoction	Oral	One teaspoonful given of 7 days	Shende et al[24]
***Plantago ovata Forsk.* (Plantaginaceae)**	Ashwakarna (Isubgol)	Herb	St	-	Oral	5 gm given empty stomach	Jain et al[30]
***Pleopeltis macrocarpa (Bory ex Willd.) Kaulf.* (Polupodiaceae)**	-	Herb	Wp	Decoction	Oral	10-15 given at night	Das et al[3]; Singh et al[39]
***Plumbago indica L.* (Plumbaginaceae)**	Lalchitraka	Undershrub	Rt	-	Oral	Roots piece soaked in cow milk & given	Hemadri et al[40]
			Rt	Paste	Internal	Vaginal insertion - Candle of about 9cm is prepared & kept overnight	Mitra & Mukherjee[9], Rajeshwari & Rani[2] Saravanan et al[15]
Plumbago zeylanica L.	Chitraka (Chitrak)	Undershrub	Rt	-	Internal	Vaginal insertion-for 15 minutes	Komaraiah et al[4]; Mitra et al[9]; Rajeshwari et al[2], Shende[24]; Sikarwar[56]
			Rt	Paste	Oral	Fresh root paste made into pills & given	Ajesh et al[14]; Murty et al[10]; Rajeshwari et al[2]
			St	Paste	Oral	Given	Terangpi et al[18]
			Rt	Decoction	Oral	Given	Yadav et al[41]
			Lf,	Decoction	Oral	Given	Taid et al[42]

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
			Rt				
Plumeria rubra L. **(Apocynaceae)**	Golachin	Tree	Bk	Powder	Oral	Given	Taid et al[42]
Punica granatum L. **(Lythraceae)**	Dadima (Anar)	Tree	Rt	Extract	Oral	Given once a day 7 days	Khan et al[7]
Raphanus sativus L. **(Brassicaceae)**	Mulaka (Muli)	Herb	Rt	Paste	Oral	Given twice a day for 7 days	Khan et al[7]
Raphanus sativus L. **(Brassicaceae)**	Mulaka (Muli)	Herb	Sd	Paste	Oral	Given	Patel et al[29]
Rhynchosia minima (L.) DC. **(Fabaceae)**	Daktaranghevda	Herb	Lf	Decoction	Oral	20 ml given twice a day for 7 days	Mali et al[8]
Rhynchosia rufescens DC **(Fabaceae)**	-	Undershrub	Lf	Decoction	Oral	Given up to 3 months	Ajesh et al[14]; Rajeshwari et al[2]; Saravanan et al[15]; Sikarwar et al[56]
Ricinus communis L. **(Euphorbiaceae)**	Eranda (Erand)	Tree	Rt	Extract	Oral	Given	Sharma et al[31]
			Sd	Paste	External	Applied on pudenda	Khan et al[7]
			Sd	Decoction	Oral	Given 2 teaspoonfuls once for 3 days	Shende et al[24]
Sapindus mukorossi Gaertn. **(Sapindaceae)**	Phenila (Ritha)	Tree	Sd	Paste	Oral	Given 1 pill after dinner for 7 days	Shende et al[24]
Saraca asoca (Roxb.) Willd. **(Fabaceae)**	Asoka	Tree	Sd	Paste	Oral	Given after meal during night for 7 days	Shende et al[24]
			Bk	Paste	Oral	Given twice a day for 7 days	Khan et al[7]
Semecarpus anacardium L. **(Anacardiaceae)**	Behla (Bhilwa)	Tree	Rtbk	Paste	Internal	Vaginal insertion-20 gm paste, small pills are prepared kept inside overnight	Mitra et al, Mukherjee et al[9]; Rajeshwari et al, Rani et al[2]
			Rtbk	Paste	Oral	20gm of fresh root paste made in to 2 pills & given	Murty et al, Vankaiah et al[10]
Sensevieria roxburghiana Schylt. F. **(Agavaceae)**	(Marul)	Undershrub	Rh	Juice	Oral	Given empty stomach	Rao et al[40]
Sesamum indicum L. **(Pedaliaceae)**	Til	Herb	Sd	Paste	Oral	With ghee and sugar given	Khan et al[7]; Yadav et al[41]
Sesbania sesban (L.) Merr. **(Fabaceae)**	Jayantika (Jayanti)	Shrub	Sd	Paste	Oral	15 gm given thrice a day for 5 days	Mali et al[8]
Smithia conferta J. E. Sm. **(Fabaceae)**	Naichibha	Herb	Lf	Extract	Oral	20-25 ml given twice a day for 7 days	Mali et al[8]
Solanum torvum Sw. **(Solanaceae)**	Gota bengan	Shrub	Lf	Extract	Oral	Given 3-5 ml for 5 days	Ajesh et al[14]; Jomy et al[43]; Komaraiah et al[4]; Rajeshwari et al[2]; Saravanan et al[15]
Solanum xanthocarpum Schrad. **(Solanaceae)**	Kantakari (Kateli)	Herb	Sd	Paste	Oral	Tablets prepared given one for 15 days	Shende et al[24]

Continued.

Botanical name and (Family)	Local name Sanskrit and/ or (Hindi)	Habit	Part used	Mode of preparation	MOA	Dose/s	Author name/s and Reference
***Stephania japonica (Thumb.) Miers.* (Menispermaceae)**	Vantiktika	Climber	Rt	Paste	Oral	30 gm given with water	Mitra et al[9]; Murty et al[10]; Saravanan et al[15]; Rajeshwari et al[2]
***Sterculia urens Roxb.* (Sterculiaceae)**	Gular (Karaya)	Tree	Rt	Extract	Oral	Given	Hemadri et al[40]
***Tabernaemontana divaricata L.* (Apocynaceae)**	Katalaripallai	Shrub	Wp	Juice	Oral	Given	Saravanan et al[15]
***Tanacetum vulgare L.* (Asteraceae)**	Peilmundi	Herb	Fl	Decoction	Oral	10 drops in a cup of warm water given after every 2 hours	Tripathi et al[20]
***Taxus wallichiana Zucc* (Taxaceae)**	Manduparni	Tree	Lf	Extract	Oral	Given	Jain et al[30]
***Tephrosia purpurea (L.) Pers.* (Fabaceae)**	Shurphnakha (Dhamasia)	Shrub	Lf	Extract	Oral	Given thrice a day for 7 days	Mali et al[8]
***Terminalia arjuna (Roxb.) Wight. & Arn.* (Combretaceae)**	Arjun	Tree	Fr	Paste	Oral	5 gm given twice a day for 7 days	Shende et al[24]
***Thevetia peruviana (Pers.) K. Schum.* (Apocynaceae)**	Ashvagna (Kaner)	Shrub	Sd	Paste	Oral	Paste with sugar molasses given bed time	Mitra et al[9]
			Sd	Decoction	Oral	Given with honey on empty stomach for 3 days	Shende et al[24]
***Trillium grandiflorum (Michx.) Salisb.* (Liliaceae)**	Nagchatri	Herb	Rt	Extract	Oral	With boiled in milk	Shukla et al[58]; Tripathi et al[20]
***Uraria lagopodioides (L.)DC.* (Fabaceae)**	Pithvan	Herb	Wp	Paste	Internal	Vaginal insertion -Paste is made into a candle which is kept inside	Mitra et al[9]; Murty et al[1]; Rajeshwari et al[2]
***Viscum articulatum Burm. f.* (Viscaceae)**	Gandhamadni (Badu)	Herb	St	Paste	Oral	Paste made into pills and given	Murty et al[58]
***Vitex negundo L.* (Verbanaceae)**	Nirgudi	Tree	Sd	Paste	Oral	Pills prepared given one for 7 days	Shende et al[24]
***Wendlandia heynei (Schult.) Santapau & Merchant* (Rubiaceae)**	Tilki	Herb	Fl	Paste	Oral	Given with milk	Shukla et al[44]
***Zingiber officinale Rosc.* (Zingiberaceae)**	Aardraka (Adrak)	Herb	Rh	Powder	Oral	2 gm once a day for 10-12 days	Sharma et al[31]
***Ziziphus nummularia Burm f.* (Rhamnaceae)**	Bhukamtaka	Tree	Rtbk	Powder	Oral	3-5 gm with sugar given	Sharma et al[31]

(Abbreviations used in table: Lf-Leaf; St-Stem; Rt-Root; Fl-Flower; Infl-Inflorescence; Stbk-Stem bark; Rtbk-Root bark; Rh-Rhizome; Tu-Tuber; Wp-Whole plant)

Plant part/s used for preparation of medicine or formulation to induce abortion, are 99 underground parts, such as root, rhizome, tuber, 49 medicinal preparations made by using leaf, fruit 35, whole plant 25, bark 13, stem 11, stembark 4, flower 8 and 3 formulations by using aerial parts (Figure 3). While analyzing the data it is observed that different methods have been used for preparation of medicine, such as, paste, extract, powder,

decoction, juice, infusion and in some cases the plant part is used as such, for example fruits and seed are eaten, while in some cases the stem root piece and candles made from paste of plant part, are used for vaginal insertion to induce abortion.

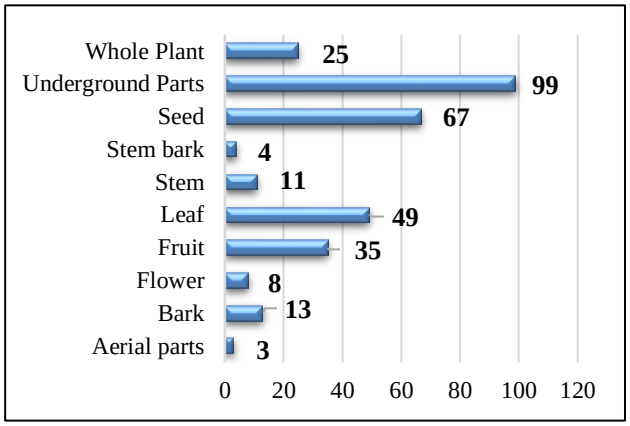

Figure 3: Number of plant parts used for inducing abortion.

Most used method of preparation was paste (112 formulations) which is followed by extract and decoction.[38,59]

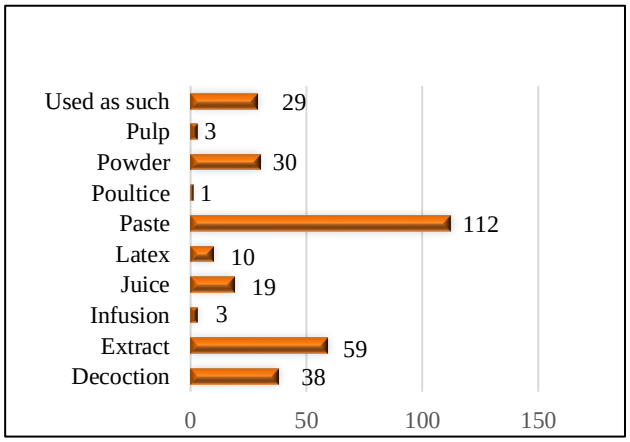

Figure 4: Mode of preparation of medicine.

As far as mode of administration is concerned, most of the formulations are given orally (272 formulations), while, 25 formulations are prescribed internally and 7 formulations for external applications, such as, application on abdomen or genitalia (Figure 4). The medicine given, with water or lukewarm water/ milk/ honey/ sugar, etc. is observed.

DISCUSSION

Ethno-medico-botanical studies broadly specifies the use of plants as a source of medicine and has imparted with enormous knowledge on medicine properties of plants. These studies have provided lead as various plants were taken up for drug discovery initiatives. Several works have been done towards documentation of traditional knowledge of plants used to induce abortion. Present systematic review is based on 58 research papers and provide the information of 136 plant species used to induce abortion in India.

Besides this some review articles published earlier, such as, Rajeshwari and Rani have given caused of abortion and discussed 30 medicinal plants used to induce abortion.[2] Das and Patra, have provided the details of 47 plants used for treating women's disorders, of which 4 plants are used as abortifacient.[3] Saravanan et al has done review on the literature published on plants used induce abortion and compared the allopathic treatment with the 13 plants used as abortifacients.[15] Some notable works on plants used to induce abortion Mali et al have provided the details of 21 plant species.[8]

Mitra and Mukherjee et al given information of 22 plants, Murty and Vankaiah et al given the details of 32 plants.[9,10] Rajeshwari and Rani et al 32 plants Saravanan et al 14 plants, Shende and Dalal 21 plants.[2,15,24] Terangpi and Yasmin 13 plants.[18] Tripathi et al 25 plants.[20] Ajesh et al and Khan and Khan have provided the details of 27 plants used to induce abortion.[18-20,22] Present paper gives plant part used to prepare formulation, method of preparation of formulation of medicine, mode of administration and doses wherever available.

CONCLUSION

Tradition of practicing herbal medicines to cure various diseases in India age old. Even in today's modern era most of the people trust herbal medicines for primary health care needs. Besides Ayurveda and other Indian Systems of medicines, several studies have been conducted on plants about its medicinal use to treat various diseases. Present review provides the data based on 58 research publications on use of plants to induce abortion. Total 136 plant species are used for making 304 formulations/medicines are reported. Analysis of the data gathered shows that has reach reservoir of traditional knowledge about plant medicine. This study will give leads for further research in the field of biochemistry, pharmacognosy, pharmacology as well as drug discovery initiatives.

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REFERENCES

1. WHO-Abortion. Available at: http://www.catholicnewsagency.com. Accessed on 5th September 2013.
2. Rajeshwari J, Rani S. Medicinal plants used as abortifacients-a review. Int J Pharm Sci Rev Res. 2014;24(1);129-33.

3. Das D, Patra B. Traditional pteridophytic herbal medicines and reproductive health disorders in women- A Review. J Phytopharmacol. 2021;10(6):490-5.
4. Komaraiah K, Rao SS, Kumuthakalavalli R, Subbu R. Herbal abortifacients used by Paderu Tribes in Visakhapatnam district of Andhra Pradesh, India. J Medi Plants Stud. 2017;5(4):107-9.
5. Dash K, Satapathy CS. Ethno medicinal uses of plants related to gynecological problem among the Mundas of Jajpur district of Odisha, JMPS. 2016;4(6):248-51.
6. Shah GM, Khan MA, Ahmad M, Zafar M, Khan A. Observations on antifertility and abortifacient herbal drugs. Afr J Biotechnol. 2009:8(9);1959-64.
7. Khan AV, Khan AA. Herbal abortifacients used by folk people of some districts of western Uttar Pradesh (India). J Nat Remed. 2003;3(1):41-4.
8. Mali RG, Hindiwale JC, Gavit RS, Patil DA, Patil KS. Herbal Abortifacient used in North Maharashtra. Natur Prod Rad. 2006;5(4):315-8.
9. Mitra S, Mukherjee S. Some Abortifacient Plants used by the Tribal people of West Bengal. Natur Prod Rad. 2009:8(2);167-71.
10. Murty PP, Venkaiah M. Some Abortifacient Plants used by the Tribal people of Andhra Pradesh, India. J Phytolog. 2010;2:7-12.
11. Gupta U, Solanki H. Herbal folk remedies used in treatment of Gynaecological disorders by tribals of Simalwara Region, Dungarpur, Rajasthan. Int J Pur Appl Sci Technol. 2013;17(1):100-7.
12. Panduranga RM, Prasanthi S., Reddy STVV. Medicinal plants in folk medicine for women's disease used by Konda Reddis. IJTK. 2011;10(3):563-7.
13. Tarafder CR. Ethnomycology in relation to plants-II. Plants used in abortion. J Econ Tax Bot. 1983;4:507-16.
14. Ajesh TP, Krishnaraj MV, Prabhu M, Kumuthakalavalli R. Herbal abortifacients used by Mannan Tribes of Kerala, India. Int J Pharm Tech Res. 2012;4(3);1015-7.
15. Saravanan S, Srinivasan GR, Shylaja G, Babu GN. A review of medicinal plants used as abortive. Plant Cell Biotechnol Mol Bio. 2020;21(5,6):69-73.
16. Ghosh A. Herbal folk remedies of Bankura and Medinipur districts, West Bengal. Ind J Trad Know. 2003;2(4):393-6.
17. Vineeta, Shukla G, Bhatt JA, Chakravarty S. Folk therapeutic uses of ethnomedicinal plants to cure gynecological disorder-a meta-analysis of West Bengal State in India. Ethnobotany Research and Applications. 2022;24:1-19.
18. Terangpi R, Yasmin F. Medicinal plants used as abortifacient among Karbis of Assam, India. J Nat Rem. 2021;4:297-302.
19. Jillelamudi S, Ankem NB, Jada NL. Abortifacient activity of *Aegle marmelos* and *Laurus nobilis* leaf extracts. Pre-Clinical Research. 2023;1:9657.
20. Tripathi R, Dwivedi SN, Dwivedi S. Ethno-medicinal plants used to treat gynecological disorders by tribal people of Madhya Pradesh, India, IJPLS. 2010;1(03):160-9.
21. Adhikari PP, Talukdar S. Borah A. Ethno-medico-botanical study of indigenous knowledge on medicinal plants used for the treatment of reproductive problems in Nalbari district, Assam, India. J Ethnopharmacol. 2018;210:386-407.
22. Ajesh TP, Kumuthakalavalli R. Ethnic herbal practices for gynecological disorders from urali tribes of Idukki district of Kerala, India. Int J Pharm Life Sci. (IJPLS). 2012;3(12):2213-9.
23. Behara KK. Plants used for gynecological disorders by tribals of Mayurbhanj district, Orissa, India. Ethobotanical Leaflets. 2006;10:129-38.
24. Shende JJ, Dalal LP. Ethnomedicinal plants used as abortifacient, contraceptive and messes in rural area of Wardha District of Maharashtra State, India. JETIR. 2022;9(1):196-209.
25. Singh R. Plants Used by Gond and Baiga Women in Ethnogynaecological Disorder in Pali Block Umaria District, M.P. Int J Adv Res. 2017;5(4):546-8.
26. Srivastava S, Mishra N. Medicinal Herbs Used for Gynecological Problems: An Overview. Research. J Pharmacog Phytochem. 2009;1(3):177-81.
27. Kumar SP. Plants used by Gond and Baiga women in ethnogynaecological disorders in Achanakmar wild life Sanctuary Bilasur CG. Int J Pharm Life Sci. 2011;2(2):559-61.
28. Balamurugan S, Vijayakumar S, Prabhu S, Yabesh JEM. Traditional plants used for the treatment of gynecological disorders in Vedaranyam taluk, South India-An ethnomedicinal survey. J Tra Complem Med. 2017;8(2):308-23.
29. Patel PK, MK Patel. Ethnogynaecological Uses of Plants from Gujarat, India. Bangladesh J Plant Taxon. 2012;19(1):93-4.
30. Jain SK. Dictionary of India folk medicine and ethno biology Deep. Publications, New Delhi. Research in Plant Sciences. 2017;5(2)51-9.
31. Sharma PP and Singh NP. Ethnobotany of Dadra Nagar Haveli and Damna (UT). Botanical Survey of India, Kolkata. (Govt Publication). 2001; Avialable at: https://bsi.gov.in/uploads.
32. Shukla Manisha. A case study of medicinal plants used by local women for gynecological disorders in Karaikal (U.T. of Puducherry). J Phytol. 2012;4(5):9-12.
33. Chouhan P, Garg AK. The use of traditional medicinal herbs for the treatment of

gynecological disorders in The Rajasthan State, India. Int J Rec Sci Res. 2020;11(10):39924-7.
34. Bora D, Mehmud S, Kangkan K, Das R, Medhi H. Report on folklore medicinal plants used for female health care in Assam (India). Inter J Herbal Med. 2016;4(6):4-13.
35. Kirtikar KR, Basu BD. Indian Medicinal plants. 1935;1(4):23.
36. Rekka R, Murugesh S, Prabakaran R. Plants used by Malayali Tribes in Ethnogynaecological disorders in Yercaud hills, Southern Eastern Ghats, Salem District, Tamil Nadu. Science Research Reporter. 2013;3(2):190-2.
37. Prasad DAG, Shyma TB, Raghavendra MP. Traditional Herbal Remedies Used for Management of Reproductive Disorders in Wayanad District, Kerala. IJRPC 2014;4(2):333-41.
38. Paul A. Indigenous uses of ethnomedicinal plants among tribal communities of Ajodhya Hill region of Purulia District, West Bengal, India. Int J Med Sc. 2021;8(7):13-9.
39. Singh S, Singh R. Ethnomedicinal use of pteridophytes in reproductive health of tribal women of pachmarhi biosphere reserve, Madhya Pradesh, India. Int J Pharm Sci Res. 2012; 3(12):4780-90.
40. Hemadri K, Rao SS. Antifertility, Abortifacient and fertility promoting drugs from Dandakaranya. Ancient Sci Life. 1983;3:103-7.
41. Yadav JP, Kumar S, Siwach P. Folk medicines used in gynecological and other related problems by rural population of Haryana, IJTK. 2006;5(03):323-6.
42. Taid TC, Rajkhowa RC, Kalita JC. A study on the medicinal plants used by the local traditional healers of Dhemaji district, Assam, India for curing reproductive health related disorders. Adv Appl Sci Res. 2014;5(1):296-301.
43. Jomy A, Sreejesh KR, Bijeshmon PP. Ethnogynecological use of plants prevalent among the tribes of Periyar Tiger Reserve, Western Ghats, Indian J Trad Knowl. 2010;9(1):73-6.
44. Shukla R, Chakravarty M, Gautam MP. Indigenous medicine used for treatment of gynecological disorders by tribal of chhattisgarh, India, JMPR. 2008;2(12):356-60.
45. Selvi P, Murugesh S. Survey of ethno-medicinal plants used gynecological disorders by rural people for Kanjamalai, Southern Eastern Ghats, Salem District. JETIR. 2019;6(1):583-9.
46. Saranya S, Prasannan P, Jeyaram Y, Palanivel V, Pandian A, Ramasubbu R. Knowledge on ethnogynaecology of Indian Tribes- a comprehensive review. J Ethnopharmacol. 2023;303:1-8.
47. Sarkhel S. Ethnogynaecological uses of plants by the Lodha Community of Paschim Medinipur District, West Bengal. World J of Alt Med. 2014;1(1):1-4.
48. Dabhadkar D, Zade V. Abortifacient Efficacy of Indigofera Trifoliata Leaves Extract on Female Albino Rats. Asian J Pharm Clin Res. 2013;6(3):75-9.
49. Choudhury S, Sharma P, Choudhury MD, Sharma. GD. Ethnomedicinal plants used by Chorei tribes of Southern Assam, North Eastern India. Asian Pac J Trop Dis. 2012;2:141-7.
50. Terangpi R, Jabin Rosni, Basumatary D, Yasmin F. Traditional use of *Lablab purpureus* (L.) Sweet as an abortifacient and antifertility among Karbi tribe of Assam, North East India. Plant Science Today. 2024;11(1):129-36.
51. Pattanayak S, Mandal TK, Bandhopadhyay SK. Etho-gyanecological study on the medicinal plants used in southern districts of West Bengal, India. Ind J Trad Know. 2016;15(3):482-6.
52. Mahesha N, Shrishail. Documentation of traditional herbal remedies for gynaecological disorder in Women of Chitra Durga District, Karnataka, India. J Bio Env Sci. 2023;22(4):168-74.
53. Sethi N, Nath D, Shukla Sc, Dyal R. Abortifacient activity of a medicinal plant "*Moringa oleifera*" In Rats. Ancient Science of Life. 1988;7(3,4);172-4.
54. Jan M, Khare RK, Mir TA. Medicinal Plants used during Pregnancy and Childbirth in Baramulla district of Jammu and Kashmir, India. Ethnobotany Research and Applications. 2021;22(23);1-19.
55. Niyaz M, Syed A, Hussain A, Rayees AM. Medicinal plants used against gynecological disorders by the local inhabitants of District Budgam, Kashmir Himalaya. Ethnobotany Research and Applications. 2023;1:25-53.
56. Sikarwar RLS. Ethnogynoecological uses of plants new in India. Ethnobotany, 2002;14:112-5.
57. Rajeshwari R, Murugesh S. Ethnogynaecological Disorders of Medicinal Plants used by tribal people in Gedamalai, Namakkal district, Southern Eastern Ghats, Tamilnadu. IJPSR. 2019;10(12):5559-64.
58. Shukla M, Begum YR, Mishra M. A Case Study of medicinal plants used by local women for gynecological disorders in Karaikal (U.T. Pondicherry). J Phytol. 2012;4(5):9-12.

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