Chapter 1
Introduction
1.1 Herbal medicine

According to Wambebe (1990), approximately 80% of the world’s population depends wholly or partially on traditional medicine for its primary healthcare needs. There are some communities, which solely rely on traditional medicines. Despite many allopathic medical facilities being made available by Government hospitals and health centres, most of the people still depend only on traditional medical practitioners. This might be due to easy accessibility and being cheap. It is also said that 72.19% of the population of India resides in villages (Anonymous, 2011). Generally, it is observed that tribes live in deep forests, which are sometimes inaccessible. Such tribes have developed very first knowledge by sheer necessity, observation and experimentation that has been perpetuating from generation to generation. This process is going on over the ages (Maheshwari, 1983).

India has very rich biodiversity. There are about 47,000 species of plants reported from India. Among 17,500 Angiosperms, 5400 are endemic to India, about 9500 species that are ethnobotanically important, 8000 are used as medicine, 3900 are edible and 880 are in trade (Mittermeier et al., 2005). Considering the limitations of allopathic drugs, the use of herbal medicine has led to a sudden increase in the number of consumers and perhaps herbal drug manufactures. Herbal medicines as the major remedy in traditional system have been used since antiquity. Their health benefits have made impact in many parts of the world towards maintaining human health (Patwardhan et al., 2005). In the western world, as the people are becoming aware of side effects of the synthetic drugs, there is an increasing interest in the herbal products (Verma and Singh, 2008). Certain advantages of the use of herbal medicines are as follows (Singh et al., 2015):

a) Herbal medicines have long history of use, patient tolerance and acceptance, and excellent safety profile.

b) They constitute a renewable source and serve as sustainable supply of cheaper medicines.

c) Easy and sufficiently available, especially in India because of its rich biodiversity.

d) Ease of cultivation in India owing to its different agro-climatic zones.
1.2 Use of plants in Indian Traditional Medicinal Systems

Most of the plants are being widely tested and accepted over a period of time and became part of the codified Indigenous Systems of Medicine viz. Ayurveda, Siddha, Unani etc. (Jain, 2004). A comparison of plant usage across different systems of medicine clearly indicates the difference in use pattern of plants. Table 1 shows that the number of plants used are highest in Folk system followed by Ayurveda (Pitroda, 2000).

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<th>Medicinal system</th>
<th>Ayurveda</th>
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<th>Modern</th>
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The bold figures indicate the count of plants used in each system and common between folk and other systems

1.3 Ayurveda

Ayurveda, a system of Indian traditional medicine, is being practiced for over 5000 years (Garodia et al., 2007). Ayurveda mainly focuses on use of plant-based medicines for treatment of various disorders (Parasuraman et al., 2014). Although, Ayurvedic medicines have specific healing power, some formulations also provide the vital life-support as antioxidants (Hegde et al., 2008). Herbal medicinal products are complex mixtures, which originate from natural sources. Therefore, there is a perception that Ayurvedic formulations are safer than synthetic chemicals (Patwardhan et al., 2005).

These plants are used either individually or in formulations. Several applications of a particular plant are used in various formulations for different purposes. For example, a common plant called Emblica officinalis has nearly 180 formulations. There are many instances in Ayurveda for application of a single plant
for multiple uses, for instance, *Azadirachta indica* has 42 reported uses, *Centella asiatica* has about 33, *Pergularia daemia* with 23, *Aristolochia indica* 22, *Alstonia scholaris* 19 and *Holarrhena pubescens* has 18 reported uses (Ajitkumar, 2003). Several formulations are mentioned in Ayurveda and to quote a few, *Asokarista, Chandraprabha vati, Dantyadyarista, Dashamoola, Kutajavaleha, Lohasava, Maha yogaraja guggulu, Punarnavasava, Rohitakarista, Trimad, Triphala Guggulu, Triphala, Usirasava* etc. They are being prescribed for the management of diverse pathological conditions (Anonymous, 2003). *Dashamoola* is one of the most commonly used combinations of herbs in Ayurveda. It has been praised for its potent *Vata* alleviating properties, which in turn are useful in many of the disorders from simple inflammatory conditions to chronic degenerative problems (Anonymous, 2003; Dawane et al., 2012a).

1.4 **Dashamoola**

According to the Ayurvedic Pharmacopoeia of India (API) (Anonymous, 1990), *Dashamoola* formulation is believed to have the potential for providing relief from inflammation. It is mentioned under *Shothahara* (anti-inflammatory) and *Vata hara* drugs (Sharma, 1983). *Dashamoola* formulations are mainly used for *Vatavyadhi*. This combination is used as a standard Ayurvedic therapy for inflammatory disorders and to reduce pain and fever associated with inflammation (Dawane et al., 2012a). The plants used in the preparation of formulation are divided into two categories viz. *Brihatpanchamoola* and *Laghupanchamoola*. *Brihatpanchamoola* category includes 5 tree species namely, *Aegle marmelos* (L.) Corr., *Premna obtusifolia* R. Br., *Gmelina arborea* Roxb., *Oroxylum indicum* Vent. and *Sreerospermum colais* Mabb. *Laghupanchamoola* category includes 5 herb species namely, *Desmodium gangeticum* (L.) DC., *Solanum anguivi* Lam., *Solanum virginianum* L., *Tribulus terrestris* L. and *Uraria picta* (Jacq.) Desv. ex DC (Section 1.10; Figure 5 to 14).

Although, these roots individually possess various beneficial activities, together in a specified proportion, they are used as a standard Ayurvedic therapy for inflammatory disorders and to reduce pain and fever associated with it (Singh et al., 2008; Dawane et al., 2012a).

During the ethnobotanical survey of different tribes in Maharashtra, it is observed that all the plants from *Dashamoola* are regularly in use to treat various
ailments of inflammatory origin during post pregnancy phase (Jagtap et al., 2006, 2009; Jagtap and Deokule 2010; Junjarwad et al., 2011). They are used individually or in different formulations. Even the plant parts used are different for the treatment of same disease in same formulation. For example, stem and leaves of *Uraria picta* are given during first ten days after pregnancy to clean the uterus. Similarly, leaves and stem of *Desmodium gangeticum* are given during post pregnancy period to prevent low back pain. Bark of *Aegle marmelos* has similar effect as the root have in *Dashamoolarishta* formulation to treat certain inflammatory condition. The very well known tribe ‘Pawara’ from the Satpura hills of Maharashtra are routinely using all these plants for better pregnancy outcome. They have a parallel system of diet of medicinal plants during nine month of pregnancy period. It is very similar to the *Dashamoolarishta* and well known concept ‘Masanumasik’ in Ayurveda but not in systematic way as mentioned in Ayurveda (Jagtap et al., 2006, 2008; Yadav and Patil, 2001).

1.5 Formulations and dosage forms

Medicinal plants, according to Ayurvedic pharmacology, are classified into different groups based on their actions of which ‘Rasayana’ is considered as one of the most effective group of herbal preparations. The word ‘Rasayana’ literally means the path that ‘Rasa’ takes (‘Rasa’: plasma; Ayana: path). It is believed, in Ayurveda that the qualities of the ‘Rasadhatu’ influence the health of other Dhatus (tissues) of the body (Sharma, 1983; Ghanekar, 1981). Hence, any medicine that improves the quality of ‘Rasa’ (‘Rasayana’) should strengthen or promote the health of all tissues of the body. ‘Rasayana’ drugs act inside the human body by modulating the neuro-endocricno-immune systems and have been found to be a rich source of antioxidants (Brahma and Debnath, 2003). These Rasayana plants are said to possess various properties like, prevention of ageing, re-establish youth, strengthen life, brain power and prevent diseases (Sharma, 1983; Ghanekar, 1981), all of which imply that they increase the resistance of the body against any onslaught.

Formulations are the mixtures prepared according to prescribed combinations. In Ayurveda, medicinal plants are used singly or in combination (formulation), either in crude or in processed form to attain the desired effect. Different types of formulations are available for the treatment of various ailments (Parasuraman et al., 2014).
Dosage forms are the type or form of preparations wherein drugs are processed to attain the desired effect. Various types of dosage forms of drugs are prescribed to increase the therapeutic efficacy of drug, for sustained (controlled) effect, for applications to accomplish quick and prolonged action, on the basis of shelf life. The type of processing for the drugs depends on nature of the raw material (fresh or dry), required concentration of the dosage form, solubility of therapeutically useful component of the plant, heat stability of therapeutically useful component of the plant, route of administration and shelf life of prepared dosage form (Savrikar and Ravishankar, 2010).

The most commonly prescribed dosage forms are Anjana (drugs used for internal application in eyes), Asava and Arishta (self fermented alcohol), Avaleha (electuary or syrups), Churna (powder form), Dhup (Fume, fumigation), Ghrita (preparation with Ghee), Guggul (extract of gum), Hima (cold infusion), Kalpa (paste), Kalpa (solid preparations in the form of granules), Kwatha or Kashaya (decocion), Lepa (External application), Mishra (Miscellaneous preparations), Nasya (Nasal drops), Pak (Semi - solid sweet preparation), Phanta (hot infusion), Swarasa (juice), Tail (Oil), Vati or Gutika (tablet), etc. (Savrikar and Ravishankar, 2010; Gupta et al., 2011b).

Out of various dosage forms of Dashamoola described in Ayurveda, some frequently prescribed are Dashamoolarishta, Dashamoola Churna, Dashamoola Ghrita, Dashamoola Kalpa, Dashamoola Kwatha and Dashamoola Oil. These dosage forms are routinely used to treat inflammatory disorders (Anonymous, 2003; Sekar and Mariappan, 2008; Mishra et al., 2010a; Tambekar and Dahikar, 2010). Korku tribes of Melghat and Pawra tribes of Satpura hills routinely use Brihatpanchamoola Churna and Laghupanchamoola Churna for the management of different inflammatory conditions (Jagtap et al., 2006; Jagtap et al., 2009; Junjarwad et al., 2011).

The most routinely used dosage forms of Dashamoola, selected in the present study are as follows:

1. Dashamoola Arishta
2. Dashamoola Kalpa
3. Dashamoola Kwatha
4. Dashamoola Churna
1.5.1 *Dashamoola Arishta (Dashamoolarishta)*

*Arishtas* are known as one of the valuable and unique therapeutics due to their efficacy, stability and desirable features (Sayyad et al., 2012). They are unique liquid dosage form, mainly fermented decoctions or self-generated herbal fermentations (Sekar and Mariappan, 2008; Nandre et al., 2012; Sayyad et al., 2012). Along with spices and Jaggery or Sugar, flowers of *Dhathakipushpa* (*Woodfordia fruticosa* Kurz) are added which assists natural fermentation. This mixture is kept as such for one month which results in natural fermentation. Some additional spices are also added into the formulations to improve assimilation. The process of fermentation facilitates the extraction of the active principles in the formulation. Only less than 12% (by volume) alcohol would be present in these preparations (Nandre et al., 2012) (Figure 1a).

1.5.2 *Dashamoola Churna*

*Churna* is a fine powder of drug or drugs, which are cleaned and dried properly. The drugs are separately powdered and sieved. All powders are weighed separately, and well mixed together. This method of powdering and weighing separately is preferred as some of the drugs contain more fibrous matter than other. The powder is fine of at least 80 mesh sieves. It should not adhere together or become moist. The finer the powder, the better is its therapeutic value. The drugs can be used internally as well as externally (Anonymous, 2003; Angadi, 2011; Arun et al., 2014) (Figure 1b).

1.5.3 *Dashamoola Kalpa*

Kalpa is a type of solid preparation. It is prepared by adding jaggery and/or sugar with the decoction of prescribed drugs. The mixture is heated on low flame to get granules. Kalpa is taken along with milk (Arun et al., 2014) (Figure 1c).

1.5.4 *Dashamoola Kwatha*

Kwatha is a basic preparation in which coarse powder of the recommended drug is boiled with different ratio of water. For soft drugs 4 parts of water is used, for medium and hard drugs 8 parts of water is used and for very hard drugs 16 parts of water is used. The mixture is heated on low flame till it is reduced to 1/8th of its original volume (Sharma, 1983; Arun et al., 2014) (Figure 1d).
Figure 1: Dosage forms of *Dashamoola*

a) *Dashamoolarishta*  
b) *Dashamoola Churna*  
c) *Dashamoola Kalpa*  
d) *Dashamoola Kwatha*
Dashamoola in its different dosage forms is used as a standard Ayurvedic therapy for inflammatory disorders and to reduce pain and fever associated with it (Dawane et al., 2012a & b).

1.6 Inflammation

The word ‘inflammation’ is derived from the Latin word ‘inflammare’ which means ‘to set on fire’. Inflammation is a host response against foreign pathogens or tissue injury. It is the major and complex reaction against infection upon tissue injury which eventually leads to the restoration of normal tissue structure and function (Khan and Khan, 2010; Kindt, et al., 2004). Tissue damage caused by a wound or by an invading pathogenic microorganism induces a complex sequence of events; collectively known as the inflammatory response (Richard et al., 2003). It is a very complex and tightly regulated sequence of events that act as a primary line of protection by restricting the tissue damage or pathogen invasion to the site of injury or infection (Vane and Botting, 1987).

There are five cardinal signs of inflammation viz. redness (rubor), heat (calor), swelling (tumor), pain (dolor) and loss of function (functio laesa). These signs reflect the three major events of an inflammatory response viz. vasodilation, increase in capillary permeability and influx of phagocytes (Richard et al., 2003). Inflammatory response is given by body in the process of repair of the damage. It involves the reaction of blood vessels, leading to accumulation of fluid and leukocytes in extravascular tissues. The process destroys or dilutes the injurious agent through a series of events that ultimately try to heal and reconstitute the damaged tissue (Kumar et al., 2004). Both adaptive and innate immune systems are involved in the inflammatory response to pathogenic induces (Asija et al., 2014).

Variety of stimuli can trigger the inflammatory response and the phenotype of inflammation is dependent on the kind of the stimulant (Hamilton et al., 1999; Gordon et al., 1995). At the time of tissue injury or pathogen invasion, the process of inflammatory response starts, which is taken up by the innate immune system. This response can be seen in two ways i.e. in physiological condition, it protects our body against further tissue damage and repairs the damage; in case of pathological condition it leads to tissue destruction and organ dysfunction. This states the importance of controlled inflammatory response. Although, controlled inflammatory
response is beneficial, it can become detrimental if it is dysregulated (Medzhitov, 2008).

Based on duration, severity and presence of inflammatory cells at the site, inflammation can be categorised into two forms, acute and chronic (Richard et al., 2003).

1.6.1 Acute inflammation

Acute inflammation is the initial response given by the body against harmful stimuli which requires healing and repair in order to restore and maintain homeostasis of the body. Acute inflammatory response has a rapid onset and lasts a short while (Richard et al., 2003). It is an immediate reaction and normal process leading to healing and repair of the local injury (Paul, 2003). At the time of tissue injury, there is an increase in the diameter of blood vessels (Vasodilation) of nearby capillaries due to constriction of vessels that carry blood away from the affected area resulting in engorgement of the capillary network (Richard et al., 2003). These engorged capillaries are responsible for tissue redness (erythema) and an increase in tissue temperature. Further it leads to increase in capillary permeability that facilitates an influx of fluid and cells from the engorged capillaries into the tissue. The accumulated fluid (exudate) contributes to tissue swelling (edema). After few hours of tissue injury, a multistep process called emigration of phagocytes occurs, that includes adherence of the leukocytes to the endothelial wall of the blood vessels (margination), followed by their emigration between the capillary endothelial cells into the tissue (diapedesis or extravasation) and finally, their migration through the tissue to the site of the invasion (chemotaxis). Leukocytes initiate the inflammatory process by releasing lytic enzymes in the phagocytosis of invading foreign particles. This process is also responsible for the release of various inflammatory mediators that contribute to the recruitment of other effector cells in the inflammatory process (Basset et al., 2003; Paul, 2003; Richard et al., 2003; Medzhitov, 2008). Thus, tissue damage or pathogen invasion results into the production of various pro-inflammatory and inflammatory mediators from the mast cells, blood platelets and various leukocytes - (Williams and Morley, 1973). The overall process of cells and cell mediators involved in the inflammatory process is shown in Figure 2 (Richard et al., 2003). After a complex series of reactions the foreign threat is eliminated from the body and the inflammatory condition fall down due to the activity of various anti-inflammatory mediators. But, in
certain conditions where the inflammatory condition persists for a longer duration, it leads to an advance stage of inflammation i.e. chronic inflammation (Richard et al., 2003).

**Figure 2: Overview of the cells and mediators involved in the local acute inflammatory response**

1.6.2 **Chronic inflammation**

Due to the mode of defence involved in the acute inflammation, it is considered as a beneficial process for the body. But when this condition continues to persist even after the elimination of foreign threat, it leads to tissue damage and an advance stage of inflammation i.e. chronic inflammation (Medzhitov, 2008). It involves the release of various hydrolytic enzymes, reactive oxygen and nitrogen intermediates by a large number of activated macrophages, which are responsible for the damage to the surrounding tissue. Chronic inflammation and related disorders are consequence of unresolved inflammation which occurs due to an imbalance between tissue damage and tissue repair (Lee and Surh, 2012).

In case of acute inflammation, the initial leucocyte infiltrate contains mostly neutrophils and after 24 to 48 hours, monocytic cells are predominant. In contrast,
chronic inflammation is associated with the presence of mononuclear cells, such as macrophages and lymphocytes (Gabay, 2006).

The inflammatory process is very complex which involves the interaction between many different types of cells, soluble mediators and tissue matrix (Kushner, 1998).

A variety of soluble factors also play major role in inflammatory response. Most of them are involved in the regulation of activation of resident cells such as fibroblasts, endothelial cells, tissue macrophages and mast cells. Along with this, they also activate the newly recruited inflammatory cells such as monocytes, lymphocytes, neutrophils, and eosinophils. Some of the soluble factors modulate the systemic responses to the inflammatory process such as fever, synthesis of acute phase proteins, leukocytosis, cachexia (Feghali and Wright, 1997).

The soluble factors that mediate these responses fall into four main categories (Feghali and Wright, 1997) as given below,

a) Inflammatory lipid metabolites; such as platelet activating factor (PAF) and the numerous derivatives of arachidonic acid (prostaglandins, leukotrienes and lipoxins), which are generated from cellular phospholipids.

b) Three cascades of soluble proteases/substrates (clotting, complement and kinins), which generate numerous pro-inflammatory peptides.

c) Nitric oxide; a potent endogenous vasodilator.

d) A group of cell-derived polypeptides, known as cytokines. They are major determinants of the make-up of the cellular infiltrate, the state of cellular activation, and the systemic responses to inflammation.

Figure 3 (Feghali and Wright, 1997) represents the cytokines involved in acute and chronic inflammatory responses.
1.6.3 Reactive Oxygen Species (ROS)

As reactive oxygen species are produced in the human body as a consequence of metabolic processes, their over synthesis can damage all types of cellular macromolecules including proteins, carbohydrates, lipids and nucleic acids leading to the onset of degenerative diseases (Lefkowitz et al., 1999). Reactive oxygen intermediates (ROI) are believed to be mediators of inflammation and responsible for the pathogenesis of tissue destruction (Thabrew et al., 2001). An inflammatory response implicates macrophages and neutrophils that secrete a number of mediators viz. eicosinoids, oxidants, cytokine, lytic enzymes, etc., which are responsible for initiation, progression and persistence of acute or chronic state of inflammation. Role of ROS/RNS (Reactive Nitrogen Species) in inflammation is clearly demonstrated by the anti-inflammatory effects of the antioxidants (Lefkowitz et al., 1999; Govindarajan et al., 2005).
1.7 Ayurveda and inflammation

In Ayurveda, it is mentioned that there are six phases of disease progression. If the disease is treated at its first or second phase, its further progression can be prevented. These two phases mainly involve the *vatavyadhi* which is correlated with inflammation that is the first step of most of the disorders (Kumari, 2015). This inflammation is known by different names in different circumstances, namely Shotha, Shopha, Svyayatu, Utsedha and Samhata; and can be treated as a symptom of a disease, an independent disease and a complication of diseases (Vinaya, 2013).

According to Ayurveda, human health is based on the balance of an individual’s physiology (Doshas), digestive processes (Agni), tissue (Dhatus) and excretion (Malas). The defects in human functional units, such as Vata (nerve impulses), Pitta (enzymes and hormones) and Kapha (body fluids) may result into different types of inflammation (Kataria and Kaur, 2013). As given in Figure 4, in women’s life, from 0 to 16 years of age, Kapha is very predominant, from 16 to 35 years of age Pitta is predominant and from 35 years of age onwards Vata is very predominant. This elevated vata is common in the Perimenopausal phase. It is the transient phase from premenopausal to postmenopausal phase (Torpy et al., 2003). If it remains untreated, it leads to onset of various inflammatory disorders like pelvic inflammatory disease, arthritis, endometriosis and the most prevalent form like cervicitis (Gutmann, 1995; McIver et al., 2009). Flow of patients in Gynecology Department of Ayurvedic Hospital, Bharati Vidyapeeth Deemed University has majority of patients affected with cervicitis.
1.8 Perimenopausal cervicitis

Considering the patient flow affected with cervicitis at Bharati Ayurved Hospital, Pune, Maharashtra and use of Dashamoola for the treatment of cervicitis, this disease was selected for the validation of newly developed formulation. Since, no authentic data was available on its prevalence, an exploratory survey was planned to find out prevalence of cervicitis.

Cervicitis is an inflammation of the uterine cervix, most often caused by infection. However, in a few cases it may be attributed to chemical exposure or a foreign body, such as a pessary (a device inserted into the vagina to support the uterus), cervical cap (a birth control device), or diaphragm. The condition may also be caused by an allergy to contraceptive spermicides or to latex in condoms (Ness et al., 2004). In cases of cervicitis attributed to foreign objects, infection is still frequently the cause, but the presence of the foreign object may make the cervix more susceptible to infection (Falk et al., 2005). The symptoms of cervicitis include abnormal vaginal discharge, cervical bleeding after coitus, cervical ectopy, elevated vaginal PMNL (polymorpho-nuclear leukocytes) count and vaginal pain. Also, there are evidences that many times it is asymptomatic (Manhart et al., 2003).
In urban areas due to awareness about disease, most of the time women are concerned about their health, which is not the case in every rural population. It in turn leads to negligence of the condition. In some cases, although there is awareness about cervicitis, the potential of discomfort with physical examination may lead to avoidance for the diagnostic tests and treatment of cervicitis (Phumdoung and Youngvanichsate, 2009; Poleshuck and Woods, 2014).

Though, it is a common clinical condition, data on its prevalence is not available. Hence, considering the increasing incidences at Bharati Ayurveda Hospital, before going for clinical validation of formulation, it is of utmost importance to find out prevalence of cervicitis from area where patients belongs. It was also necessary to find out the required potential of newly developed formulation.

Cervicitis affects the overall health as well as psychological condition of women. Among various symptoms associated with cervicitis, some of the common and nonspecific symptoms are weakness, severe leg pain, low back pain, stomach pain, pelvic pressure, redness to vagina, genital infection in past, etc. (Falk et al., 2005; Curran et al., 1975; Schlicht et al., 2004). As these are nonspecific, most of the time they are correlated with other physiological activities which lead to negligence of the cervicitis. If it remains untreated may lead to further complications like cervical cancer (Gallup and Cowherd, 1978; Gutmann, 1995; McIver et al., 2009). But there is no clear data available on the prevalence of cervicitis, hence to understand the region based prevalence and to develop the methodology to find out the most probable candidate the survey must be carried out.

1.9 Treatments

For the treatment of cervicitis, generally antibiotic or antifungal therapies either orally or per vagina are prescribed to treat this condition. Many times exogenous hormonal therapies are suggested so as to increase the local immune response against pathogens (Marrazzo et al., 2006). For local tissue destruction in case of chronic cervicitis with ectropion available treatment options are cryotherapy, electrocauterization, laser therapy, cold conization or loop diathermy (Dalgic and Kuscu, 2001). Although, these medicines are well tolerated by majority of the patients and there are no major adverse effects, the search is always going on to explore more effective medicine(s). But, prolonged
use of such modern drugs causes undesirable and severe side effects (Patwardhan et al., 2005).

The use of natural remedies has a long traditional history with minimum or no side effects (Conforti et al., 2008) and the drug of choice for the treatment of gynecological disorders, especially cervicitis, is *Dashamoola* (Anonymous, 2003; Bagul et al., 2005).

As mentioned in Ayurveda, practioners can alter formulation composition as per requirement (Angadi, 2011). Many Ayurvedic practitioners are routinely using the altered formulations for the management of various disorders, therefore, it is also necessary to know which other plants can be included in the routinely used formulations to enhance its efficacy and for its target specific actions (Section 1.11; Figure 15 to 18).
1.10 **Dashamoola plants**

1.10.1 **Aegle marmelos (L.) Corr.**

**Family:** Rutaceae

**Vernacular names:** Bael, Vael (A); Bela, Bilva (B); Bael, Bengal Quince, Golden apple (E); Bilivaphal, Bill, Bilum (G); Bael, Sirphal (H); Bilva, Bilvapatre, Byaalada hannu (Ka); Koovalam, Kuvalam, Vilvam (M); Baela, Bel, Vel (Mt); Bela (O); Bil (P); Bilvam, Sripahal (S); Bilva, Kuvilam, Vilvam (T); Bilva, Maredi (Tu), Bel (U).

**Habitat:** Common throughout in dry deciduous forests and also planted.

**Description:** It is a small to moderate-sized tree with branches armed with strong axillary spine 1-3 cm long. Bark dark grey, slightly corky; leaves alternate, 3-foliate, rarely 5-foliate. Flowers greenish-white, sweet scented. Fruits globose, grey or yellowish, shell woody. Seeds numerous, ablong, compressed, with a wooly mucous testa, embedded in a clear mucilage and a mass of yellow or orang-coloured sweet aromatic mealy pulp.

**Flowering and fruiting:** April - November

**Distribution:** Globally, this species is distributed in the Indo-Malesian region, India, Myanmar and Sri Lanka. Widely cultivated in southeast Asia, Malaysia and tropical Africa. In India, it is reported to occur commonly throughout from coastal belt to subtropical western Himalayas, Sub-Himalayan tracts from Jhelum eastward and also Southward to the Central and Southern India and Andaman Islands. In the peninsular India, it is restricted to the dry and most deciduous forests of the Eastern and Western Ghats. This plant is commonly distributed in Maharashtra. It is also planted in temples.

**References:** Oommen et al., 2000; Ravikumar and Ved, 2000; Singh and Karthikeyan, 2001. (Figure 5 a and b)
Figure 5: *Aegle marmelos* (L.) Corr.

a) Habit

b) Fruits
1.10.2 *Desmodium gangeticum* (L.) DC.

**Family:** Fabaceae

**Vernacular names:** Salparni (B); Salwan (G); Salaparni, Sarivan (H); Kolakunaaru, Murelchonne (Ka); Moovila, Orila, Pullati (M); Salparni, Salwan (Mt); Saloporni (O); Shalpurni (P); Amsumati, Salaparni, Sthira, Vidarigandha (S); Moovilai, Orila, Pullati (T); Gitanaram, Kolakuponna, Kolaponna, Nakkotakponna (Tu).

**Habitat:** Common throughout in deciduous forests and also in open situations.

**Description:** Erect undershrubs, branches angled, grooved, sparsely pubescent. Leaves unifoliolate, membranous, rounded at base, margin entire, softly pubescent beneath and lesser above. Flowers deep violet or white in axillary and terminal panicles. Pods linear, lower margin deeply undulate, pubescent with hooked hairs. Seeds flattened.

**Flowering and fruiting:** March - November

**Distribution:** Global distribution of the species is recorded from the tropical regions of Africa, Asia and Australia. It is a shrub, found commonly in deciduous forests and teak plantations, as an under growth. In India, it is found in Kerala, Karnataka, West Bengal, Gujarat, Orissa, Manipur, etc. It is common in dry deciduous forests and recently under cultivation in Maharashtra.

**References:** Oommen et al., 2000; Ravikumar and Ved, 2000; Singh et al., 2001. (Figure 6 a and b)
Figure 6: *Desmodium gangeticum* (L.) DC.

a) Habit

b) Fruiting branch (pods)
1.10.3 *Gmelina arborea* Roxb.

**Family:** Verbenaceae

**Vernacular names:** Gamari (A); Gambhar, Gamar (B); Candhar Tree (E); Shivan (G); Gumbhar, Khambhari, Kumbhar (H); Kashmiri, Kulimavu, Shivani, Shivanigida (Ka); Kashmari (Ks); Kumil, Kumizhu, Kumpil (M); Gamar, Shewan, Shivan (Mt); Gambhari (O); Gumhar, Kumhar (P); Gambhari, Kasmari, Kasmarya (S); Gumadi, Kumil, Kumishan, Kumizhan (T); Gummadi, Gummudu, Peggummadi, Peggummudu (Tu).

**Habitat:** Common in deciduous forests and also under plantation

**Description:** A large or moderate-sized deciduous tree. Identified by light grey bark, smooth and even grained. Leaves broad, ovate, acuminate with cordate base and 2 to 4 shining prominent glands on the under surface of the leaves between the primary nerves, fulvous-tomentose beneath. Handsome panicles of brownish-yellow flowers. Fruits fleshy ovoid drupes, orange yellow when ripe. Seeds hard and oblong.

**Flowering and fruiting:** February - July

**Distribution:** Globally, it is a native of Pakistan, Bhutan and India. It is an Indo-Malesian species. In India it is found in the Sub-Himalayan tracts, Uttar Pradesh, Punjab, Dehra Dun, Orissa, West Bengal, Assam, Madhya Pradesh, Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. It occurs commonly in Maharashtra.

**References:** Oommen et al., 2000; Ravikumar and Ved, 2000; Singh et al., 2001. (Figure 7 a and b)
Figure 7: *Gmelina arborea* Roxb.

a) Habit

b) Leaves
1.10.4  *Oroxylum indicum* (L.) Vent.

**Family:** Bignoniaceae

**Vernacular names:** Kering (A); Sonagachh (B); Tentoo (G); Arlu, Sauna, Shyonak, Sonapatha, Tentoo, Ullu, Urru (H); Alangi, Bunepaale, Dundukara, Pathagani, Tigudu (Ka); Palagripayanni, Palakappayyani, Veluttapatiri (M); Tentoo, Tetu, Ulu (Mt); Pamponiya (O); Talvarphali, Tatpaling (P); Dirghavrnta, Katvanga, Prthsuimba, Shyonaka, Tintuka (S); Achi, Pana, Pei maram, Peruvagai, Vanga maram (T); Dundilum, Gumpena, Nemali chettu, Pampini (Tu); Sonapatha (U).

**Habitat:** Dry deciduous to moist deciduous forests, in ravines and moist places but rare in dry regions.

**Description:** A medium sized, soft-wooded, deciduous tree of about 5-10 m height. The stem possesses leaf scars. Bark about 6 mm thick, rough, surface brownish grey, prominently dotted with lenticels, blaze yellowish green. Branchlets robust, with prominent corky lenticles, hairless. Leaves opposite, 2-3 pinnate, 1-1.8 m long; each pinnate opposite; leaflets 3-9, odd-paired, each egg-shaped-ellipticbase unequal, rounded or sometimes heart-shaped, apex acuminate, margin entire, hairless. Flowers are large, bisexual, in large erect terminal racemes; peduncle stout, robust, upto 1 m long; calyx upto 3 cm long, dark purple, bell-shaped; corolla reddish purple outside, pinkish yellow inside, about 5 cm across, tube about 8 cm long. Capsules are very large, flat, linear, brown, tapering at both ends, hairless. Seeds are many, rectangular, flat, whitish winged all around except the base.

**Flowering and fruiting:** June - December

**Distribution:** Globally the species is distributed in the Indo-Malesian region and Sri Lanka. India, Sri Lanka, Myanmar, Malaysia and Malacca. The species is distributed throughout India, especially in Karnataka, Kerala, Tamil Nadu and commonly in Maharashtra.

**References:** Oommen et al., 2000; Ravikumar and Ved, 2000; Singh et al., 2001. (Figure 8 a and b)
Figure 8: *Oroxylum indicum* (L.) Vent.

a) Habit

b) Flowers and fruits (Pod)
1.10.5 *Premna obtusifolia* R. Br.

**Family:** Verbenaceae

**Vernacular names:** Arni (H); Thakkile, Eegigida (K); Appel, Benmoenja (M); Arani, Chamari, Kharanarvel (Mt); Agnimanthah, Ganikarica (S); Minnai, Perumunnai (T); Gadanelli, Kanika (Tu).

**Habitat:** Occasional in semi evergreen and evergreen forests and also planted

**Description:** A small tree or shrub with large branches often spinous. Branchlets unarmed. Leaves sub obtuse, very shortly acuminate or obtuse, mature glabrous or minutely hairy on the nerves above or beside the nerves beneath. Inflorescences corymbose. Flowers 0.3-0.4 cm, greenish white. Drupes 5 mm in diameter, globose, 3-4 seeded.

**Flowering and fruiting:** July - May

**Distribution:** Globally, the species is distributed from the Indo-Malesian region to pacific and also in Sri Lanka. Within India, it is distributed in Tamil Nadu, Andaman and Nicobar Islands. It is occasionally distributed in Maharashtra.

**References:** Oommen et al., 2000; Ravikumar and Ved, 2000; Singh et al., 2001. (Figure 9 a and b)
Figure 9: *Premna obtusifolia* R. Br.

a) Habit

b) Flowering branch
1.10.6  *Solanum anguivi* Lam.

**Family:** Solanaceae

**Vernacular names:** Tilabhakuri (A); Byakud (B); Poison berry (E); Ubhibharingani, Ubhibhuyaringa, Umimuyaringani (G); Badikateri, Barhauta, Birhatta, Vanabharata (H); Gulla, Heggulla, Kirugullia, Ramagulla (Ka); Cheru Vazhuthina, Cheruchunda, Putirichunda (M); Chichuriti, Dorale, Dorli (Mt); Dengabheji (O); Kandiarivaddi (P); Brhati, Sanhika, Simhi (S); Chiru vazhuthalai, Karimulli, Mullamkatti, Papparamulli, Puthirichundai (T); Cittimulaga, Tellamulaka (Tu); Kateli (U).

**Habitat:** Common in most barren land

**Description:** Undershubs or shrubs up to 1.5 m high. Leaves 3.10 x 1.5.6.0 cm, broadly elliptic or elliptic, oblong or ovate, prickly on nerves. Inflorescence extra axillary, racemose cymes. Flowers blue. Berries globose, yellowish, red when ripe. Seeds orange, spherical, minutely pitted.

**Flowering and fruiting:** July - February

**Distribution:** Distributed throughout the warmer part of Nepal, India, Africa, China, etc. In India it is found in the tropical parts of India. Commonly distributed in Maharashtra and is also under cultivation.

**References:** Kumar, 2009; Singh et al., 2001. (Figure 10 a and b)
Figure 10: *Solanum anguivi* Lam.

a) Habit

b) Fruits
1.10.7  *Solanum virginianum* L.

**Family:** Solanaceae

**Vernacular names:** Kantakar, Katvaedana (A); Kantakari (B); Febrifuge plant, Yellow-berried nightshade (E); Bharingani (G); Bhatakataiya, Chhotikateri, Katai, Katali, Kateli, Remgani, Ringani (H); Kiragulla, Nelagulla, Nelagulli (Ka); Kantakari chunda (M); Bhauringani, Kateringani (Mt); Ankarati, Bhejibaugana, Chakada Bhoji (O); Kandiari (P); Dhavani, Dusparsa, Kantakari, Kantakarika, Ksudra, Nidigdha, Nidigdhika, Vyaghri (S); Kandangatri, Kandanghathiri, Kandankatri, Kantankattiri (T); Callamulaga, Chinnamulaka, Mulaka, Nelamulaka, Pinnamulaka, Vakudu (Tu).

**Habitat:** Common throughout in waste places rarely under cultivation

**Description:** Procumbent or trailing herb or under shrub, prostrate or decumbent, widely branched. Leaves 4.0.8.5 x 2.5.5.5 cm, ovate, elliptic, stellately hairy on both sides, prickly on nerves. Inflorescence of extra axillary, few flowered cymes. Flowers purple. Berries yellow. Seeds numerous.

**Flowering and fruiting:** December - May

**Distribution:** Reported to occur in Ceylon and Malacca through South East Asia, Malaya, tropical Australia and Polynesia. In India, it is very commonly found in plains from seashore to hills up to 1000 m high. In Maharashtra it is common throughout in waste places on sandy river beds and fields as a weed.

**References:** Deb 1961; Singh et al., 2001; Singh and Bansal, 2003; Mohan et al., 2005; Najmi et al., 2005; Chaturvedi et al., 2008; Gabay et al., 2010; Gupta et al., 2011a; Paul and Datta, 2011. (Figure 11 a and b)
Figure 11: *Solanum virginianum* L.

a) Habitat and fruits

b) Habit and flower
1.10.8 *Stereospermum colais* Mabb.

**Family:** Bignoniaceae

**Vernacular names:** Parul (A); Parul (B); Rose Flower Fragrant (E); Podal (G); Padal, Padaria, Paral (H); Hude, Hulave, Padramora (Ka); Padiri, Puppatiri, Vedankorana (M); Padal, Parul (Mt); Boro, Patulee (O); Padal (P); Amogha, Krsnvrnta, Madhuduti, Patala, Patali, Tamrapuspi (S); Appu, Padiri (T); Kaligottu, Kokkesa, Patala, Podira (Tu).

**Habitat:** Occasional in hilly area of dry deciduous forests.

**Description:** A large deciduous tree with a spreading canopy. It is identified by grey bark with light yellow blaze. The leaves are 30-45 cm long with 7-9 leaflets, petiole and young leaves are bluish violet in colour. Flowers are yellowish with red venis and are in branches. Corolla pale or dark purple, puberlous lobes rounded, crisped crenate pods are about 20 cm long. Curved, pendulous and brown when ripe. Seeds are many and possess membranous wings.

**Flowering and fruiting:** February - September

**Distribution:** Globally, the species is distributed in India, Myanmar (earlier Burma), Sri Lanka, Indo-China and Malesia. It is found throughout India in the drier localities and is often planted also. This species occasionally occurs in forests of Maharashtra.

**References:** Oommen et al., 2000; Ravikumar and Ved, 2000; Singh et al., 2001. (Figure 12 a, b and c)
Figure 12: Stereospermum colais Mabb.

a) Leafy branch

b) Fruits and seeds
c) Roots
1.10.9 *Tribulus terrestris* L.

**Family:** Zygophyllaceae

**Vernacular names:** Gokshura, Gukhurkata (A); Gokhri, Gokshura (B); Caltrops root (E); Be tha gokharu, Mithogokharu, Nana gokharu (G); Gokhru, Gokshri, Hussuk (H); Negalu, Neggilamullu, Neggilu, Sannanaggilu (Ka); Michirkand, Pkhda (Ks); Nernjil, Nernnild, Nerrnigil (M); Gokharu, Sarata, Sharatte (Mt); Gokhyura, Gkhura (O); Bhakhra, Gokhru (P); Goksurah, Svdamstra, Trikantaka (S); Kamaraci, Nernjil, Nerncil, Nerrnjl (T); Pallru, Palleruveru, Sannaneggilugida (Tu); Kharr-e-Khasak Khurd (U).

**Habitat:** As a weed in dry places, waste lands and in cultivation fields.

**Description:** Procumbent herb. Leaves ooposite, compound with lanceolate stipules, leaflets oblique at base. Flowers pedicelled, solitary and axillary. Fruit dry woody sub-globose schizocarp, which is easily recognised by the spines present all over the surface. Seeds many (or 4-6) in each of the five parts of the fruit that separate on maturity.

**Flowering and fruiting:** Almost throughout the year

**Distribution:** The species is a native to the Mediterranean region, South Europe, South Asia, Africa and Australia. It is distributed throughout in India from sea level to 3500 m. Occurs commonly in Maharashtra.

**References:** Twaij et al., 1989; Murthy et al., 2000; Oommen et al., 2000; Ravikumar and Ved, 2000; Singh and Karthikeyan, 2001; Chu et al., 2003; Amin et al., 2006; Abbas et al., 2010. (Figure 13 a and b)
Figure 13: *Tribulus terrestris* L.

a) Branch with flower and fruit

b) Roots and fruits
1.10.10 *Uricia picta* (*Jacq.*) Desv. ex DC.

**Family:** Fabaceae

**Vernacular names:** Chakule, Chhalani, Salpani (B); Pithavan (G); Dabra, Pitvan, Shankaraja (H); Murele Honne, Ondele honne, Prushniparni (Ka); Muvila, Orila (M); Pithvan, Prisniparni, Prushnipamee, Ranganja (Mt); Prushnipamee, Shankarjata (O); Detedarme (P); Andhriparni, Citraparni, Dhavani, Kalasi, Prthakparni, Shrigalavinna, Sinhapuchchi (S); Chittirappalatai, Oripai, Sittirappadai (T); Kolkuponna (Tu).

**Habitat:** Occurs in deciduous forests mostly on open lands.

**Description:** Undershubs, 1–2 m high. Leaflets 3.5–22.0 x 1.3–2.6 cm, apex acute, base rounded. Flowers purple or white, in close fascicles and 15–30 cm long racemes. Pods 3–6–jointed, placed one above the other. Seeds yellowish or reddish–brown, reniform.

**Flowering and fruiting:** August - September

**Distribution:** It is reported from China, Japan, Bhutan, Bangladesh, Pakistan, Sri Lanka, India, Bhutan, Nepal, Nigeria, Egypt, Ethiopia, Congo, South Africa, Queensland Australia, Myanmar, Thailand, Brunei, Indonesia, Malaya, Phillipines, Papua New Guinea, Sabah, Cambodia, Vietnam, southern China, and Taiwan. In India it is widely distributed throughout and become rare. In Maharashtra it is distributed rarely throughout in deciduous forests.

**References:** Singh and Karthikeyan, 2001; Ohashi and Iokawa, 2007; Bhattacharya and Datta, 2010; Patel et al., 2011. (Figure 14 a, b and c)
Figure 14: *Uraria picta* (Jacq.) Desv. ex DC.

- **a) Habit**
- **b) Inflorescence**
- **c) Roots**
1.11 Additional plants

Along with Dashamoola, some additional plants are also used in the present study which are as follows:

1.11.1 Asparagus racemosus Willd.

Family: Liliaceae

Vernacular names: Satmull (A); Satamuli, Satamuli, Shatamuli (B); Asparagus (E); Satavari (G); Satamul, Satavar, Shaqaqul, Shatavir (H); Aheruballi, Ashadi poeru, Jayibem, Halavu Bau, Makkala, Narayani (Ka); Satavali, Shatavali, Satvari Kizhangu (M); Shatavari, Shatmul, Zatar (Mt); Satavar (P); Abhiru, Atirasa, Narayani, Satvari, Vari (S); Catavari, Kilavari, Nilichedi Kishangu, Shimai-Shadvari (T); Challa-gaddalu, Pillipichara (Tu), Satawari (U).

Habitat: Commonly occur in forests, open land, along the hedges and in scrub forests.


Flowering and fruiting: June - December

Distribution: It has a paleotropical distribution. It is recorded in Africa, S. Asia, China, S. Masesia and N. Australia. In India it is found growing wild in tropical and subtropical parts including Andamans. In the Indian Himalayan region it is found in Jammu and Kashmir of North West Himalayas to Sikkim of Eastern Himalayas. It is often cultivated as an ornamental. In Maharashtra, it is common in all districts.

References: Sharma et al., 1996; Oommen et al., 2000; Ravikumar and Ved, 2000; Sharma and Sharma, 2013. (Figure 15 a and b)
Figure 15: Asparagus racemosus Willd.

a) Habit and roots

b) Flowering and fruiting branch
1.11.2 *Curcuma longa* L.

**Family:** Zingiberaceae

**Vernacular names:** Haladhi, Haldhi (A); Haldi, Halud, (B); Turmeric (E); Haldar (G); Haldi, Hardi (H); Arishina (Ka); Ladhir, Ledar (Ks); Manjal (M); Halad (Mt); Haladi (O); Haldar, Haldi (P); Dosa, Ksanada, Nisa, Nisi, Rajani, Ratri (S); Manjal (T); Pasupu (Tu); Haldi (U).

**Habitat:** Cultivated for the turmeric obtained from the rhizomes.

**Description:** Herbs, tall; rootstock ovoid; sessile tubers cylindric. Leaves up to 50x8 cm, oblong-lanceolate, apex caudate-acuminate, base tapering. Spikes 10-15 cm long. Corolla white; flowering bracts pale green; bracts of coma tinged with pink.

**Flowering and fruiting:** June - November

**Distribution:** Extensively in Asia, India, China and other countries with a tropical climate. It is also cultivated throughout tropical and other regions in India as well as in Maharashtra.

**References:** Sharma et al., 1996; Kumar et al., 2011; Vasavda et al., 2013. (Figure 16 a, b and c)
1.11.3 *Pongamia pinnata* (L.) Pierre

**Family:** Fabaceae

**Vernacular names:** Korach (A); Dahara Karanja, Nata Karanja (B); Smooth leaved pongamia (E); Kanajo, Karanji (G); Dithouri, Karani, Karanj, Karuaini, Papar (H); Honge, Hulagilu, Rakta hone (Ka); Avittal, Pungu, Uengu, Unu (M); Karanja, Karanji (Mt); Karnja (O); Karanj (P); Ghrtakaranja, Karanja, Karanjaka, Naktahva, Naktamala (S); Pungan, Pongana, Pungam (T); Ganuga, Kanuga, Lamiga (Tu); Karanj (U).

**Habitat:** Common throughout along the river banks and in moist places.

**Description:** This tree is 6 to 8 m tall, bark thick grey mottled with brown dull yellow inside. Leaflets ovate or elliptic oblong shortly acuminate at apex, acute at base. Flowers fascicled on axillary racemose axes, pinkish-white, calyx reddish-brown. Pod oblong, flat, woody. Seeds 1 to 2, indehiscent.

**Flowering and fruiting:** February - May

**Distribution:** It is a native of Bangladesh, India, Myanmar, Nepal, Thailand and distributed in Australia, China, Egypt, Fiji, Indonesia, Japan, Malaysia, Mauritius, New Zealand, Pakistan, Philippines, Seychelles, Solomon Islands, Sri Lanka, Sudan, United States of America. In India, it is native to Western Ghats and chiefly found in tidal forests. It is widely planted along roadsides and canal/stream banks. In Maharashtra, it is common throughout the state, along the river banks and it is also under cultivation.

**References:** Krishnamurthi, 1969; Oommen et al., 2000; Ravikumar and Ved, 2000; Singh and Karthikeyan, 2001; Orwa et al., 2009. (Figure 17 a and b)
Figure 17: *Pongamia pinnata* (L.) Pierre

a) Habit

b) Stem and bark
1.11.4 *Terminalia chebula* Retz.

**Family:** Combretaceae

**Vernacular names:** Shilikha (A); Haritaki (B); Myrobalan (E); Himaja, Hirdo, Puloharda (G); Harad, Harar, Harara, Harre, Harra (H); Alalekai, Aralaikai, Harade (Ka); Halela (Ks), Kadukka, Kattuka, Katukka (M); Harda, Haritaki, Hirda, Hireda (Mt); Harida (O); Halela, Harar (P); Abhaya, Haritaki, Kayastha, Pathya, Siva, Vijaya (S); Kadukkai, Kattukay (T); Karaka, Karakkaya (Tu); Halela (U).

**Habitat:** Common in moist and dry deciduous forest, on plain or medium slopes.

**Description:** Trees 10-15 m tall. It is identified by dark brown bark exfoliating in irregular woody scales and presence of pair of large glands at the top of the petiole. Leaves pubescent, ovate-oblong, obtuse at apex, rounded at base. Flowers greenish-white, fragrant in terminal spikes. Fruits greenish-yellow, ovoid.

**Flowering and fruiting:** February - May

**Distribution:** Globally the species is distributed in the Indo-Malesian region and Sri Lanka. Within India it is distributed in the sub-Himalayan tracts to west Bengal and Assam. In southern India it is found in Maharashtra, Tamil Nadu and Karnataka. In Maharashtra it is frequent in moist deciduous or dry deciduous forests.

**References:** Parkinson, 1936; Oommen et al., 2000; Ravikumar and Ved, 2000; Singh et al., 2001; SuryaPrakash et al., 2012. (Figure 18 a and b)
Figure 18: *Terminalia chebula* Retz.

a) Flowering branch

b) Fruits
Genesis of thesis

Management of inflammation is particularly an important issue for women in perimenopausal phase (Torpy et al., 2003) since, it is a root cause of various inflammatory disorders with cervicitis (inflammation of cervix) being most prevalent. If this disorder remains untreated, it leads to chronic conditions like cervical cancer. Although, various treatments are available which are practiced worldwide, they have side effects. From the literature survey, it is quite clear that in traditional medicinal systems, Dashamoola provides relief from such inflammation (Kirtikar and Basu, 1987). However, no comparative studies have been carried out on the formulations prepared from Dashamoola and their dosage forms. Hence, there is need to scientifically evaluate and rationalize the use of routinely practiced and new combinations of plants and their dosage forms for perimenopausal cervicitis using modern methodology and to find out the prevalence of disease by targeting certain area.

Rationale

Though drugs like Steroids and Non Steroidal Anti-inflammatory Drugs (NSAIDs) are currently being practiced worldwide for management of perimenopausal cervicitis, there appears hardly any formulation to have a target specific, preventive and curative role in reverting back the inflammatory changes. Also, the treatment modalities available are failing to prove their safety with their serious side effects evident soon after starting the medication. Thus, it becomes important to identify alternative drugs like Dashamoola which are routinely used in traditional systems of medicine for different gynaecological conditions that may play a significant role in treatment of such chronic inflammatory conditions with minimum or without any side effects. As the selected anti-inflammatory condition is cervicitis, where no authentic data is available on its prevalence, hence it is utmost important to understand its prevalence.

Hypothesis

With the above background, we hypothesize that, “New Dashamoola formulation can be a better solution for the management of inflammation”.