International Journal of Current Science Research
www.drbgrpublications.in

Industrial crops in India for using an emollient – A review

Mariselvam R[1*], Shibila S[2], Mathan Kumar S[3] and Balasubramanian A[4]

[1]Saraswathi Institute of Lifescience, Terkumadathur, Tenkasi, India.
[2]Department of Biotechnology, Meenaakshi Ramasamy Arts and Science College, Thathanur, Ariyalur, India.
[3]Department of Biotechnology, Srinivasan College of Arts and Science, Perambalur, India.
[4]Research Department of Microbiology, V.H.N.S.N. College, Virudhunagar, India.
*Corresponding Author Email: honeyselvam01@gmail.com

Abstract

India is one of the world's seventeen mega-biodiversity countries. In India have seventy percent areas covered by more than 45,500 plant species and nearly 6500 native species which are still used in the health care products by traditionally. More than 53 plants were used for an emollient which were reported by various researchers. The 53 plant species with have emollient properties belongs to the twenty three different families. Especially, more than 19 plant entire parts with emollient property. The present review discussed the plants with emollient properties and cultivation status in India.

Keywords: Plants; Emollient; moisturizer; NMFs; Cosmetics; Indigenous plants

Introduction

Emollient is used as moisturizer to treat the skin dryness, scaly, irritation, skin itchiness etc. Our human body covered by skin approximately 1.7m2 for control the water loss crated by various environmental and physical factors. Water dehydration creates the skin dryness, scaly, irritation, rashes, skin itchiness and sometimes skin burns. Human body obtained naturally Sebum, stratum corneum intercellular lipids, and natural moisturising factors (NMFs) are compounds that regulate the evaporation of water by environmental conditions. Environmental factors such as

temperature, humidity etc. to affect the NMFs. The loss of NMFs, the skin was loss their softness and to formed the skin dryness, rashes, irritation etc. The modern world some substances were used for an emollient or maintaining the skin nature. Moisturizers, night creams, even moisturizing creams are other names for emollients.

Emollients, often known as moisturizers, are any compounds that simulate the effects of sebum and lipids on the skin. The first emollient in human history was created by the Greek physician Galenus in the year 129 AD. This emollient was utilised as surgical ointment rather than a standard skin care item and was mostly made of natural oils and wax. Beeswax use was common among people in the 15th century, and white powder was a preferred cosmetic in Europe. The first petroleum deposits were discovered in the 20th century, and paraffins like petroleum jelly were employed as emollients.

As cosmetic products became more and more industrialized, a wide range of synthetic and semi-synthetic oils made from natural oils also increased. Ceramides and other natural oils can now be used to produce a wide range of oils with different molecular weights because to advances in chemical expertise, such as asymmetric synthesis. The development also resulted in the discovery of oils that, unlike surfactants that form micelles, soften in both water and polar oils, and the variety of emollients has expanded in terms of polarity.

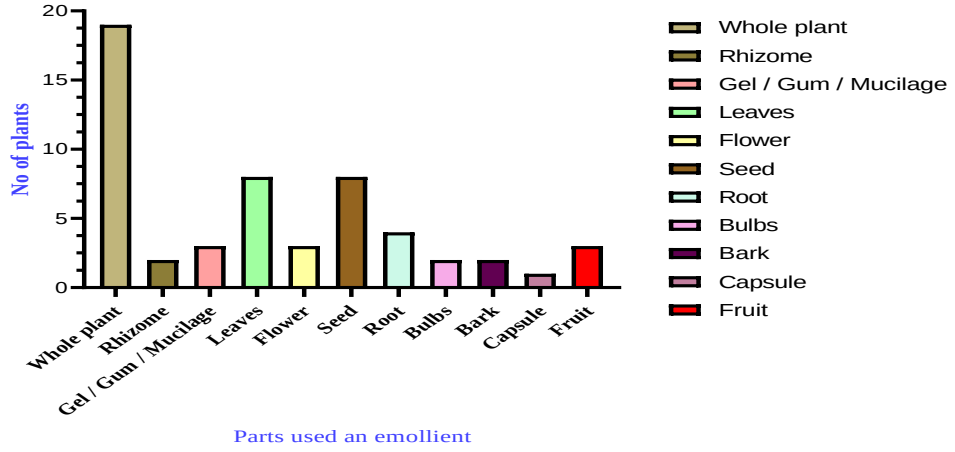
Additionally, a wider range of natural oils, such as organic certified oils, are more frequently utilised nowadays, and this is an emerging trend. The majority of emollient creams employ water-in-oil (w/o)-type emollients, which may hold a lot of oil and have a strong occlusive effect. Emollient creams are created using standard cream production techniques and include moisturisers such glycerin, 1,3-butylene glycol, propylene glycol, and hyaluronate in addition to emollients. Active substances including retinols, a-hydroxy acids, different vitamins, and astaxanthin are also included to boost the products' effectiveness in preventing symptoms that are strongly linked to dryness, such as minor wrinkles and roughness.

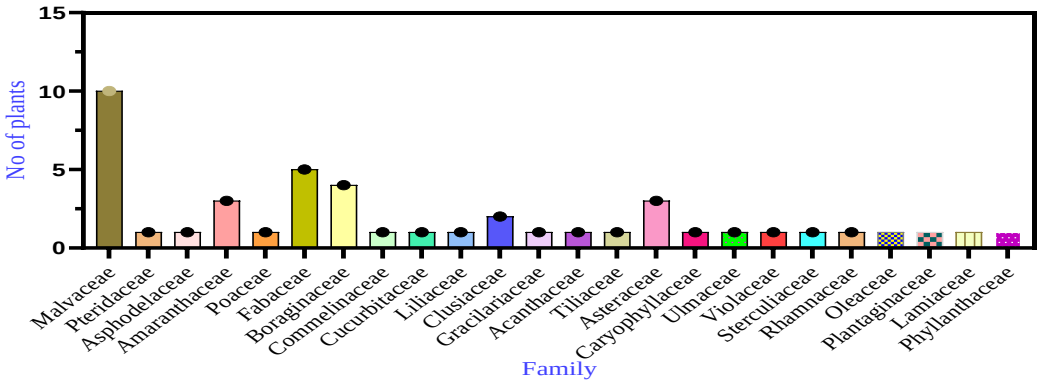
Plants used an emollient in India

One of the regions with the most biodiversity is India. India is the fourth-ranked biodiversity hot spot in the world. They are the Sundarbans, the Western Ghats, the Indo-Burma region, and the

Eastern Himalaya. A variety of ecosystems and habitats, including several woods, grasslands, marshes, deserts, and coastal and marine ecosystems, have developed as a result of the variable edaphic, climatic, and topographic environment and years of geological constancy. One of the world's 17 mega biodiversity nations is India.

Seven percent of the world's flora, or 45,500 plant species (including fungi and lower plants), have been identified from the Ministry of Environment and Forests of India's survey of nearly 70% of the entire geographic area. The over 6,500 native plants that are still utilised in India's ancient healing systems are its greatest pride. There are at least 18,664 species of vascular plants native to India, of which 26.8% are indigenous. In 45,500 different plant species, more than 53 plants and one alga were used for an emollient property. The useful parts of these plants varied from one to other. In example more than nineteen entire plants was used for emollient (Graph 1). These 53 plant species belongs to 23 different families (Graph 2).





Volume: 8; Issue: 12; Dec. 2022; pp 2382-2406; ISSN: 2454-5422

List of plants with emollient property

1. *Abelmoschus esculentus* (Linn.) Moench.

One of the Malvaceae family's most widely cultivated and consumed species is Abelmoschus esculentus. It is a wholesome vegetable grown in tropical, subtropical, and warm temperate climates around the globe. It is used to cure catarrhal infections, gonorrhea, and dysuria. The leaves and immature pods have an emollient quality (Fletcher et al., 2018).

2. *Abutilon indicum* Linn. Sweet.

A tiny shrub in the Malvaceae family by the name of *Abutilon indicum* is native to tropical and subtropical areas and is occasionally grown for decorative purposes. It can be found in Tamil Nadu and Karnataka. *Abutilon indicum* applied topically and the use of such compositions to benefit the skin, particularly for aesthetic purposes, anti-aging, anti-cellulite, skin whitening, and/or anti-wrinkle benefits (Bing *et al*., 2017).

3. *Adiantum aethiopicum* Linn.

Adiantum aethiopicum, sometimes referred to as the common maidenhair fern in the Pteridaceae family, is a small fern with a wide geographic range that may be found in Africa, Australia, Norfolk Island, and New Zealand. Kerala has it as well. Chest ailments and coughing are treated with an infusion of the leaves as an emollient. (American fern journal).

4. *Aloe barbadensis* Mill.

Aloe *barbadensis* is a kind of succulent plant of the Asphodelaceae family that naturally thrives in dry, semi-arid, and tropical conditions all over the world. It can be found in a variety of consumer goods, such as drinks, skin lotion, cosmetics, ointments, and gel for minor burns and sunburns. (Valencia, 2016)

5. *Althaea officinalis* Linn.

Althaea officinalis, sometimes known as marsh-mallow, is a perennial species of the Malvaceae family that is native to Europe, Western Asia, North Africa, and India. It is also grown there for ornamental purposes and use in herbal medicine. *A. officinalis's* leaves, flowers, and root have all

been employed in conventional herbal therapy. According to Cavero (2014), marshmallow has long been used as a remedy for mucous membrane irritation, particularly as a gargle for gastric and mouth ulcers.

6. *Amaranthus blitum* Linn. var.oleraceus Duthie

An annual plant species known as *Amaranthus blitum* belongs to the economically significant Amaranthaceae family. Although it originated in the Mediterranean region, it has since naturalised in various regions of the world, including as eastern North America, tropical Africa, Western Europe, Japan, and all of India. These plants are utilised for biliousness and hemorrhagic diathesis as well as cooling, stomachic, emollient purposes. (Khare, 2007).

7. *Amaranthus spinosus* Linn.

The Amaranthaceae family includes *Amaranthus spinosus*, also referred to as the spiny amaranth, spiny pigweed, prickly amaranth, or thorny amaranth. It is a plant that is indigenous to the tropical Americas, but it has been imported to most continents and is occasionally considered a harmful weed. It can be a significant weed in Asian rice farming (Caton *et al*., 2004). The leaves' laxative, emollient, and claimed antimalarial, antioxidant, and anti-hepatotoxic properties come from its usage as a poultice on burns, abscesses, and boils (Kirtikar & Basu, 2001).

8. *Amaranthus tricolor* Linn.

Amaranthus tricolour is a very significant purple red coloured leafy vegetable that belongs to the Amaranthaceae family. It is consumed throughout most of India, but is especially popular in Bihar, Jharkhand, and West Bengal. It is also grown in other tropical nations like South Africa. A popularly advertised African leafy vegetable is this plant. It belongs to a taxonomic group that is widely farmed (Rajani, 2017). This plant is used externally as an emollient and as an astringent in ayurvedic medicine for bronchitis, cough, leucorrhoea, dysentery, diarrhea, and hemorrhagic colitis (Rajani, 2017).

9. *Arundo donax* Linn.

A tall perennial cane in the Poaceae family is called *Arundo donax*. It belongs to a group of species referred to as reeds. Gigantic cane, elephant grass, carrizo, arundo, Spanish cane,

Colorado river reed, wild cane, and giant reed are some of its other common names. From the Mediterranean region eastward to North Africa, India, and Pakistan, Arundo donax can be found all over the world. *Arundo donax* root was used for antigalactagogues, depuratives, diaphoresis, diuretics, emollients, hypertensives, and sudorific purposes. (Passalacqua *et al*., 2007; Safa *et al*., 2003).

10. *Astragalus gummifer* Labill.

With a typical height and spread of 30 cm at maturity, *Astragalus gummifer* is a tiny woody evergreen shrub that is native to western Asia, notably Turkey and Iraq. *Astragalus gummifer* is utilized as a demulcent, emollient, suspending agent, emulsifying agent, and sustained release agent in cosmetics. (Owen *et al*., 2003).

11. *Astragalus hamosus* Linn.

One of the most significant medicinal herbs that has been utilized for a variety of health issues is Astragalus hamosus. This plant may be found on the Punjabi plains and is a member of the Fabaceae family. Additionally, Balochistan, Sindh, Afghanistan, and Persia all cultivate it. It has been used as a marijuana herb since very early times. The plant has aphrodisiac, galactagogue, maturant, pectoral, antiperiodic, stomachic, wound-healing, demulcent, laxative, and emollient properties(The wealth of India, 2000), according to Kirtika and Basu (1991), Prajapati et al. (2003) and Chopra et al. (1956) studies. Additionally, it has astringent, anti-inflammatory, and anti-rheumatic effects (Khare, 2004).

12. *Astragalus sarcocolla* Dymock.

Due to its abilities as an antirheumatic, anthelmintic, aperient, and emollient, the Fabaceae family plant known as *Astragalus sarcocolla* has been utilised as medicine since ancient times (Khare, 2007; Khare, 2004). It can also be found in India, Iraq, Kurdistan, Pakistan, and the Western Himalayas. Iran and Turkistan are its original countries (druginfosys, 2017).

13. *Borago officinalis* Linn.

An annual herb in the Boraginaceae family of flowering plants, *Borago officinalis*, is also referred to as starflower. It is indigenous to the Mediterranean area, Europe, and Northern Asia.

It is also rumoured to be grown in Indian gardens (Mayank and Swati, 2010). The *Borago officinalis* leaves and flowers are used as an emollient and skin conditioner. It is also thought to have a saline, cooling, diuretic, and anti-inflammatory impact on the skin. Research has shown that it works well as an emollient for calming injured and irritated skin tissue and reducing redness (Kaskoos *et al*., 2014).

14. *Brassica napus* Linn.

A member of the family Brassicaceae with vivid yellow flowers, *Brassica napus* subsp. napus is farmed primarily for its oil-rich seed, which naturally contains significant levels of erucic acid. The second-largest source of protein meal and the third-largest source of vegetable oil in the world are both *Brassica napus*. Long-term cultivation of *Brassica napus* is restricted to Punjab, Himachal Pradesh, and some areas of Haryana (Arvind *et al*., 2009). These genera are once again gaining popularity for application in adhesive and biodegradable plastic products, cosmetics, the emollient industry, and the lubricant sector (McVetty *et al*., 2016; Gupta, 2016).

15. *Butea superba* Roxb.-seeds

The Fabaceae family of legumes includes the vining shrub *Butea superba*, which is indigenous to India and mainland Southeast Asia. To treat piles, butea superba seeds and stem decoction are employed (Parrotta, 2001).

16. *Commelina benghalensis* Linn.

The species *Commelina benghalensis*, also called the Benghal dayflower, tropical spiderwort, or wandering Jew, is a member of the Commelinaceae family. Tropical Asia and Africa are its natural habitats as a perennial grass. It is regarded as a significant weed of a wide variety of crops in its natural habitat, which includes sub-Saharan Africa, India, Sri Lanka, and most of Southeast Asia, from tea and coffee to cassava and peanuts. It is used to treat female infertility and is also used in India as a laxative, emollient, bitter, anti-inflammatory, and depressive (Jayvir *et al*., 2007).

17. *Cucurbita maxima* Duchesne.

One of the most diversified domesticated species in the Cucurbitaceae family is *Cucurbita maxima*, one of at least four species of cultivated squash. South America is where this species

first appeared. It was grown in Myanmar, Bangladesh, Bangladesh, and perhaps the southern Appalachians. Fruit pulp was used as a poultice to treat burns, inflammations, boils, and burns because it was calming, emollient, and cooling (Khare, 2007).

18. *Fritillaria imperialis* L.

Fritillaria imperialis, also known as the imperial fritillary, the Kaiser's crown, or the crown imperial, is a species of flowering plant in the Liliaceae family that is native to a large area, ranging from Afghanistan, Pakistan, Northern India, and the foothills of the Himalayas to the Anatolian plateau of Turkey, Iraq, and Iran. The bulb was employed as a resolvent, emollient, and diuretic. It has been used to promote enhanced breast milk production and as an expectorant. The raw bulb is hazardous because it has trace amounts of a deadly alkaloid.

19. *Garcinia indica* Choisy.

The fruit-bearing tree *Garcinia indica*, also referred to as kokum, is a member of the Clusiaceae family of plants and belongs to the mangosteen genus. The Western Ghats region of India, which is situated along the country's western coast, is home to the native *Garcinia indica* plant. 17 of the 35 species that are present in India are endemic. The kokum butter is nutritious, demulcent, astringent, and emollient. It is also edible (Pruthi, 1979).

20. *Garcinia pedunculata* Roxb. ex Buch.-Ham.

The evergreen *Garcinia pedunculata* tree is a member of the Clusiaceae family. The tree is only found in the south-eastern areas of Asia, including some of Myanmar and northeastern India. Its fruit is used as an emollient, astringent, cooling, antiscorbutic, and antispasmodic (Anushi *et al*., 2014).

21. *Gracilaria lichenoides* (Linn.) Harv.

A red alga belonging to the family Gracilariaceae, *Gracilaria lichenoides* often has many branches that are cylindrical in shape and eventually taper to a point. Plants range in colour from light green to cream-colored white, turning purple as they dry. Treatments for respiratory illnesses, diarrhea, and dysentery use the emollient and demulcent *Gracilaria lichenoides* (Nadkarni, 1996; Watt, 2014).

22. *Graptophyllum picum* (L.) Griff.

Graptophyllum picum is introduced into Indian gardens from Polynesia. *Graptophyllum picum* is belongs to the family Acanthaceae. *Graptophyllum picum* leaves are applied topically to ulcers and swellings as an emollient and resolvent. (Khare, 2007).

23. *Grewia sclerophylla* Roxb. ex G. Don.

Grewia sclerophylla is belongs to the family Tiliaceae. It was discovered in Assam, the Sub-Himalayan tract, and the surrounding hills from Kumaon to Bhutan. *Grewia sclerophylla* root was used as emollient, bechic and furthermore recommended for irritable bladder and gastrointestinal issues.

24. *Gynura pseudochina* (L.) DC.

Most tropical regions of Africa and Asia support the growth of *Gynura pseudochina* var. hispida. It is belong to the family Asteraceae. In Thailand, plant leaves have been applied topically to treat abscesses, burning pains, and herpes infections, all of which may have anti-inflammatory benefits. Herpes infections and inflammation are treated topically using fresh leaves and rhizomes. The root can be taken internally to treat fever and pain (TISTR, 2010). (Lemmen and Bunyapraphatsara, 2003). The plant used as emollient and used in Anti-photoaging cosmeceutical composition (Omboon Luanratana, 2005).

25. *Heliotropium indicum* Linn.

The annual hirsute plant Heliotropium indicum, a member of the Boraginaceae family and often known as Indian Turnsole, is a prevalent weed in built-up regions and waste sites. Asia is where it is from. Native Indian medicine in Tamil Nadu, India, makes extensive use of it. Plants are astringent, emollient, vulnerary and diuretic (Anupam, 2015).

26. *Hibiscus surattensis* Linn.

A species of flowering plant belonging to the Malvaceae family is called *Hibiscus surattensis*. This species found in throughout the warmer parts of India. *Hibiscus surattensis* flowers were used as emollient and pectoral (Khare, 2007).

27. *Linum usitatissimum* Linn.

A flowering plant belonging to the Linaceae family, *Linum usitatissimum* is commonly referred to as common flax or linseed. It is grown as a food and fibre crop in temperate climate zones around the world. In India, it was mostly grown in Rajasthan, Madhya Pradesh, Uttar Pradesh, Maharashtra, and Bihar. The Seed was utilised as a laxative, pectoral lubricant, demulcent, antilipidemic, antitussive (Silva, 2010).

28. *Litsea glutinosa* (Lour.) C. B. Robinson.- leaf and bark

The Lauraceae family of trees includes the rainforest tree *Litsea glutinosa*. This species is indigenous to Australia, South China, India, Malaysia, the Philippines, and the islands in the western Pacific. In traditional medicine, the bark is used as a demulcent, emollient, treatment for diarrhoea and dysentery, as well as to speed up the healing of wounds. The leaf paste is used to treat respiratory conditions, to treat coughs, and as an emollient and demulcent (Pradeepa *et al*., 2011).

29. *Madhuca indica* J. F. Gmel.

The Sapotaceae family includes the tropical Indian tree *Madhuca longifolia*, which is mostly found in the plains and forests of central and northern India. It is a significant tree in tropical mixed deciduous forests in the Indian states of Odisha, Chhattisgarh, Jharkhand, Uttar Pradesh, Bihar, Maharashtra, Telangana, Madhya Pradesh, Kerala, Gujarat, West Bengal, and Tamil Nadu, demonstrating its adaptability to arid settings. Historically, this plant's bark has been employed as astringents, demulcents, emollients, stimulants, and heating agents (Anu *et al*., 2015).

30. *Malva rotundifolia* Linn.

Malva pusilla, commonly referred to as Malva rotundifolia, is a species of annual and biennial herb in the Malvaceae family. Mallows can be found in the temperate, subtropical, and tropical regions of Simla, Kumaon, and the Indian plains. The leaves are used for emmenagogue, glycosuria, stomach diseases, and as demulcents and emollients. (Khare, 2007).

31. *Malva sylvestris* Linn.

Malva sylvestris is a member of the Malvaceae family. Through the English-speaking world, it has travelled from its native habitat in Western Europe, North Africa, and Asia. Since antiquity, people have utilised *Malva sylvestris* for its emollient, laxative, and anti-inflammatory effects. It is commonly used in salads, soups, and teas. (Prudente *et al*., 2013).

32. *Melilotus indica* (Linn.)

The yellow-flowered herb *Melilotus indicus* is native to northern Africa, Europe, and Asia. It has spread naturally to other parts of the world. It was grown for fodder in several areas of Punjab, Haryana, and Uttar Pradesh in India. Melilotus indicus belongs to the Fabaceae family. According to reports, Melilotus indica contains narcotic, laxative, emollient, and astringent properties (Cooper and Johnson, 1984).

33. *Morus alba* Linn.

The Moraceae family includes *Morus alba*, also referred to as white mulberry, common mulberry, and silkworm mulberry. The species is commonly grown and naturalised outside of its native range in northern China and India. Making a decoction from mulberry leaves, *Morus alba* (L.), which contain diaphoretic and emollient properties and are used to treat throat inflammation (Rutuja *et al*., 2019).

34. *Ochna jabotapita* Linn.

The Ochnaceae family of flowering plants includes *Ochna jabotapita*. These species are found only in the tropical forests of Asia, Africa, and the Mascarenes. It was grown in Assam, Bihar, Orissa, and the Deccan Peninsula in India. Boiling the leaves of *Ochna jabotapita* produced an emollient cataplasm that was also applied as a poultice to treat lumbago. (Khare, 2007).

35. *Opuntia cochinellifera* Mill.

The cactus species *Opuntia cochenillifera* belongs to the Cactaceae family. It is the most prevalent species in Jamaica and is indigenous to Mexico. At the end of the 18th century, it was brought to India. Fruits were employed as bechics and emollients. In situations of articular

rheumatism, inflammations, scalds, burns, and skin illnesses, mucilaginous joints were used as poultices. (Khare, 2007).

36. *Papaver somniferum* Linn.

A species of flowering plant belonging to the Papaveraceae family is called *Papaver somniferum*, also referred to as the opium poppy or bread seed poppy. Although historical introductions and cultivation have masked its native distribution, which was likely the eastern Mediterranean, it has naturalised across most of Europe and Asia. The poppy seed had nutritional benefits, was emollient, demulcent, spasmolytic, and lacked narcotic effects. (Khare, 2007).

37. *Pentapetes phoenicea* Linn.

A genus of flowering plants in the Malvaceae family is called Pentapetes. *Pentapetes phoenicea*, known as the noon flower and occasionally farmed, is the only species found there. The flower is indigenous to a large area of tropical South Asia, ranging from northern Australia and the Philippines to Ceylon and India. Traditional systems of primitive medicine employ it to treat a wide range of illnesses. As an emollient, capsule decoction is employed (Nisha *et al*., 2014).

38. *Sesamum indicum* Linn.

A flowering plant in the Pedaliaceae family is called *Sesamum indicum*. There are many wild relatives in Africa, but less in India. It has become widely naturalised in tropical areas all over the world and is grown for its edible, pod-shaped seeds. The cultivated variety of S. indicum is an Indian native. There are numerous medical and pharmacological uses for S. indicum oil. It is emollient, demulcent, and moderately laxative. (Kandangath *et al*., 2010).

39. *Sida rhombifolia* Linn. – mucilage

Sida rhombifolia, sometimes known as arrow leaf sida, is a perennial or occasionally annual plant in the Malvaceae family that is indigenous to the tropics and subtropics of the New World. In Ayurvedic medicine, it is employed. The fruits are used to ease headaches, the crushed leaves to reduce swelling, the mucilage to act as an emollient, and the root to treat rheumatism. (Parrotta, 2001).

40. *Sonchus asper* Hill

Sonchus asper belongs to the Asteraceae family. It was indigenous to western Asia, North Africa, and Europe. It was discovered in farms and waste locations all over India. It has also spread over other continents and is often recognized as a harmful, invasive weed. Its leaves can be eaten, and they create a tasty and healthy leaf vegetable. Emollient was made from this plant. used to boils and sores after being pounded (Giner *et al*., 1993).

41. *Sphaeranthus indicus* Linn. (also auct. non L.)

The blooming plant *Sphaeranthus indicus* belongs to the Asteraceae family. It travels throughout Indomalaya from Northern Australia. Studies have been done on the plant to determine whether it has any potential health benefits, particularly as an anti-inflammatory. Ayurvedic practitioners frequently employ *Sphaeranthus indicus* Linn to treat a variety of ailments, including epilepsy, mental illness, hemicrania, jaundice, hepatopathy, diabetes, leprosy, fever, pectoralgia, cough, gastropathy, hernia, hemorrhoids, helminthiasis, dyspepsia, and skin disorders (Varsha *et al*., 2010). As a styptic, emollient, and resolvent, plant juice (Khare, 2007).

42. *Stellaria media* (Linn.) Vill.

Chickweed, or *Stellaria media*, is an annual and perennial flowering plant in the Caryophyllaceae genus. It originated in Eurasia and has since become naturalised everywhere. This plant was employed as a demulcent, emollient, vulnerary, antipruritic, astringent, refrigerant, antirheumatic, and anti-inflammatory agent. soothes discomfort and extra body heat. Used externally as an ointment for abscesses, varicose ulcers, and chronic skin diseases. Used internally for rheumatism. It served as a plaster for swellings and damaged bones. (Zhu, 1998; Duke *et al*., 2002).

43. *Trichodesma indicum* R. Br.

A flowering plant in the Boraginaceae family of borages is called *Trichodesma indicum*. It was found in tropical and subtropical areas of Australia, Asia, and Africa. The herb is used as an emollient, anodyne, febrifuge, carminative, depurative, and pectoral to treat inflammation and joint diseases. The plant's leaves are used to treat cancer. (Hamsalakshmi *et al*., 2018).

44. *Trichodesma zeylanicum* R. Br.

Cattle bush or camel bush, also known as *Trichodesma zeylanicum*, is a herb or shrub that is indigenous to Australia and Peninsular India, crossing into West Bengal. Trichodesma zeylanicum belongs to the family Boraginaceae. The seed oil of the *Trichodesma zeylanicum* used as emollient properties in India (Sheila *et al*., 2013).

45. *Ulmus wallichiana* Planch.

Ulmus wallichiana Planch., is in the family of Ulmaceae. The Himalayan elm is a mountain tree that grows at elevations of 800-3000 m from central Nuristan in Afghanistan to northern Pakistan and northern India to western Nepal. This plant's bark is utilised as an expectorant, astringent, demulcent, emollient, and diuretic. (Khare, 2008).

46. *Urena lobata* Linn. var.sinuata King.

The sensitive perennial *Urena lobata*, also called Caesarweedor, is a member of the Malvaceae family. It is extensively found in the tropics, including Brazil and Southeast Asia, and was once regarded as a weed. This plant can be found in India's drier regions and is common in West Bengal. Root of these plants used for diuretic, emollient, antispasmodic, antirheumatic (Sajem and Gosai 2006; Jia *et al*. 2010).

47. *Viola biflora* Linn.

The species *Viola biflora* is a member of the family Violaceae and the genus Viola. It can be found in Western North America, Siberia, Central Asia, Pakistan, Western and Northern China, North Korea, and Japan. The plant was discovered in the temperate Himalayas of India, from Kashmir to Sikkim. The leaves were used to laxative, emollient (Khare, 2007).

48. *Waltheria indica* Linn.

A flowering plant species in the Sterculiaceae family with a pantropical distribution is called *Waltheria indica*. It is believed to have originated in the Neotropics. In India it was found in tropical regions. The plant was used for emollient, bechic, febrifuge, purgative, abortifacient (Vardhana, 2008).

49. *Ziziphus jujuba* Mill.

Ziziphus jujuba, sometimes referred to as jujube, red date, etc. It belongs to the Rhamnaceae family of plants. It can be found all over India and up to 1300 metres in the outer Himalayas. The fruit was employed for laxative, sudorific, anti-inflammatory, hypotensive, expectorant, emollient, antiasthmatic, hemostatic, and cystitis purposes.

50. *Althaea officinalis*

With the Malvaceae family of plants, *Althaea officinalis*, sometimes known as marsh-mallow, is a perennial species that is native to Europe, Western Asia, and North Africa. It is grown in India and prefers tidal areas and marshy plains. Since ancient times, marshmallow has been utilised in traditional European medicine. The root's decoction is used to treat burns, ulcers, ulcerative colitis, anuria, diarrhoea, lithiasis, internal injuries, nerve pain, bee stings, toothaches, and abscesses. (Madaus, 1938).

51. Olea europaea

The little tree species known as *Olea europaea*, also known as the olive, belongs to the Oleaceae family. All of the Mediterranean nations as well as South America, South Africa, China, Australia, New Zealand, Mexico, and the United States cultivate this species. In India, the production of olives is still in its infancy as a crop. Olea europaea has historically been used to treat a variety of conditions including urinary infections, gallstones, bronchial asthma, diarrhea, and emollient, febrifuge, laxative, and skin cleanser (Samova *et al*., 2003).

52. *Plantago ovata*

Originally from the Mediterranean region, *Plantago ovate* has since spread to North America, central, eastern, and south Asia. It is a member of the Plantaginaceae family. The states of Rajasthan, Gujarat, and Madhya Pradesh are where this crop is primarily grown for commercial purposes. Dried seed and husk are valued as an emollient, demulcent, and safe laxative in traditional medicine, with special benefits for chronic diarrhea, habitual constipation, and dysentery. (Montague, 1932; Kirtikar and Basu, 1988).

53. *Ocimum tenuiflorum*

Holy basil, sometimes referred to as tulsi or *Ocimum tenuiflorum*, is a fragrant perennial plant in the Lamiaceae family. Its original habitat is the Indian subcontinent, and it is widely farmed across the tropical regions of Southeast Asia. One of the ingredients in emollient and itch cream products included this plant (Chatterjee *et al*., 2005).

54. *Phyllanthus maderaspatensis*

A member of the Phyllanthaceae family is *Phyllanthus maderaspatensis*. Due to its origin in the Madras region of India, the species is known as "maderaspatensis." An emollient was made from the seed. (Kabiruddin *et al*., 2007).

Conclusion

In the Indian market, moisturisers have a cosy place to sit and are widely and diversely used. Despite the dearth of Indian literature, a few reports on the use of moisturisers in a few particular dermatoses shed some light. There is still a lack of exact knowledge regarding their application to Indian skin. Although a few branded moisturisers demonstrated some positive results, there was often little proof that one moisturiser was superior to another. Moisturizers are rarely linked to health risks compared to other topical medications used by dermatologists, despite the fact that they may be used to significant body surface regions throughout the majority of a person's lifespan. Since practically any substance can produce skin reactions in sensitive places in certain people who experience signs of inflammation, different types of skin pain from topical preparations are more frequently observed. The most frequent negative impact of moisturizers, it may be both obvious and invisible. Some emollients, according to Frost and Kligman (1977), induced irritant contact dermatitis, allergic contact dermatitis, nonimmunologic contact urticaria, and irritant contact dermatitis based on the skin's reaction. India's floral diversity naturally includes more than 53 species having emollient characteristics. The secret to successful future moisturiser therapy will be to specifically tailor plant-based agents to particular dermatological products. The need for moisturisers will be rising as the population ages and the world becomes more urbanized.

The information on Indian herbs having emollient properties is helped by this review. This lengthy article aims to educate all stakeholders in skin care—including dermatologists, physicians, dermatological scientists involved in skin biology, and academicians—on the benefits of emollient plants.

Reference

Fletcher E, Gao K, Mercurio K, Ali M and Baetz K: Yeast chemogenomic screen identifies distinct metabolic pathways required to tolerate exposure to phenolic fermentation inhibitors ferulic acid, 4-hydroxybenzoic acid and coniferyl aldehyde. Metab Eng 2018.

Bing C. Mei, Mahwah, NJ (US); John W. Lyga, Basking Ridge, NJ (US). *Abutilon indicum* extracts and methods of use. United States Patent. No: US 9, 757, 327 B2; 2017.

Tropical Plants Database, Ken Fern. Tropical the ferns.info. 2021-03-04. <tropical.theferns.info/viewtropical.php?id=Adiantum+lunulatum>

American fern journal Vol 60, 1970.

Valencia Long, Aloe Vera in Dermatology-The Plant of Immortality, JAMA Dermatol 2016.

Cavero, R (2 December 2014). "Medicinal plants used for respiratory affections in Navarra and their pharmacological validation". *Journal of Ethnopharmacology*. **158** (Part A): 216–220.

John S. Williamson and Christy M. Wyandt 1997. Herbal therapies: The facts and the fiction. *Drug topics*" (PDF). Archived from the original (PDF) on 2012-04-02.

Khare C. (2007) Amaranthus blitum Linn. var. oleraceus Duthie. In: Khare C. (eds) Indian Medicinal Plants. Springer, New York, NY.

Caton, B. P.; M. Mortimer; J. E. Hill (2004). A practical field guide to weeds of rice in Asia. International Rice Research Institute. pp. 20–21.

Kirtikar KR, Basu BD, Indian Medicinal Plants, Vol. I, 2nd ed. Dehradun, India, Oriental Enterprises, 2001, 2832–2836.

Rajani Srivastava, An updated review on phyto-pharmacological and pharmacognostical profile of Amaranthus tricolor: A herb of nutraceutical potentials. The Pharma Innovation Journal 2017; 6(6): 124-129.

Passalacqua NG, Guarrera PM and De Fine G. Contribution to the knowledge of the folk plant medicine in Calabria region (Southern Italy). Fitoterapia, 78, 2007, 52-68.

Safa O, Soltanipoor MA, Rastegar S, Kazemi M, Dehkordi KN and Ghannadi A. An ethnobotanical survey on hormozgan province, Iran. Avicenna Journal of Phytomedicine, 3(1), 2003, 64-81.

Owen SC, Gum Tragacanth. In: Raymond CR, Paul JS, Paul JW, ed. Handbook of Pharmaceutical Excipients, the Pharmaceutical Press and the America Pharmaceutical Association. 2003: 654-656.

Kirtikar KR, Basu BD. Indian medicinal plants. 2nd ed. Shiva Offset Press, Dehradun, 1991, I: 738-739.

Prajapati ND, Purohit SS, Sharma AK, Kumar T. Hand book of medicinal plants. Agrobios, India, 2003, 31.

Chopra RN, Nayer SL, Chopra IC. Glossary of Indian medicinal plants. Publication and Information Directorate, CSIR, New Delhi, 1956, 29.

Anonymous. The wealth of India – A dictionary of Indian raw materials and industrial products. First Supplement Series. (A-Ci): Publication & Information Directorate, CSIR, New Delhi, 2000, 102:I

Khare CP. Encyclopedia of Indian Medicinal Plants. Springer-Verlag Berlin Heidelberg, New York, 2004, 84.

Khare, C.P., 2007. Indian Medicinal Plants: An Illustrated Dictionary. Springer-Verlag, Heidelberg, pp: 72.

Khare, C.P., 2004. Indian Herbal Remedies: Rational Western Therapy, Ayurvedic and other Traditional Usage, Botany. Springer-Verlag, Berlin, pp: 84.

Drug Information System: Astragalus sarcocolla Dymock. [Apr; 2017]; Drug Information System. Astragalus sarcocolla Dymock 2014 [cited 2017 13 April].

Mayank Gupta and Swati Singh, (2010). Borago officinalis Linn. an important medicinal plant of mediterranean region: A review. Inter. J. Pharm. Sci. Rev. Res. 5(1); 27-34.

R. A. Kaskoos, M. Ali and K. J. Naquvi, (2012). Phytochemical investigation of the leaves of *Borago officinalis* L. Der Pharmacia Lettre, 2012, 4 (2):544-548.

Arvind Kumar, Pankaj Sharma, Lijo Thomas, Abha Agnihotri and S.S. Banga, (2009). Canola cultivation in India: scenario and future strategy. 16th Australian Research Assembly on Brassicas. Ballarat Victoria, 0-5.

McVetty P.B.E., Mietkiewska E., Omonov T., Curtis J., Taylor D.C., Weselake R.J. Brassica spp. Oils. In: McKeon T.A., Hayes D.G., Hildebrand D.F., Weselake R.J., editors. Industrial Oil Crops. AOCS Press; London, UK: 2016. pp. 113–156.

Gupta S.K. Breeding Oilseed Crops for Sustainable Production: Opportunities and Constraints. Academic press; New York, NY, USA: 2016. Brassicas.

Parrotta JA (2001) Healing Plants of Peninsular India, CABI Publication, UK, 903.

Jayvir A, Minoo P, Gauri B, Ripal K and Natural Heals: A glossary of selected indigenous medicinal plant of India, SRIST Innovations, Ahmadabad, India, Edition 2nd, 2007: 22.

Khare C. (2007) Cucurbita maxima Duchesne. In: Khare C. (eds) Indian Medicinal Plants. Springer, New York, NY.

Bingöl F, Şener B, Koyuncu M, Faizi S & Gilani A (1996). Biological activities of some Fritillaria L. species growing in Turkey, GUEDE-J Fac Pharm Gazi 13: 45.

Pruthi JS (1979). Spices and Condiments. New Delhi, National Book Trust.

Anushi Sharma, G. S. Joseph, and R. P. Singh, (2014). Antioxidant and antiplatlet aggregation properties of bark extracts of *Garcinia pedunculata* and *Garcinia cowa*. J Food Sci Technol (August 2014) 51(8):1626–1631.

A.K. Nadkarni, Dr. K.M. Nadkarni's Indian materia medica: with Ayurvedic, UnaniTibbi, Siddha, allopathic, homeopathic, naturopathic & home remedies, appendices & indexes, 3rd ed., Popular Prakashan, Mumbai, 1996.

G. Watt, A dictionary of the economic products of India, Gossypium to Linociera, Vol. 4 Cambridge University Press, 2014.

TISTR. Centre of Knowledge, Institute of Scientific Research and Technology of Thailand. (2010) [internet]. TISTR-Medicinal Plants Database [accessed 16 Jan 2010] Available from.

Lemmen R, Bunyapraphatsara N. (2003) Plant resources of south-east Asia, Medicinal and Poisonous Plants 3. Backhuys Publishers, Leiden, The Netherlands.

Omboon Luanratana, (2015). Anti-photoaging cosmeceutical composition. US20050191267A1.

Anupam Roy, (2015). Pharmacological Activities of Indian Heliotrope (Heliotropium Indicum L.): A Review. Journal of Pharmacognosy and Phytochemistry 2015; 4(3): 101-104.

P. Silva, Farmacologia, Guanabara Koogan, Rio de Janeiro, Brazil, 8th edition, 2010.

K. Pradeepa, V. Krishna, Venkatesh, K. Girish Kumar, B.V.Thirumalesh and K.J. Naveen Kumar, (2011). Antibacterial screening of the stem bark and leaf extracts of Litsea glutinosa (Lour.) C.B. Rob – an ethnomedicinally important tree of the Western Ghats. Pharmacognosy Journal 3(21) 72-76.

Anu Chaudhary, Anil Bhandari, A.Pandurangan, and Sameksha Koul, (2015). Madhuca Indica J. F. Gmel. (Sapotaceae): An Overview. International Journal of Pharmaceutical Sciences Letters 2015 Vol. 5 (2) 539-545.

A.S. Prudente, A.M.V. Loddi, M.R. Duarte, A.R.S. Santos, M.T. Pochapski, M.G. Pizzolatti, S.S. Hayashi, F.R. Campos, R. Pontarolo, F.A. Santos, D.A. Cabrini, M. F. Otukia, (2013). Pre-

clinical anti-inflammatory aspects of a cuisine and medicinal millennial herb: Malva sylvestris L. Food and Chemical Toxicology. 58; 324-331.

Cooper, M. and Johnson. A. (1984). Poisonous Plants in Britain and their effects on Animals and Man. HMSO, England.

Rutuja Ashok Kadam, Nivedita Dattatray Dhumal and Vitthalrao Bhimasha Khyade, (2019). The Mulberry, *Morus alba* (L.): The Medicinal Herbal Source for Human Health. Int.J.Curr.Microbiol.App.Sci (2019) 8(4): 2941-2964.

Nisha Sharma, Prakash Chandra Gupta, Anju Singh and Ch.V Rao, (2014). Pharmacognostical, phytochemical investigations and HPTLC fingerprinting of *Pentapetes phoenicea* L. leaves. Indian Journal of Natural Products and Resources 5(2), 158-163.

Kandangath Raghavan Anilakumar, Ajay Pal, Farhath Khanum, and Amarinder Singh, (2010). Nutritional, Medicinal and Industrial Uses of Sesame (*Sesamum indicum* L.) Seeds - An Overview. Agriculturae Conspectus Scientifi cus. 75 (4); 159-168.

Giner RM, Ubeda A, Just MJ, Serrano A, Manez S, Rios JL, 1993. A chemotaxonomic survey of Sonchus subgenus Sonchus. Biochem Syst Ecology, 21:617.

Varsha J. Galani, B. G. Patel, and D. G. Rana, (2010). Sphaeranthus indicus Linn.: A phytopharmacological review. Int J Ayurveda Res, 1(4), 247-253.

Zhu, Y. P. 1998. Chinese materia medica: Chemistry, pharmacology and applications. Amsterdam: Harwood Academic Publishers.

Duke, J. A., M. J. B. Godwin, J. Cellier, and P. A. K. Duke. 2002. Chickweed (Stellaria media (L.) Vill.). In Handbook of Medicinal Herbs, edited by J. A. Duke, M. J. B. Godwin, J. Cellier and P. A. K. Duke, 183–184. New York, NY: CRC Press.

Hamsalakshmi, Suresh joghee, Babu and Silpa, (2018). Trichodesma indicum – an Overview. Int. J. Pharm. Sci. Rev. Res., 48(2), 63-69.

Sheila M.M., Nyamwisenda T.N., Denis M. and Abdul K, (2013). In vitro antimicrobial activity and determination of essential metal and ash value contents of Trichodesma zeylanicum. Int. J. of Res. in Pharmacology and Pharmacotherapeutics, 2(3); 417-424.

Khare, C. P. (2008). Indian Medicinal Plants: An Illustrated Dictionary. Berlin: Springer Science & Business Media.

Sajem AL, Gosai K. (2006). Traditional use of medicinal plants by the Jaintia tribes in North Cachar Hills district of Assam, northeast India. J. Ethnobiol. Ethnomed. 2:1 -7.

Jia L, Bi YF, Jing LL, Zhou SA, Kong DY. (2010). Two new compounds from *Urena lobata* L. J. Asian Nat. Prod. Res. 12: 962 - 967.

Vardhana R (2008) Direct uses of medicinal plants and their identification. In: Sarup & sons.

Madaus, (1938). Lehrbuch der Biologischen Heilmittel.

L. I. Samova, F. O. Shode, P. Ramnanan, A. Nadar, Antihypertensive, antiatherosclerotic and antioxidantactivity of triterpenoids isolated from Oleaeuropaea, subspecies Africana leaves, J. Ethnopharmacol., 84:299–305 (2003).

Montague JF. Psyllium seeds: the latest laxative, Montague Hospital for Intestinal Ailments, New York, USA. 1932.

Kirtikar KR. and Basu BD. Indian Medicinal Plants (2nd Edn.) Vol. III, Bisen Singh Mahendra Pal Singh, Dehra Dun, India, 1988; 2039-2042.

S.Chatterjee, R.N. Datta, D.Bhattacharyya and S.K. Bandopadhyay (2005). Emollient and antipruritic effect of itch cream in dermatological disorders: A randomized controlled trail. Indian J Pharmacol, 37(4); 253-254.

Kabiruddin M. Makzanul Mufradat.IdaraKitab-ul-Shifa, Daryaganj, Delhi, 2007; pp. 335-336.

Frosch PJ, Kligman AM. A method for appraising the stinging capacity of topically applied substances. J Soc Cosmet Chem. 1977;28:197–209.

Siddappa K. Dry skin conditions, eczema and emollients in their management. Indian J Dermatol Venereol Leprol. 2003;69:69–75.

Dhar S. Topical therapy of atopic dermatitis. Indian J Paediatr Dermatol. 2013;14:4–8.

Volume: 8; Issue: 12; Dec. 2022; pp 2382-2406; ISSN: 2454-5422

Table(s)

S. No	Name of the plant	Useful parts	Reference(s)
1	*Abelmoschus esculentus* (Linn.)Moench	Immature pods & leaves	Fletcher *et al*., 2018
2	*Abutilon indicum* Linn. Sweet.	Juice of the plant	Bing *et al*., 2017
3	*Adiantum aethiopicum* Linn	Rhizomes	American fern journal
4	*Aloe barbadensis* Mill.	Gel	Valencia, 2016
5	*Althaea officinalis* Linn.	Plant	Cavero, 2014; Williamson and Wyandt, 1997
6	*Amaranthus blitum* Linn. var.oleraceus Duthie	Plant	Khare, 2007
7	*Amaranthus spinosus* Linn.	Plant	Caton *et al*., 2004; Kirtikar & Basu, 2001
8	*Amaranthus tricolor* Linn.	Plant	Rajani, 2017
9	*Arundo donax* Linn.-	Rhizome	Passalacqua *et al*., 2007; Safa *et al*., 2003
10	*Astragalus gummifer* Labill.	Plant	Owen *et al*., 2003
11	*Astragalus hamosus* Linn.	Plant	The wealth of India, 2000
12	*Astragalus sarcocola* Dymock.	Gum	Khare, 2007; Khare, 2004
13	*Borago officinalis* Linn.	Leaves and flowers	Kaskoos *et al*., 2014
14	*Brassica napus* Linn.	Plant	McVetty *et al*., 2016; Gupta, 2016
15	*Butea superba* Roxb.	Seeds	Parrotta, 2001
16	*Commelina benghalensis* Linn.	Plant	Jayvir *et al*., 2007
17	*Cucurbita maxima* Duchesne.	Fruit pulp	Khare, 2007
18	*Fritillaria imperialis* Linn.	Bulbs	Bingol *et al*., 1996
19	*Garcinia indica* Choisy.	Fruit	Pruthi, 1979
20	*Garcinia pedunculata* Roxb.	Plant	Anushi *et al*., 2014
21	*Gracilaria lichenoides* (Linn.) Harv.	Plant	Nadkarni, 1996; Watt, 2014
22	*Graptophyllum picum* (L.) Griff.	Leaves	Khare, 2007
23	*Grewia sclerophylla* Roxb. ex G. Don.	Root	Healthdictionary, 2019
24	*Gynura pseudo-china* (L.) DC.	Plant	Omboon Luanratana, 2005
25	*Heliotropium indicum* Linn.	Plant	Anupam, 2015
26	*Hibiscus surattensis* Linn.	Flower	Khare, 2007
27	*Linum usitatissimum* Linn.	Seed	Silva, 2010
28	*Litsea glutinosa* (Lour.) C. B. Robinson.	Leaf	Pradeepa *et al*., 2011
29	*Madhuca indica* J. F. Gmel.	Bark	Anu *et al*., 2015
30	*Malva rotundifolia* Linn.	Leaves	Khare, 2007
31	*Malva sylvestris* Linn.	Plant	Prudente *et al*., 2013
32	*Melilotus indica* (Linn.) All.	Plant	Cooper and Johnson, 1984
33	*Morus alba* Linn.	Leaf	Rutuja *et al*., 2019
34	*Ochna jabotapita* Linn.	Leaves	Khare, 2007
35	*Opuntia cochinellifera* Mill.	Fruits	Khare, 2007

36	*Papaver somniferum* Linn.	poppy seed	Khare, 2007
37	*Pentapetes phoenicea* Linn.	Capsule	Nisha *et al*., 2014
38	*Sesamum indicum* Linn.	Seed	Kandangath *et al*., 2010
39	*Sida rhombifolia* Linn.	Mucilage	Parrotta, 2001
40	*Sonchus asper* Hill	Plant	Giner *et al*., 1993
41	*Sphaeranthus indicus* Linn.	Juice	Khare, 2007
42	*Stellaria media* (Linn.) Vill.	Plant	Zhu, 1998; Duke *et al*., 2002
43	*Trichodesma indicum* R. Br.	Herb	Hamsalakshmi *et al*., 2018
44	*Trichodesma zeylanicum* R. Br.	Flower	Sheila *et al*., 2013
45	*Ulmus wallichiana* Planch.	Bark	Khare, 2008
46	*Urena lobata* Linn. var.sinuata King.	Root	Sajem and Gosai 2006; Jia *et al*. 2010
47	*Viola biflora* Linn.	Leaves	Khare, 2007
48	*Waltheria indica* Linn.	Plant	Vardhana, 2008
49	*Ziziphus jujuba* Mill.	Fruit	Sokolov, 1988
50	*Althea officinalis*	seed and root	Madaus, 1938
51	*Olea europaea*	Seed	Samova *et al*., 2003
52	*Plantago ovata*	Seed	Montague, 1932; Kirtikar and Basu, 1988
53	*Ocimum tenuiflorum*	Seed	Chatterjee *et al*., 2005
54	*Phyllanthus maderaspatensis*	Seed	Kabiruddin *et al*., 2007