IJBPAS, June, 2024, 13(6): 2797-2815

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

REVIEW OF MEDICINAL PLANTS WITH CARMINATIVE PROPERTIES

DAMMATI ND*, GONUGUNTLA BNS[2], VANKAYALAPATI Y[3], NALLAMALLI DV[4] AND MADDU AL[5]

Department of Pharmacology, Chalapathi Institute of Pharmaceutical Sciences (Autonomous) Guntur-522034, Andhra Pradesh, India

***Corresponding Author: Ms. Nalini Devi Dammati; E Mail: nalinidevi86@gmail.com**

Received 15th June 2023; Revised 8th July 2023; Accepted 14th Sept. 2023; Available online 1st June 2024

https://doi.org/10.31032/IJBPAS/2024/13.6.8087

ABSTRACT

A carminative is mainly intended to prevent or relieves the formation of gas in the gastrointestinal tract. Plants are an important source of medicine, and they have long been utilized as a traditional therapeutic treatment of a wide range of diseases. Most of people in rural areas of developing countries use traditional medicines for their health care. Carminatives are substances that help to relieve flatulence by reducing gas production in the gastrointestinal tract and making it easier to expel. Carminatives have been demonstrated to control the lower esophageal reflux however they also raise the risk of gastro-esophageal reflux disease or heartburn. Ayurveda is a traditional medicinal system in which a variety of plants are used as carminative agents. The volatile oils in these plants are mainly responsible for carminative property. The current study is a review of the literature on medicinal plants having carminative properties. The review includes 42 plants, their families, kingdom, species, plant parts used and origin. This effort aims to assist researchers in the investigation of natural compounds that can be used as carminative.

Keywords: Carminative, gastrointestinal tract, esophageal reflux, medicinal plants, volatile oil

INTRODUCTION:

Medicinal plants play an important role in therapeutic aid for alleviating the ailments of human kind. Now a day's most of the people transformed in traditional medicine leads to extend the demand for plant derived drugs. The returning of interest in herbal drugs than

synthetic drugs because of serious adverse effects possess by synthetic drugs **[1]**. In different parts of India, several medicinal plants were using to cure specific diseases or disorders from ancient times **[2]**. As per the estimate of the World Health Organization (WHO), now more than 80 percent of the human population is dependent on herbal medicine as a primary health care **[3]**. Medicinal plants exhibit pharmacological activities such as, anticancer, carminative, antioxidant, cardiovascular, immunological, anti-inflammatory, analgesic, antipyretic, antimicrobial hypolipidemic, central nervous, and respiratory, many other **[4]**. Carminatives are food substances, when ingested, produce a sensation of intestinal warmth and to relieve the symptoms of postprandial bloating by producing flatulence and eructation **[5, 6]**.

Carminatives help in digestion and to relieve from bloating and flatulence. The word carminatives come from the Latin meaning to "comb out". Carminatives relax smooth muscles to relieve cramping and help to expel gas. Carminatives contain essential oils that impart their medical effects. After consuming carminatives, within a few minutes, smooth muscles and sphincters relax relieving cramping pains. The exact mechanism of carminatives is unknown, but the essential oils on mucous layer causing capillaries to dilate and increase blood flow. Research supports the traditional use of carminatives to improve symptoms of abdominal pain, bloating and irregular bowel habit. Carminatives can help with several conditions including: Flatulence, Colic, Irritable bowel syndrome, Indigestion, Colitis, Gastric ulcer. Herbs used as carminatives are

BEE BALM: *Monarda didyma* commonly known as bee balm is perennial herbaceous plant that grows annually. These are either hairy or hairless and grow about 90 cm long. Chemical constituents of Bee balm are oils – Thymol, limonene, carvacrol and p-cymene. It is a natural antiseptic due to thymol. It is used to prevent excess flatulence that acts as a carminative. When bee balm is boiled, it is used to reduce fever and headache. This is used as anti-microbial, as a soothing agent in mouth washes. Carminative activity is shown by its stem **[7, 8]**.

LOVAGE: Biological source of lovage is *Levisticum officinale* belonging to family Apiaceae. Lovage is perennial and herbaceous plant. Rhizome and roots are used medicinally. It is used to treat flatulence, blotting and indigestion concerns. Regular consumption of Lovage can prevent kidney stones and treats heart burn and regulates menstrual periods. Chemical constituents of lovage includes terpenoids and phthalides,

also includes carvacrol and eugenol as volatile oils. Lovage is also used in the treatment of jaundice, pain and inflammatory conditions **[9, 10]**.

CALAMUS ROOT: *Acorus calamus* commonly known as calamus belongs to a family called Araceae, has different chemical constituents of Asarones. These usually relate to hallucinations. These are composed of aldehydes like asaraldehyde (volatile oil) present in the rhizome of calamus. This contains about 3% of asaraldehyde. This is a potent adaptogen. Used against epilepsy, flatulence, used as sedative and hypnotic and is used as a vermifuge. Plant part used as a carminative is root **[11, 12]**.

MARJORAM: Marjoram is botanically named as *Origanum majorana* belongs to a family Lamiaceae commonly called as sweet marjoram. It is grown at Mediterranean region and North Africa, Western Asia. This has anti-microbial and inflammatory activities. The chemical constituents are carvacrol, carnosol, carnosic acid, carnosol and flavonoids. Marjoram is composed highly with ursolic acid. This is used as carminative, treats indigestion, infections, antioxidant activity and used in treating menstrual pain. Plant part used in treating flatulence is leaves **[13]**.

MYRTLE: *Myrtus communis* commonly known as Myrtle belongs to a family Myrtaceae. Its fruits, branches and leaves are used in various traditional treatments. This is majorly used by people suffering with flatulence, lung infections, heart burns, yeast infections, infections due to worms. Myrtle has high percentage of antioxidants, tannins, linalool, flavonoids, sugars, pinene, also has catechin, citric and malic acids. This is specially used in carcinogenic and mutagenic treatments majorly breast cancer. Its leaves show carminative activity and reduce flatulence **[14, 15]**.

CATNIP: *Nepeta cataria* known as catnip is commonly named as cats wort and catmint. Belonging to a family called Lamiaceae. This is used in treating anxiety, nervousness and stress induced indigestion, flatulence and insomnia. This also produces sedation activity and treats headache. This is taken internally as tea, using its flowers or leaves. Major chemical constituent of catnip is nepetalactone which is a terpenoid. This is also best used as insect repellent, and is much more effective than others **[16]**.

PIPPERMINT: *Mentha piperita* commonly known as peppermint belongs to the mint family namely Lamiaceae. Peppermint contains a wide variety of bioactive compounds, including polyphenols, along with menthol, a powerful volatile oil that gives the leaves their distinctive scent and

flavor. Peppermint contains volatile oils like menthol (0.3%-0.4%), methyl acetate (3-10%), and methane (20-6%). Peppermint, a hybrid of spearmint and water mint, has been most widely used medicinally and most often studied. Lab and animal studies indicate that some compounds in peppermint may have digestive benefits, as well as anti-cancer, antibacterial, antioxidant, and anti-inflammatory effects, carminative. The plant part used for carminative is leaves **[17, 18]**.

CAYENNE PEPPER: *Capsicum annuum* is the biological name of cayenne pepper belongs to a family Solanaceae. These are thin, long and red dried fruit part of chili family. The spice in it helps kill bacteria in the stomach and prevent the growth of ulcer forming bacteria. It is mostly used as carminative, astringent, stimulant and also as am emetic. This is of similar species of capsicum, sweet bell peppers and jalapenos. Chemical constituents are 1.5% capsaicinoids, and carotenoid pigments. Dried fruit is edible in treating flatulence **[19]**.

CELERY SEEDS: This is commonly used in Indian kitchen. *Apium graveolens* is botanically known as celery. These are used as a flavoring agent, treat and prevent ulcers, carminative and as a nervine. Seeds and plant of the same are rich in nutrients and shows anti-bacterial activity and as antiseptic. These are also used to boost immunity and treats kidney stones. These celery seeds reduce flatulence. It is sometimes used as a diuretic and maintains blood pressure. Chemical composition of celery is 15% of fatty oils like petroselenic acid, linoleic acid, palmitic acid and some phthalides **[20]**.

SAFFRON: The biological source of saffron is *Crocus sativus* belonging to family Iridaceae. It is autumn flowering perennial plant. The plant part is dried stem in Crocus sativus. It mostly cultivated in Iran. The major constituents of saffron includes crocin, picrocrocin, safranal, carotenoids like lycopene, zeaxanthin. saffron acts as carminative, antioxidant, anti-inflammatory, it also has beneficial effects on cardiovascular risk factors, autoimmune disorders, cognitive problems and digestive diseases **[21, 22]**.

SESAME: The biological source of sesame seeds is *Sesamum indicum* belonging to family pedaliaceae. It is also called as benne; it is an annual flowering plant belonging to genus sesamum. The chemical composition of sesame seeds are lignans sesamolin, sesamin, pinoresinol, & lariciresinol. The sesame contains high magnesium, which helps to lower blood pressure, anti-oxidant activity, reduce inflammation, digestion disorders. These seeds contain high protein and rich in vitB6 helps in treatment of digestive problem **[23]**.

SPEAR MINT: The biological source of spear mint is *Menthe spicata* belonging to Lamiaceae. The chemical constituents of spear mint involve mainly pinene carvone, cineole, linalool, limonene, myrcene, caryophyllene. It is used to treat various digestive disorders. Used for the treatment of indigestion, carminative and nausea. It is rich in polyphenols and shows greater antioxidant activities. The major constituent found in spearmint oil is limonene which shows greater biological activity. It is used as anti-spasmodic, anti-microbial, anti-oxidant agents. The plant parts used for carminative action are leaves **[24, 25]**.

HOLY BASIL: The biological source of holy basil is *Ocimum tenuiflorum* belonging to family Lamiaceae. It is an aromatic perennial plant. The chemical constituents of holy basil involve eugenol, ursolic acid, rosemarinic acid. The active components like caryophyllene, oleanolic acid, carotenoids. Holy basil is used to treat cold, headache, inflammation, stomach complaints. The **leaves** are majorly act as carminative, anti-bacterial activities **[26]**.

SPIKENARD: The biological source of spikenard is *Nardostachys jatamansi*. It is belonging to flowering plant of valerian family. The chemical constituents of spikenard are valeranone, bornyl acetate, jonon, methyl thymol-ether, tetramethyl-oxatricylodecanol. It is used to treat in various disorders like anxiety, depression, insomnia, stress. The essential oil of spikenard is used as carminative, anti-inflammatory, and anti-bacterial activities. The plant part used as carminative is Rhizome **[27]**.

TARRAGON: The biological source of tarragon is *Artemisia dracunculus* belonging to family Asteraceae. Tarragon is perennial herb belonging to sunflower family. It is used for biological purposes like anti-spasmodic, anti-viral & anti-bacterial properties. it is also used as carminative, appetite stimulant and anticonvulsant. The chemical constituents present in tarragon are terpenes, limonene, methyl eugenol, phenyl propanoids. The leaves of tarragon show biological activity **[28]**.

GALANGALROOT: The biological source of galangal root is *Alpinia officiniarum* belonging to family zingiberaceae. The chemical constituents of galangal root are mainly galangin, 4- hydroxy cinnamaldehyde, curcuminoids, and diarylheptanoids. It is an aromatic stimulant and act as carminative. It is also used for various purposes like nausea, flatulence, rheumatism, enteritis& ulcers. The active constituents are volatile oil and resin. It is also treats against various types of cancers **[29, 30]**.

GENTIAN: The biological source of gentian is *Gentiana lutea*, belonging to family Gentianaceae. The Gentiana genus is widely used for various biological activities like rheumatism, carminative, inflammation, and treatment of skin infections. The plant part of gentian mainly rhizome is used for biological activity. The chemical constituents of gentian are iridoids, secoiridoids, xanthones and flavonoids **[31]**.

OREGANO: Oregano is a perennial herb, up to 80cm in height. The scientific name is *Origanum vulgare*, belonging to family Lamiaceae. Oregano is used as both preservative and antidote to Poison. Origanum vulgare is also used as fragrance component in perfumes, detergents, cosmetics, flavoring soap and pharmaceuticals. Oregano contains iron, vitamins, calcium, copper, niacin, magnesium, and thiamine. It is used in treatment of cancer, muscular degeneration and heart disease. The major constituents of Origanum vulgare leaves essential oils are carvacrol, p-cymene, c-terpinene, limonene, terpinene, ocimene, caryophyllene, β-bisabolene, linalool and 4 – terpineol. Oregano essential oils and phenolic compounds have been shown to possess antioxidant, anticancer, antibacterial, antifungal, diaphoretic, carminative, antispasmodic and analgesic activities. Carvacrol shows multiple biological effects including antioxidant activity that associated with prevention of various degenerative diseases **[32, 33]**.

CARDAMOM: Cardamom is known as queen of all species. *E. Cardamomum* is an herbaceous perennial plant with erect shoots bearing two rows of green leaves. The Scientific name is *Elettaria cardamomum* belonging to family Zingiberaceae. Different parts of E. Cardamomum such as leaves, seeds, bark, root and flowers are applied for treatment of various intestine related disorders such as stomachic, retentive, resolvent, antiemetic, digestive constipation, hypertension, asthma, diarrhea, Colic, dyspepsia, epilepsy and carminative. Major metabolites such as α- pinene (1.5%), β-pinene (0.2%), sabinene (2.8%), myrcene (1.6%), α-phellandrene (0.2%), limonene (11.6%), 1,8, cineole (36.3%), terpinene (0.7%), cymene (0.1%), terpinolene (0.5%), linalool (3%) and other components shows various biological applications such as antioxidant, anticancer, anti-inflammatory, antibacterial activities respectively. Cardamom enhances learning and memory **[34]**.

PARSLEY: The biological source of parsley is *Petroselinum crispum* belonging to family Apiaceae. Parsley belongs to annual culinary

herb. Parsely shows various biological actions like carminative, antipyretic, antimicrobial, anti-inflammatory, anticancer, and antioxidant properties. Parsely contains components that shows action mainly are phenolic compounds, and flavonoids, these constituents include apigenin, apin, 6-acetylapiin, and essential oils like myristicin and coumarins. The essential oil obtained from parsley shows biological action. Parsley leaves are rich in vitamin-C, iron, iodine and magnesium **[35, 36]**.

PERIWINKLE: The biological source of periwinkle is *Catharanthus roseus*, belonging to family apocynaceae. Periwinkle synonyms are *Vinca minor and Vinca major.* The periwinkle shows various biological actions like antibacterial, antispasmodic, carminative, coagulant, hemostatic, diuretic and sedative commonly. The plant parts like seeds and **leaves** contain major constituent like vincamine, which contains biological properties. The periwinkle contains various constituents like vincamine, vanillic acid, reserpine, tannin **[37, 38]**.

ROSEMARY: The biological source of rosemary is *Rosmarinus officinalis*. It is belonging to family Lamiaceae. Rosemary also has been used extensively as medicinal herb for astringent, spasmolytic, anti-inflammatory, expectorant, carminative, anti-rheumatic, analgesic, anti-microbial. Rosemary contains variety of volatile essential oils, include monoterpene hydrocarbons, camphene, limonene, camphor, borneol, cineole, linalool, and verbenol. The plant also contains variety of flavonoids, diterpenes, polyphenols and high levels of salicylates **[39]**.

WILD GINGER: The common names of wild ginger are *Asarabaca,* Canada ginger, cats' foot, colic root, heart leaf, Indian ginger, name pin, snakeroot, sturgeon potato. The scientific name of wild ginger is *Asarum canadense* belonging to family Aristolochiaceae. Wild ginger habitat is moist, shady, deciduous wood, it is perennial. Wild ginger is acquired from a different plant *Zingiber officinale*. The wild ginger is used for variety purposes. It is used as carminative and used to relieve generally upset stomachs. Wild ginger is also used to treat intestinal ailments, and relieve stomach aches, cramps, as well as indigestion. It also contains aristolochic acid, it is effective in treating tumors. It is main component in many dietary supplements and declared to be carcinogenic and nephrotoxic **[40]**.

VANILLA: Vanilla is commonly called vanilla, vine, vanilla orchid. The native place of vanilla plant is Central America. Available in form of vanilla pod and belongs to family

orchidaceous. Vanilla has been regarded as aphrodisiac, carminative. vanilla also have medicinal properties like anxiolytic and haemo-protective. Vanilla is in form of hot infusions/tisanes, liquid extracts, tincture, powder, essential oil. The constituents of vanilla consist of vanillin, flavonoids, and alkaloids. The flavonoids and alkaloids have potent antimicrobial effect, which inhibit yeast and microorganisms. Vanilla reduces anxiety and also lowers blood pressure. Vanilla also used for treating loss of appetite, fevers and digestive troubles **[41, 42]**.

EPAZOTE: The epazote name is from Aztec (Nahuatls) epazote. Epazote is also known as *Chenopodium ambrosioides* belonging to family Amaranthaceae. Epazote contains compounds which actually act as anti-gas agent. (i.e., carminative). when cooked with beans. the oil of epazote is used to expel wormseed or intestinal hookworms. It is poisons in larger doses. The commonly used parts are stem, leaves and fruits for medicinal purposes. It is also used for treating Menstruation problems, asthma, and nervous disorders. Leaves and stem parts cooked with beans to treat flatulence **[43]**.

DILL: Dill belonging to species in genus Anethum. Dill is an *Anethum graveolenusl* belonging to family Apiaceae. Dill is an aromatic and annual herb. Dill seeds are used as carminative, stomachic, diuretic. The essential oil in seed relives intestinal spasms and griping, helping to settle colic. The carminative volatile oil improves appetite, relieves gas and aids digestion. Seed extracts of Graveolenusl have significant mucosal protective, anti-secretory and anti-ulcerative against HCL and ethanol includes stomach lesions. The flavonoids isolated are quercetin and isorhamnetin; which have anti-oxidant activity. There are various volatile components are carvone being odorant of dill seed, α-phellandrene, limonene, dill ether, α-pinene and dipentene. Dill is also used to treat hemorrhoids, hiccups, headaches, coughs, wounds, liver disease, gallbladder disease, female diseases, insomnia, blood detoxification, and insect bites **[44, 45]**.

CUMIN: Cumin is obtained from *Cuminium cyminum* and Carum carvi. Cumin is also known as caraway. It is belonging to family Apiaceae, Umbelliferae. Cumin and caraway **seeds** are considered carminative, eupeptic, antispasmodic, astringent, and also in treatment of mild digestive disorders, diarrhea, dyspepsia, flatulence, morning sickness, colic, dyspeptic headache and bloating. Solvent dried extracts of caraway seeds show antibacterial activity against gram negative bacterium helicobacter pylori. It is primarily etiological factor for development

of gastritis and peptic ulcer. The major components of cumin oil are cuminaldehyde, cymene, terpenoids. cumin is annual herbaceous, spice glycophyte that has various applications as food and flavoring additive and therapeutic agent **[46, 47]**.

SAVORY: The biological source of savory is *Satureja hortensis* belonging to family Lamiaceae. Savory consists of various biological properties like stimulant, stomachic, carminative, expectorant, anti-diarrhetic mainly. It is also used for various infectious diseases. The components of savory include majorly carvacrol, thymol, δ-terpinene, ρ-cymene, and α and β- pinene, carvacrol is the major component which shows biological action. The plant part used for carminative action are leaves **[48]**.

CORIANDER: Coriander is obtained from the species *Coriandrum sativum* and belonging to the family Umbelliferae. It is mostly grown in south Asian countries the biggest producer and exporter all over the world. The majorly used parts of the coriander plants are coriander seeds and leaves i.e., seed in the form of oil. The major constituent for carminative action is lanolool-65.8% in seeds, other chemical constituents are α-pinene, δ-terpinene, camphor and limonene. The medicinal uses of coriander are carminative, antioxidant, diuretic, anti-diabetic, sedative, antimicrobial, anthelmintic **[49, 50]**.

FENNEL: An herb namely Fennel is native to Asia Minor and Southern Europe. Sanskrit name of Fennel is shatapushpa which is indigenous and mostly grown in shores of Mediterranean Sea. Fennel can also be grown in dry soils near the river. The majorly used parts of Fennel are plant is seed in the form of the oil. The major constituents are Anethole (trans anethole)81.63% to 87.85%. other chemical constituents are Fenchone, Estragole and α-phellandrene. The medicinal uses of Fennel are carminative, antifungal, anti-bacterial, purgative, anti-oxidant, hepatoprotective action **[51]**.

CLOVE: Clove is originated in Moluccas Islands of Indonesia. Clove is mostly grown in eastern Asia, majorly in loom soil. The plant part used in the clove is unripen flower bud has aromatic and dried part. The chemical constituents are volatile- eugenol (70-85%), eugenyl acetate (15%), β-caryophyllene (5-12%). Eugenol inhibits growth of harmful bacteria like *E. coli.* The other chemical constituents are methyl amyl ketone, methyl salicylate, α and β-humulene, benzaldehyde. The medicinal uses for Clove are carminative, Analgesic, digestive, prevents blotting, anti-bacterial, flavoring agent and in most of the

GI problems anti-inflammatory due to the presence of flavonoid **[52]**.

ASAFOETIDA: Asafoetida is herb also known as Hing spice. The scientific name of Asafoetida is *ferrula asafoetida*. belonging to family Umbelliferae. Asafoetida is used as an antidote for opium. The plant part used is rhizome and root. Asafoetida is mostly grown in Europe, Asia, and eastern countries. Chemical constituents are ferulic acid, umbelliferone, as are sinotannols, farnesiferols A, B, C, riboflavin, niacin, monoterpenes. Volatile oils in Asafoetida are said to be excellent in treatment of asthma and as carminative. The medicinal uses of asafoetida are carminative, laxative, sedative and to treat GIT infections, anticancer, anti-flatulent, indigestion **[53]**.

CHAMOMILE: The biological source of chamomile is *matricaria chamomilla* belonging to family Asteraceae. The chemical constituents of chamomile are polyacetylene, α-bisabol, chamazulene, cadinene, farnesene, furfural & spathulenol. The chamomile consists of biological properties like carminative, anti-inflammatory, anti-oxidant, spasmolytic, and mostly used in gastrointestinal complications, the flower part of chamomile is mainly used for biological activity **[54]**.

GINGER: Ginger is being used since thousands of years globally and is a nutraceutical compound. The botanical source of ginger is *Zingiber officinalis* used as a spice worldwide and it belonging to family zingiberaceae. The part of plant used is oleoresin of rhizome. The chemical constituents of ginger contains both volatile and nonvolatile contents including zingerone, shogaols (18-25%), gingerols (23-25%), capsaicin, gingediol. Contain carbohydrates of 50-70%, lipids of 3-8%. The medicinal uses of ginger are carminative, antihypertensive, hypocholesterolemia, anti-inflammatory, mucosal stimulants, gastro protective agent and most of the gastro related diseases, antiulcer, antiemetic **[55-57]**.

BLACK PEPPER: Black Pepper is a woody climber and botanical source of black pepper is *Piper nigrum*, belonging to family piperaceae. It grows to a height about 10 meters in long rainy season and is propagated by stem cuttings. Its pungent smell is obtained from fruit part. It is the earliest known spices. Black pepper is native to coastal areas of India, earlier widely cultivated in Southeast Asia. The part of plant used is dried unripe berries- peppercorn. The chemical constituents are α-terpineol, acetophenone, hexanol, α-pinene, nerolidol, 1,8-cinelol. Uses of Black pepper are carminative, indigestion,

heart diseases, constipation, joint pains, lung diseases, tooth decay and gastric secretion stimulant **[58]**.

CINNAMON: The biological source of cinnamon is *Cinnamomum zeylanicum*, belonging to family lauraceae. The part of plant used is bark, leaves and flower. This is traditionally used as a flavoring agent and most commonly used spice in Indian kitchen and the content of volatile oils varies based on the difference in species. This is a topical tree in India and Sri Lanka and is widely used in middle East. The chemical constituents are volatile oils (1-2%), cinnamaldehyde- bark, eugenol(leaf), benzaldehyde, cinnamyl acetate, benzyl acetate, benzyl alcohol, terpineol. Used as carminative, in the treatment of gastric ulcers, joint pains, dyspepsia, mild spasms, indigestion, loss of appetite and diarrhea **[59, 60]**.

NUT MEG: Nut mug is a Kernel and the biological source of nutmeg is *Myristica fragrans*, belonging to family myristicaceae. This is grown in loamy soil that is well drained. This tree grows about 25-65 feet height. The part of plant used as a spice is seed. The chemical constituents are essential oils about 7-14%myricitinin, α-pinene, lanolol, elemicin. The medicinal uses of nut mug are carminative and the other therapeutic uses are gastrointestinal stimulant, antioxidant, rheumatism, immune modulators, antimicrobial, anticarcinogenic, hepatoprotective, anti-inflammatory **[61]**.

CARAWAY: Caraway is a dried ripe seed or fruit. The botanical source of caraway is *Carum carvil*, belonging to family Apiaceae. Caraway is native to Europe, Asia and North Africa and is grown in Poland mostly. The part of plant for therapeutic use includes seeds. Chemical constituents are essential oils, fatty oils and oleoresins are carvone, limonene, thymol, eugenol. The medicinal uses of caraway are anti-flatulent, digestants, antispasmodic, inflammatory bowel disease, anti-bacterial, anti-fungal, anti-carcinogenic and insecticidal **[62]**.

WILD CELERY: Wild Celery is a bitter herb and succulent grown in marshy places. The botanical source of wild celery is *Apium graveolens* Linn, belonging to family Apiaceae. Cultivation was started in Italy. The part of plant wild celery used is bark and fruit. The chemical constituents are prunasin also contain scopoletin. Vitamins including A, B, C and zinc are present. Its leaves contain 88% of moisture and protein of 6.3%. The medicinal uses of wild celery are astringent toxic, carminative, arthritis, rheumatism, gout, inflammation in urinary tract, pectoral, sedative and expectorant. It is used to treat whooping cough, dyspepsia **[63]**.

THYME: Thyme is belonging to species *Thymus vulgaris* L. Belonging to family Lamiaceae. Thyme grows up to 15-30 cm tall. The part of plant used in thyme is leaves. The chemical constituents of thyme are monoterpenoids about 56.53%, sesquiterpene hydrocarbons 5.04%, thymol (essential oil of 51.34%), lanolol, carvacrol, myrcene, limonene and α-pinene. The medicinal uses of thyme are carminative, antimicrobial, anti-inflammatory, antioxidant, insecticidal activity, antiseptic, astringent, laryngitis and urinary infections **[64]**.

LICORICE: Licorice is a perennial herb belonging to species G*lycyrrhiza glabra* Linn, family Leguminosae. The part of plant licorice is dried rhizomes and dried roots. The chemical constituents of licorice are glycyrrhizin, liquiritin, isoliquiritin, the other chemical constituents are liquiritigenin, rhamnolipid. The medicinal uses of licorice are carminative, expectorant, antibacterial, antispasmodic, anti-inflammatory, antioxidant, arthritis, mouth ulcers, antimalarial, antihyperglycemic and antifungal **[65]**.

BOLDO: Boldo is a perennial herb and the biological species of boldo is *peumus boldus*, belonging to family monimiaceae. This grows in the mountains of South America. The part of plant used is leaves and bark. The chemical constituents of boldo are boldine, cineol. The medicinal uses are liver diseases, carminative, stomach pain, gastritis, lower blood cholesterol, mucosa protective, mild hypnotic, increases immunity, natural antibiotic **[66]**.

List of Medicinal Plants having Carminative activity (Table 1)

Table 1: List of Medicinal Plants having Carminative activity

S. No	Common name	Biological source	Family	Plant part
1.	Asafoetida	*Ferrula foetida*	Umbelliferae	Root
2.	Bee balm	*Monarda didyma*	Lamiaceae	Stem
3.	Black pepper	*Piper nigrum*	Piperaceae	Fruit
4.	Boldo	*Peumus boldus*	Monimiaceae	Leaves
5.	Calamus	*Acorus calamus*	Araceae	Root
6.	Caraway	*Carum carvil*	Apiaceae	Seed
7.	Cardamom	*Elettaria cardamomum*	Zingiberaceae	Seeds
8.	Catnip	*Nepeta cataria*	Lamiaceae	Flowers & leaves
9.	Cayenne pepper	*Capsicum annum*	Solanaceae	Fruit
10.	Celery	*Apium graveolens*	Apiaceae	Seeds
11.	Chamomile	*Matricaria chamomilla*	Asteraceae	Flower
12.	Cinnamon	*Cinnamomum Zeylanicum*	Lauraceae	Bark
13.	Clove	*Eugenia carophyllus*	Myrtaceae	Flower
14.	Coriander	*Coriandrum sativum*	Umbelliferae	Leaves
15.	Cumin	*Cuminum cyminum*	Apiaceae	Seeds
16.	Dill	*Anethum graveolens*	Umbelliferae	Leaves
17.	Epazote	*Dysphania ambrosioides*	Amaranthaceae	Leaves
18.	Fennel	*Foeniculum vulgare*	Apiaceae	Seeds
19.	Galangal	*Alpinia officinarum*	Zingiberaceae	Root
20.	Gentian	*Gentian lutea*	Gentianaceae	Root

21.	**Ginger**	***Zingiber officinalis***	**Zingiberaceae**	**Rhizome**
22.	**Holy basil**	***Ocimum tenuiflorum***	**Lamiaceae**	**Leaves**
23.	**Licorice**	***Glycyrrhiza glabra***	**Leguminosae**	**Rhizome**
24.	**Lovage**	***Levisticum officinale***	**Apiaceae**	**Rhizome**
25.	**Marjoram**	***Origanum majorana***	**Lamiaceae**	**Leaves**
26.	**Myrtle**	***Myrtus communis***	**Myrtaceae**	**Leaves**
27.	**Nut meg**	***Myristica Fragrans***	**Myristicaceae**	**Seed**
28.	**Oregano**	***Origanum vulgare***	**Lamiaceae**	**Leaves**
29.	**Parsley**	***Petroselinum crispum***	**Apiaceae**	**Leaves**
30.	**Peppermint**	***Mentha piperita***	**Lamiaceae**	**Leaves**
31.	**Periwinkle**	***Catharanthus roseus***	**Apocynaceae**	**Leaves**
32.	**Rosemary**	***Rosmarinus officinalis***	**Lamiaceae**	**Leaves**
33.	**Saffron**	***Crocus sativus***	**Iridaceae**	**Flower**
34.	**Savory**	***Satureja hortensis***	**Lamiaceae**	**Leaves**
35.	**Sesame**	***Sesamum indicum***	**Pedaliaceae**	**Seeds**
36.	**Spearmint**	***Menthe spicaea***	**Lamiaceae**	**Leaves**
37.	**Spikenard**	***Nardostachys jatamansi***	**Caprifoliaceae**	**Rhizome**
38.	**Tarragon**	***Artemisia dracunculus***	**Asteraceae**	**Leaves**
39.	**Thyme**	***Thymus vulgaris***	**Lamiaceae**	**Leaves**
40.	**Vanilla**	***Vanilla planifolia***	**Orchidaceae**	**Orchids**
41.	**Wild celery**	***Apium graveolens***	**Apiaceae**	**Leaves**
42.	**Wild ginger**	***Asarum canadense***	**Aristolochiaceae**	**Rhizome**

CONCLUSION:

One of the most important sources of pharmaceuticals is medicinal plants. Because of their accessibility, availability, inherited practice, economic feasibility, and perceived efficacy, plants have been utilized to cure many diseases from ancient times. The present article revealed that all of the medicinal plants presented have carminative properties might be due to the presence of volatile oils. As a result of this study, it appears that certain herbs and spices can be employed in primary health care.

ACKNOWLEDGEMENT:

This work would not have been possible without the services provided by Chalapathi institute of

pharmaceutical sciences (Autonomous) and so I'm extremely grateful to the institution.

CONFLICTS OF INTEREST: Authors declare no conflict of interest.

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