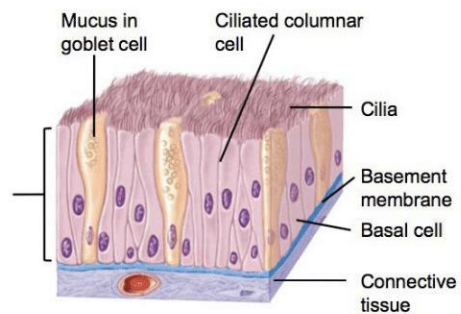
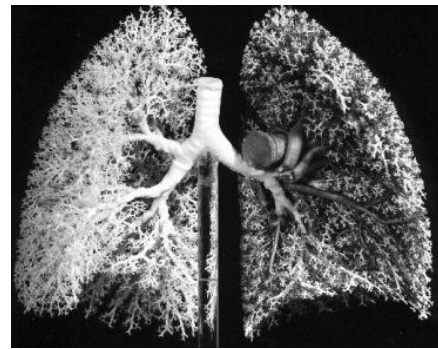


Ethno Health Products

Lung Power (Lung Strength) (Lungenkraft)

Lung Power was formulated to help normalize mucousal membrane function, support the immune system, and provide protection against cell-damaging free radical molecules or oxidative stressors that challenge the immune system. Essential oils, herbs, Chinese mushrooms, and antioxidant vitamins combine to build more lung power (Ethno, 2021).



Compiled by Mary Esther Gilbert, MSc, BSc, April 13, 2021

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Chinese Tragalanth Root Extract (*Astragalus membranaceus*)



- Has been shown to reduce the inflammatory response by inhibiting the inflammatory enzyme, COX-2 (cyclo-oxygenase 2) and inflammatory proteins such as ROS (reactive oxygen species) in intestinal epithelial cell lines.
- Has demonstrated to have antioxidant potential through influencing cells to increase the release of protective biochemicals such as nuclear factor, a protein complex that controls the transcription of DNA from a mother cell to a newly forming cell.
- Has been shown to help control cytokine production and helps ensure the cell's survival.
Cytokines – small proteins or peptides that play several roles:
 - Help the immune system respond to abnormal conditions in the body such as a foreign illness-causing pathogen or tumors.
 - Also help the immune response of reducing inflammation.
 - Cytokines may, however, cause damaging inflammatory responses in severe abnormal conditions such as in arthritis, asthma, or the presence of tumors
 - While therapeutics that help modulate or block damaging inflammatory responses, some therapeutic side effects may result in over-producing a storm of cytokines, which can be seriously life-threatening (Foster, 2001).
 - *Astragalus membranaceus* has demonstrated its ability to properly modulate or control the proper production of cytokines during various abnormal event conditions.
- Studies found that *A. membranaceus* is an effective anti-inflammatory and antioxidant applicable to intestinal diseases, including irritable bowel syndrome (IBS) and plays a vital role in maintaining intestinal homeostasis or a proper environment.
 - Epithelial cells that compose the intestinal tissues or lining are vital for maintaining a protective barrier against harmful substances.
 - Chemicals, physical injuries, and infectious microbial organisms can damage that lining, leading to the absorption of toxic substances, and stimulating the activation of various immune responses and inflammatory agents that can further sustain a state of inflammation in the intestinal layers of tissues.
- In the People's Republic of China, *A. membranaceus* is known to be effective for edema, as it induces diuresis; as a diuretic, it helps eliminate excess extracellular fluids and adjusts the body's fluid balance.
- Is widely used in Asia to help prevent the severe side effects of chemotherapy as well as to prevent liver fibrosis (liver damage caused by fatty liver, alcohol, iron overload, hepatitis, or blockages in bile ducts that produce bile).

- Has been investigated for its effects on intestinal injuries of the mucosal lining and the **small intestine villi**, micro fingerlike projections that absorb nutrients on their surface.



The small intestine is 9-15 feet, but the surface area of the villi can be up to 25,000 villi projections per square inch of nutrient-absorbing tissue (Britannica, 2020).

- Increases SOD (superoxide dismutase) activity, which is an enzyme that catalyzes the scavenging superoxide free radical the body produces (Adesso, et al., 2018).
- Pharmacological and clinical studies in Asia have confirmed *A. membranaceus* as an antibacterial, antiviral, immunostimulant and anti-inflammatory, with diuretic, liver-protecting effects, and as an adaptogenic (helps normalize the body's chemistry while handling stress).
- Contains multiple phytochemical compounds that have wide-ranging effects, such as stimulating the immune system into action (immunostimulants), and which include the polysaccharides astragalin I, II, and III, and saponins and triterpenes.
- Combined Western and traditional Chinese medicine has brought about more research in the concern for the damaging effects of chemotherapy in cancer patients, such as a depressed immune system, which make patients more vulnerable to secondary diseases.
- Chinese scientists have published several studies on the application of *Astragalus* as a non-specific immune system stimulant against cancer chemotherapy and radiation.
- Found to protect the adrenal glands' cortical function during treatment, which helps control blood sugar, burn protein and fat, regulate blood pressure and reactions to illness or injury.
- Found to enhance bone marrow white blood cell production activity normally depressed by cancer treatments, such as increasing the destruction of invading bacteria, viruses, or other invasive particles through phagocytosis (literally digesting those invading agents).
- Found to modify gastrointestinal toxins as the result of conventional cancer treatments.
- Patients receiving adjunct Chinese fu-zheng or astragalus therapy along with Western medical cancer treatments improved survival rates.
- Researchers in Texas performing laboratory and clinical studies found that water extracts of polysaccharide fractions helped restore T-cell levels in 90% of patients (9 out of 10) to the levels observed in healthy donors.
- Other studies show that *A. membranaceus* assists in reducing blood pressure, dilating blood vessels, improving circulation, and protecting the liver against producing toxic compounds (Steven, 2011).

Reishi fruit body extract
(*Ganoderma lucidum*, 30% polysaccharides)



21.4% Reishi (*Ganoderma lucidum*), extract (contains 30% polysaccharides)
21.4 g per 100 g, of which polysaccharides 6.4 g.
Per daily dose of 300 mg Reishi Extract and 90 mg of Polysaccharides.

- *Ganoderma lucidum* uses and beneficial effects are documented in the classical Materia Medica or Shen-nong's Herbal Classics, *Shen Nong Ben Cao Jing*, written in the Eastern Han dynasty of China (25-220 AD), and has continuously been maintained and extended.
- A well-known mushroom with an impressive range of health protective benefits.
- Data supports its anticancer, blood glucose regulating, antioxidant, antibacterial, and antiviral effects, as well as protection against liver and gastric injury.
- A good source of essential minerals: potassium, calcium, phosphorus, magnesium, selenium, silica, sulfur to be their main mineral components, and iron, sodium, zinc, copper, and manganese.
- Contains bioactive molecules: terpenoids, steroids, phenols, nucleotides and their derivatives, glycoproteins, and polysaccharides.
- Polysaccharides are active anti-inflammatory, hypoglycemic, anti-ulcer, antitumorigenic, and immunostimulating compounds.
- Terpenes have demonstrated having anti-inflammatory, antitumorigenic, and hypolipidemic activity.
- The *G. lucidum* mushroom contains all essential amino acids, and is especially high in lysine and leucine.
- Is used for strengthening the immune system and is taken when undergoing conventional therapies for cancer.
- Polysaccharides and triterpenes are major components in *G. lucidum*, and have been shown to exhibit chemopreventive and tumoricidal effects in numerous *in vitro* and *in vivo* human studies.
- Out of fifty-eight basidiomycetes mushrooms, *G. lucidum* proved to be the most effective for destroying cancer cells in various human and rodent tumor cell lines *in vitro*, including leukemia and lung cancer cells.
- Tumor cells were also arrested in breast, liver, bladder, and prostate cancer cell cultures.
(Wachtel-Galor, 2011)

***Agaricus blazei* fruit body extract, Polysaccharide extract
(*Agaricus* membrane)**



- A native mushroom of Brazil, known as “*Cogumelo do Sol*”, “*Himemastutake*” in Japan, and *Ji Song Rong* in China.
- Considered to be a most important medicinal species for atherosclerosis, cancer, diabetes, dermatitis, hepatitis (liver inflammation) and hyperlipidemia and hypercholesterolemia (high blood lipid, fat and cholesterol levels).
- In both laboratory and live test subjects, studies show *Agaricus blazei* has immunomodulatory, immunostimulant, antimutagenic and antitumor properties.
- High in minerals, vitamins, essential amino acids, and important types of fiber.
- Phytochemical compounds:
 - α and β -glucan antitumor activity as well as inhibiting tumorigenesis
 - Polysaccharides act on cell receptor sites provide greater inhibition of tumor growth.
 - Various phytochemicals as well as fatty acids in this plant have been found to act in synergy to prevent the formation of cancer cells in lung carcinoma in mice and prevent immune system impairments.
- A study reported that when cancer human test subjects consumed daily an extract of *Agaricus blazei*, it improved their immunological status and qualities of life, and minimized the effects of chemotherapy. White blood cell counts decreased while cancer cell destruction was significantly raised after 6 weeks, and side effects including appetite, alopecia (hair loss), emotional stability and physical weakness all improved.
- In many other clinical studies, *Agaricus blazei* demonstrated successful results for improved hypertension (lowered blood pressure), obesity and reduced cholesterol, and liver inflammation indications.

(Firenzuoli, et. al., 2008)

Bibernelle herb extract 10: 1 (*Pimpinella saxifraga L.*)



- *Pimpinella saxifraga L.* grows in temperate areas of Europe and in Asia.
 - Contains a great variety of phytochemical compounds, including:
 - Saponins, tannins, polysaccharides, resins.
 - Coumarins: pimpinellin, bergapten, umbelliferone.
 - Historically used as a diuretic, for heart disease, edema and cough as an expectorant.
 - Known for its anti-inflammatory, antispasmodic properties.
 - Has been shown to dissolve mucus in the respiratory airways; and be effective for sore throat, bronchitis and other upper respiratory infections.
 - Known for being effective against kidney and cystitis or urinary tract infections, and kidney stones.
 - Traditionally used for milk production in lactating women.
 - Useful for relieving flatulence from gastric upsets.
 - Extractions of *Pimpinella saxifraga L* reveal various beneficial phytochemicals for neutralizing free radical scavenging molecules that damage healthy cells:
 - Rutin, luteolin, quercetin, gallic and ellagic acids.
 - Rutin, a phenolic compound is found to have antioxidant, anti-inflammatory, and anti-diabetic properties.
 - Used for varicose veins, hemorrhoids, stroke and mucositis or inflammation of the mucousal linings in the digestive tract.
- (Marchyshyn et. al., 2018)

Gallic acid – an organic acid classified as a polyphenol phytochemical, it has been shown to possess potent free radical scavenging activity (neutralizes the damaging effects of free radicals), and disrupts the communications pathways between cancer cells leading to apoptosis or their own self-destruction. Gallic acid is found in tealeaves, oak bark, dates, bananas, blackberries, apples, and herbs sage, marjoram and oregano, as well as vinegar and cloves. Gallic acid is also present in chestnuts, soybean sprouts, cauliflower, eggplant, olive and chicory (Badhani, et al., 2015) (Phenol-Explorer, n.d.).

Ellagic acid – an antioxidant polyphenol compound that has been shown to bind to cancer-causing chemicals, rendering them inactive, and preventing those carcinogens from binding to DNA, and thus preventing cancer cells from developing and forming new blood vessels. It also has been found to enhance insulin's action, decrease insulin resistance, and therefore lower blood sugar, and lowers blood pressure when high blood pressure is detected.

Also prevents damage to the eyes, kidneys, heart, small capillaries in the hands and feet, which occurs in diabetes when blood glucose levels are elevated. Also inhibits an enzyme known as aldose reductase, which end products result in damage to the capillaries, preventing proper circulation and causing damage to the eyes, heart, kidneys, and causing stroke, heart attack and loss of limbs associated with diabetes.

Rutin – a phytonutrient flavonoid found in many plants and is classified as a flavonol glycoside, and is used therapeutically to decrease the fragility of capillaries. Rutin is part of a large family of glycoside polyphenolic compounds present in most fruits and vegetables, as well as buckwheat.

Rutin has been found to be antiallergenic, anticarcinogenic (helps prevent cancer), anti-inflammatory and antiproliferative (retards the spreading of malignant or tumorous cells). Rutin is also considered a protector against heart disease and inflammatory bowel disease.

Luteolin – Studies of luteolin, found in celery, parsley and rosemary, are thought to have neuroprotective effects by inhibiting inflammation induced by glial cells of the nervous system, showing improvement in spatial learning or being able to recognize and record information about one's environment, and in improving memory impairments.

Luteolin shows promise in improving impaired cognition, concentration, and multitasking abilities that require short and long-term memory associated with a wide range of disorders as a result of inflammation affecting the brain and nervous system.

A study applied a luteolin formulation containing olive fruit extract improved the attention span in autistic children, and in patients with cognitive difficulties (Gilbert, 2018).

Thyme herb extract 10: 1 (*Thymus vulgaris*)



- Hippocrates, “the father of Western medicine”, around 460 BC to 370 BC, recommended thyme for respiratory health conditions, and in ancient Egypt, it was used for embalming. It is now used for preserving meats and other foods in the food industry, and as a natural insect repellent.
- Is used both medicinally and as a spice in the food and aroma industries; it has been shown to be more effective as a food preservative than the potentially carcinogenic and allergenic BHT (butylated hydroxytoluene) according to the Environmental Working Group.
- Thyme’s polyphenols and flavonoid compounds prevent lipid peroxidation or the formation of free radicals that destroy manufacturing sites within the body’s cells. (Hailemariam, 2013).
- University researchers in Serbia found promise in thyme for helping those with high blood pressure; a study in Poland tested thyme oil and found its essential oils destroy a number of bacteria, including *Pseudomonas* bacteria; and oncologist researchers in Turkey found wild thyme to be effective in the self-destruction (apoptosis) of breast cancer cells.
- Researchers in Turin, Italy found that thyme essential oil enhanced the destruction of *Candida albicans*, the yeast that causes the yeast infection known as thrush, and still other university studies around the world found thyme’s effectiveness for skin problems, including acne.
- Researchers found that a combination of three of its essential oil compounds thymol, alpha-terpenene, and carvacrol are capable of killing the larvae of the tiger mosquito from Southwest Asia that carries the West Nile Virus, Yellow fever virus, St. Louis encephalitis, dengue fever, and Chikungunya fever (Nordqvist, 2016).
- Due to its high content of essential oils, thyme has expectorating and antispasmodic action, which makes it indispensable in the treatment of acute and chronic bronchitis, whooping cough and inflammation of the upper respiratory tract.
- Thyme is often used as an antifungal, antiseptic and disinfecting agent for skin, liver, biliary tract diseases, for imbalances of the gastrointestinal tract (relieves spasms and increases gastric secretion), and reducing inflammation of the mucous membranes in the mouth and throat.
- It is a strong anthelmintic, meaning it is effective against worm infestations.
- Contains potent antioxidant essential oil compounds that are antibacterial, antiviral, antifungal, and antiparasitic: oxygenated monoterpene and monoterpene hydrocarbons, and the sesquiole hydrocarbons para-cymene, gamma-terpinene, and the phenolic compound thymol, and other polyphenols or phenolic compounds (Motamedi, et. al., 2013).
- When tested against commonly known bacteria that causes typical food borne diseases or food poisonings, thyme essential oil was found to effectively destroy the following bacteria: *Salmonella enteritidis*, *Salmonella thyphimurium*, *Escherichia coli*, *Staphylococcus aureus*, Methicillin resistant *Staphylococcus aureus*, *Bacillus cereus* (Bosovic, et. al., 2015).

Hyssop herb extract 10: 1 (*Hyssopus officinalis*)



- Is distributed in the east Mediterranean and central Asia regions.
- Traditional name in Iran is called Zufa, where it is known for its carminative (flatulence relieving), tonic (invigorates), antiseptic (prevents growth of microbial infections), and expectorant and cough relieving qualities.
- Contains antioxidant, anti-platelet or clot-regulating, and anti-fungal properties.
- Has shown to be effective for helping to modulate hyperglycemia (high blood sugar).
- Contains antioxidant, free radical neutralizing phenolics and flavonoids.
- Essential oils:
 - 1,8- Cineole
 - L- linalool
 - Cis- sabinol
 - Camphor
 - Terpineol-4
 - Myrtenal
 - Bornyl acetate(Fathiazad,2011)
- Other literature reviews of the biochemicals in hyssop (*Hyssopus officinalis*) include:
 - Polyphenolic compounds: flavonoids apigenin, quercetin, diosmin, luteolin and their glucosides.
 - Phenolic compounds: chlorogenic, protocatechuic, ferulic, syringic, p-hydroxybenzoic and caffeic acids.
 - Essential oils contain: terpenoids, pinocamphone, isopinocamphone, and β -pinene.
- Has antibacterial, antifungal, and antiviral properties *in vitro*.
- Other researchers have identified 21 compounds, including various monoterpenes, phenols, sesquiterpenes, and myrtenol methyl ether, myrtenic acid, methyl myrtenate, pinic acid, cis-pinic acid, hydroxyisopinocamphone, pinonic acid and cis-pinonic acid.
- One study tested *Hyssopus officinalis* and found its crude extracts to strongly inhibit the HIV virus from replicating itself, without toxic effects on the immune system's lymph cells' detoxification and clearing functions.
(Fathiazad, 2011)

Mullein Arctic Herb Extract 10: 1 (*Verbascum herb extract*)



- Used medicinally in our ancient past, mullein (pronounced mullin) commonly grows along roadsides, and in pastures and meadows in the U.S.
- Used internally and externally by people in Europe, Asia, Africa and North America.
- Has been used for pulmonary (lung), respiratory tract problems: asthma, coughs, hoarseness, whooping cough, and bronchial congestion.
 - Anti-inflammatory, anti-irritant properties are due to polysaccharide mucilaginous iridoids glycosides and flavonoids.
 - Saponins play a role in its expectorant properties by stimulating fluid production.
 - Mullein's expectorant actions of the saponins and the soothing effect of its mucilage is a synergistic effect for hoarseness, tight coughs, bronchitis, asthma and whooping cough.
- Used against tuberculosis, diarrhea, migraine headaches, and other inflammatory conditions.
- Leaves and flowers are known for their expectorant and demulcent (anti-inflammatory) properties, particularly in the urinary tract.
- Has been used for pneumonia.
- Other researchers have found other properties:
 - Anodyne (pain relief), antiseptic, antispasmodic (relieves muscle spasms), astringent (contracts skin cells).
 - Emollient (skin softening), nervine (calming the nerves), vulnerary (healing of wounds), analgesic (pain relieving), antihistaminic (prevents allergic responses).
 - Anticancer, antiviral, bacteriostat (prevents the multiplying of bacteria).
 - Fungicide, sleep relaxant.
- Used against warts, ringworm, colic, for burns and chronic bacterial infections, and toothaches, relieving cramps, frostbite and bruises.
- Used to help control convulsions.
- Used for earaches and ear discharge, and eczema.
- Active compounds show promise in research for stress-related neurodegenerative conditions: iridoids, saponins, flavonoids, phenylethanoids, and neolignan glycosides. (Science, 2021)

Lungwort herb extract 10: 1 (*Pulmonaria officinalis*)



- Used throughout Europe and western Asia.
 - Traditional medicine systems in many countries use Lungwort for respiratory conditions such as asthma, chronic bronchitis, tuberculosis, and laryngitis.
 - Also used for coughs as an expectorant, an antitussive (cough reliever), and diaphoretic (induces perspiration).
 - Other ethnomedicinal sources also use *Pulmonaria officinalis* as infusions or decoctions as an astringent, anticoagulant, anti-microbial and anti-inflammatory.
 - Used for urinary conditions, cystitis (bladder inflammation), and has shown to be an effective diuretic (increases urine production) and anti-lithiasis (prevents formation of kidney stones).
 - Is also applied externally for burns, cuts, and skin eruptions such as eczema.
 - Contains many beneficial phytochemical compounds:
 - Quercetin, kaempferol glycosides.
 - Chlorogenic acid, myricetin, acacetin.
 - Apigenin, rutin and hyperoside, hesperidin, naringin glycosides.
 - Rosmarinic acid, chlorogenic and caffeic acids.
- (Krzyzanowska-Kowalczyk, 2018)
- Studies show Lungwort's strong acetylcholinesterase functioning potential.
 - Acetylcholinesterase – enzyme that plays a major role in the central nervous system (CNS) and peripheral nervous system (PNS); activates an important neurotransmitter, acetylcholine.
 - *Pulmonaria officinalis* helps protect against neurodegenerative conditions such as Alzheimer's disease (AD) by preserving levels of acetylcholine, the main neurotransmitter of the parasympathetic nervous system, the part of the autonomic nervous system that causes contractions of smooth muscles, dilates blood vessels, modulates heart rate, and increases bodily secretions. (Smooth muscles include those in hollow organ walls such as arteries, veins, respiratory and urinary organs, stomach, uterus, and intestines.)
 - Studies show lungwort's strong antioxidant activity against oxidative injury occurring in neurodegenerative diseases that lead to stroke, Alzheimer's disease, and vascular dementia. (Oxidation occurs at the molecular/atomic levels where valuable electrons are lost, indicating degenerating conditions.)
 - Findings also show how lungwort's compounds help modulate the functions of tyrosinase, the enzyme that is involved in producing the pigment colorations of the eyes, skin and hair.
 - In relation to degenerative brain conditions such as Parkinson's disease, lungwort's compounds have also been shown to help modulate tyrosinase enzyme's involvement with neuromelanin production in the brain that might otherwise lead to damaged neurons or nerve cells.

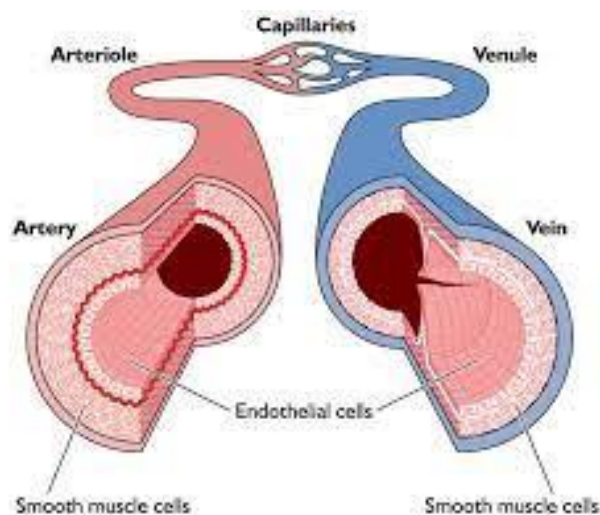
- Lungwort has also demonstrated the ability to inhibit overproduction of acetylcholinesterase activity, which normally breaks down the neurotransmitter acetylcholine into the simpler compounds, acetic acid (an organic acid used in various biochemical pathways, gives vinegar its distinctive taste) and choline (an essential nutrient similar to B vitamins).
 - Lungwort contains various polyphenols, flavones, proanthocyanidins, all of which help reduce age-related neurological conditions, including preventing the degeneration of the eye's macula (central area of the retina, the light sensitive tissue lining the inside of the eye).
- (Neagu, 2018)

Horehound herb extract 10: 1 (*Marrubium vulgare*)



- Contains a complex variety of phenolic phytochemical compounds that are excellent antioxidant agents that are regarded as potentially useful for cancer, diabetes mellitus (type 2 diabetes), and liver conditions.
- Horehound is known for its wound healing qualities.
- Is found to be antihypertensive (helps control high blood pressure), hypolipidemic (helps prevent high blood fat or lipids).
- Has a calming effect on the nervous system.
- Anti-viral.
- Phytochemicals in horehound have been found to be anti-bacterial, anti-fungal, antilarval, and work against herpes simplex virus, and the parasites *Toxoplasma gondii*, *Trichomonas vaginalis*, and *Plasmodium berghie-berghie*.
- Natural lice repellent, herbicide, natural insecticide.
- Known in medical systems worldwide as an effective solution for gastrointestinal (stomach and intestines) and respiratory conditions.
- Contains extensive amounts of beneficial antioxidant, phytochemical compounds that assist in maintaining a balanced body chemistry of homeostasis:
 - Monoterpenes: camphene, p-cymol, fenchene, limonene, α -pinene, α -terpinolene, marrubic acid, and monoterpene glycoside sacranoside.
 - A, sesquiterpene lactone vulgarin, β -sitosterole and lupeol, and β -amyrin triterpenoids such as oleanolic acid.
 - Phenolic compounds: phenolic acids, phenylpropanoid (cinnamic) acids, esters, flavonoids, tannins and catechins.
 - Other detailed analysis included finding gallic, gentisic, p-hydroxybenzoic, protocatechuic and syringic acids.
 - Other quantified phenolic cinnamic acids included the discovery of trans-cinnamic, ferulic, o-coumarinic, p-coumarinic and sinapic acids, as well as chologenic acid and other cinnamic acid esters.
 - Above antioxidant compounds help prevent biochemical imbalances that lead to oxidative stress, considered to be the main cause of aging, cancers, diabetes, neurodegenerative conditions, and inflamed conditions such as arthritis.
 - The above organic acids and many others are important in maintaining proper biochemical processes in all body systems (Drincovich, 2016).
- Found to be an effective cough suppressant, relieving hoarseness, and as an expectorant for expelling catarrh (excessive mucous production).

- Found to be effective for mild digestive problems such as bloating flatulence since it helps increase digestive juices in the stomach and helps produce bile for digesting fats.
- Has shown to have hepatoprotective (liver-protecting) properties.
- Essential oils in *Marrubium vulgare* were found to prevent proliferation of cervical cancer cell lines, and reduced the regeneration of melanoma and glioma cancer cell lines *in vitro*, and induced apoptosis and autophagy (cancer cell self-destruction).
- Horehound extracts have been found to significantly reduce oxidation actions that adversely affect the heart.
- In another study, researchers administered *Marrubium vulgare* on their hypertensive test subjects and found it resulted in a decrease in systolic blood pressure due to its actions of relaxing the blood vessels, and improving the smooth muscle actions of the endothelial tissues linings that move blood through the vessels.



Lonza Bioscience 2021

- Has shown hypolipidemic activity; helps decrease total blood cholesterol, LDL cholesterol and triglyceride levels.
- Has demonstrated gastroprotective actions against ulcers.
- Has shown antimicrobial properties against *Escherichia coli*, *Bacillus subtilis*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa*, *Proteus vulgaris* and *Candida albicans*.
- Has shown to be effective for wound healing.
- Antiviral actions in destroying acute and recurrent herpes simplex virus type 1 (HSV-1), which causes mouth and lip sores (also known as cold sores or fever blisters). HSV-2 causes genital herpes.
- Other researchers showed horehound to be effectively useful against the *Toxoplasma gondii*, the parasite that causes encephalitis (inflammation of the brain) and causes congenital (present from birth) disorders.
- Also demonstrates potent antiprotozoal activity against the protozoa parasite, *Trichomonas vaginalis*.

(Acimovic, et. al., 2020)

Other ingredients

Hydroxypropyl Methylcellulose (HPMC)



- HPMC is used as a vegetable capsule shell.
- Derived from plant cellulose fiber; is not absorbed by the body.
- Has been found to modulate amounts of lipoproteins in cell plasma.
- Promotes changes in liver lipid (fat) levels.
- In the intestine, it acts to increase fat in the feces and the excretion of fats such as the harmful trans fats in fast-food diets.
- Preliminary studies on mice showed reductions in plasma cholesterol, glucose (blood sugar) and insulin levels (Caballero, 2016).

Anti-caking Agent: Magnesium Salts of Fatty Acids Also Known As Magnesium Stearate

- Magnesium stearate is a very commonly used food additive that has been used in the food and supplements industry for many decades, and has never shown any toxic effects on health.
- Is produced by one of two processes involving edible fats and oils, mainly stearic and palmitic acid by:
 - a. causing a direct reaction between fatty acids and a form of magnesium.
 - b. initiating a precipitation process of reacting fatty acids with sodium hydroxide in water and adding magnesium salts to form the “soap”.

(Hobbs, et. al., 2017)

DL-alpha-tocopheryl Acetate

- Part of a large class of organic compounds of natural vitamin E.
- Also known as alpha-tocopherol acetic acid or D-vitamin e acetate.
- Other forms of vitamin E occur naturally in various plants, with varying actions in the body, including:
 - Alpha-, beta-, gamma-, delta-tocopherols, and alpha-, beta-, gamma-, and delta-tocotrienols.
 - Extensive studies have shown tocopheryl acetate, tocopherol, and tocopheryl succinate to modulate or minimize cancer or tumor causing agents (American, 2002).

L-cysteine hydrochloride

- An amino acid the body can produce from the essential amino acid methionine, which one must derive from food. Both are necessary for synthesizing body proteins.
- As a side chain containing sulfur on this molecule, L-cysteine hcl has been shown to carry out multiple important functions in the body, particularly in situations such as the following to:
 - Reduce scarring after damage to the eye's cornea.
 - Be included in nutritional therapy in stroke victims or seizures, and reduce the associated risk of a cardiovascular accident (blood flow is obstructed due to blockage or rupture).
 - Reduce hair loss and strengthen it.
 - Protect and maintain the digestive system, preventing cancers of the digestive tract and breast cancer.
 - Reduce chronic inflammation.
 - Improve the breakdown of carbohydrates, modulate insulin, and maintain a healthy body composition of body fat to lean body mass ratios.
 - Help type-2 diabetes by helping to maintain proper blood triglyceride levels.
 - Help reduce oxidative (degenerative) stressors such as free radicals in aging.
 - Improve ulcer healing.
 - Improved performance of athletes.
 - Restoring the proper attenuating actions of Natural Killer (NK) immune cells.
- Consumption of all essential amino acids are associated with various cardiovascular benefits, such as maintaining pliable blood vessels as opposed to arterial stiffness, thereby avoiding vascular damages leading to stroke.

(Clemente, 2018)

Retinyl Acetate

- One of the most common forms of vitamin A, retinyl acetate is known as a *preformed vitamin A*, and is used in nutritional supplements, dairy and fortified cereals.
- Is an active form of the vitamin that can be directly utilized without needing to be converted to a useable form.
- Derived from meat, poultry, fish or dairy products.
- Preformed vitamin A is 50-90% absorbable into the body's cells.
- The other type of vitamin A is the provitamin A found in compounds of plants, such as the carotenoids. A portion of provitamin A is converted to retinal, which is found in and maintains the eye tissues, or is further converted for utilization to retinol, then retinyl esters.
(Harrison, 2018)
- Retinyl esters are found in fat droplets, mixed with triglycerides (blood lipids that, when elevated, are stored as body fat) and cholesteryl esters, that are stored in the liver, with lesser amounts in the kidneys and the lungs, and lower still amounts in various other body tissues.
(Ross, 2018)

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