

COMBINATION OF KEY INGREDIENTS FOR EASY BREATHING

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ABSTRACT

The goal of this paper is to emphasize the advantages of lozenges. As well as the components employed in its formulation, how they benefit human health by assisting the body in enhancing its natural defense against irritants found in the environment. In addition, airborne particles can interfere with a person's normal breathing process. There are multiple ingredients that help the body to enhance its ability to defend against the factors present in the environment and the breathing array that continues in their everyday life whose benefits are discussed.

Index Terms—Lozenges, benefits.

INTRODUCTION

LOZENGES have grown in popularity over the last decade due to their ability to heal while using a different technique than other drug products while and providing multiple benefits.

They are thought to be a unique approach for administering medications with a systematic effect. Lozenges have been extensively embraced by people of all ages, including adults and children. These are solid preparations that contain a variety of medications in a sweetened and flavored basis that is meant to dissolve gradually in the mouth. These are created by compressing or shaping) sugar-based tablets. The crushed lozenges are referred to as troches, whereas the molded lozenges are known as pastilles.

They are designed specifically for the patients who are not capable of swallowing solid oral dosage. They gradually discharge a steady level of medication into the oral cavity or bathe throat tissues with drug solution. Lozenges have been widely used in the past to relieve mild throat pain and irritation They can also be used as antibacterial and sedatives.^[1]

Lozenges are commonly used to obtain the benefits of antimicrobials, analgesics, corticosteroids, aromatics, antitussives, and demulcents, as well as various combinations and classes. Along with all the benefits that lozenges have to offer, it also assures much easier dosage consumption because each of its serving is apportioned and can have a relieving effect on the throat, gradually, as all its ingredients release and spread over the mucosal membrane. Its administration is easier for both geriatric and pediatric patients. The pleasant taste of the lozenges

extends the time of contact with the affected membrane to cause the local activity. The systematic absorption of these medications can also take place through the buccal cavity with very little equipment. The taste of these drugs is usually masked using flavors and sweeteners that are used in the making process.^[2]

Benefits of Ingredients

Since the development of medications has been shifted toward the use of more natural substances, the source of these medicines is usually herbs, and the popularity of herbal remedies has grown since then. The basic objectives of these medicines are promotion (maintaining the natural/original condition of the human body), prevention (preventing diseases), curation (curing diseases) and rehabilitation (recovery of the body).^[3]

Lozenges dissolve in the mouth, causing the excitatory flavor to last longer. This helps for covering the active ingredients as well as the additional materials that are used for the composition of the lozenges. The main purpose of the production of lozenges by the pharmaceutical firms is boosting immunity, increasing stamina in human body, and keeping all its functions sound for it to support its daily routine and prevention of fatigue. Lozenges are highly convenient as they do not need to be swallowed by water. Instead, the water present inside the mouth helps to break it down.^[4]

The main ingredients that are responsible for fulfilling the basic task for providing ease in breathing are further discussed. All these ingredients play their distinctive roles to ensure the increase in stamina in human body. The ingredients used for the composition are mentioned as below.

- Green tea (leaf)
- Baikal Skullcap (root)
- Astragalus (root)
- Ginger (root)
- Licorice (root)
- Eucalyptus (leaf)
- Mangosteen (fruit)
- Grape Seed
- Black Currant
- Ash berry

1. Green tea

One of the main ingredients used for its composition is the green tea leaves. It contains active caffeine compounds along with theophylline and theobromine. These further belong to the chemical compounds' class of Xanthin. Three of these substances work together to enhance blood flow within the human body via the coronary arteries, relax the bronchi, and act as stimulants for the heart muscle and brain system.

Green tea contains several EGCG (Epigallocatechin gallate), EGC (epigallocatechin), EC (epicatechin) and ECG (epicatechin gallate). The flavonoids, serving as antioxidants, act as hypocholesterolemic, cariostatic and anti-carcinogenic. Several studies demonstrate that green tea can also be used as a tonic, hypoglycemic agent, and to prevent atherosclerosis.^[5]

2. Ginger

People have long used ginger as a medication to treat and prevent a variety of health problems, including digestive disorders, tonic, analgesic, anti-inflammatory, and cold symptoms. According to a number of studies, ginger also has antioxidant effects. The major components of ginger such as Shogaol, Gingerol and Gingeron show antioxidant performance beyond the limits of vitamin E. Ginger is also very effective to cure motion sickness and it also has antiemetic activity. If ginger extracts are consumed on regular basis, as a combination with other ingredients within conventional medicines or serviceable beverages, it can assure the increase in endurance and treatment of diarrhea.^[6] Ginger contains some components that are responsible for antioxidants activity such as 6-shogaol and 6-gingerol. Antioxidants are known to be the compounds that are capable of either preventing or slowing down lipids' oxidation.^[7]

According to the researchers, the combination of ginger and green tea is more beneficial than any of them alone.^[6]

Ginger vs. Turmeric

There are a variety of things that can happen if ginger is used instead of turmeric to get the anti-inflammatory effects. Apart from the spicy zing and sweet taste ginger has to offer, it is also considered to be highly effective for the treatment of lower back pain as well as osteoarthritis. The spice of ginger also offers anti-tumor effects that shows prevention of the platelets to stick

together. In addition to it, its antiemetic spice is also very effective to control the feeling of nausea.^[8]

3. Baikal Skullcap

Baikal skullcap supplements are the most famous for the treatment of multiple health issues such as inflammation, microbial infection, respiratory infections, diarrhea, and insomnia. This versatility of Baikal skullcap is due to its properties concerning anticonvulsant, anti-bacteria, antiviral, and anti-inflammation. These properties are mostly concentrated in the rhizome and roots of the plant. It also offers a benefit as a dietary supplement as it also consists of anti-obesity features i.e., it also helps the consumers to lose abdominal fat and weight. However, it is also worth noting that Baikal skullcap is being studied to learn more about its efficacy and safety for use. Similarly, several studies have shown that it is beneficial to digestion and metabolism. It decreases inflammation and aids in the management of gut bacteria as well as digestion.

In addition to all the above-mentioned benefits, its supplements can have considerable impacts on the cardiovascular functions. In the case of oral ingestion, it may also aid in the treatment of a variety of disorders such as anti-inflammation, anti-hypertension, vasodilation, and antispasmodic properties. These impacts are very much related to circumstantial efficacy as an intervention for fever and respiratory infection therapeutically. Its extraction can treat skin inflammation and is a good treatment for psoriasis. It is extensively used with in TCM, with yellow phlegm, as in Chinese medicines it is considered to be a type of herb that not only clears the fever but can also effectively drain dampness. It can have beneficial impact on lung meridians, stomach, gall bladder and large intestine.

It is also considered to be a part of the "three yellows" that are composed of yellow-colored herbs and prevent and cure fever. Apart from Baikal skullcap, the other two yellow herbs are Coptis and either Chinese rhubarb or philodendron that make up the formula for cooling and fighting the pathogens at three torso levels. Baikal skull affects the upper part. It is worth mentioning that it is the only yellow herb, among the three, that relies on antioxidants and flavonoids and do not contain berberine.^[9]

4. Astragalus

A number of various species of Astragalus are used for medicinal purposes. Among all of these species, *A. membranaceus* is the best studied. It is also listed as species *A. mongholicus* and *A. complanatus* in the Chinese Pharmacopoeia officially. Many of the pharmaceutical preparations are based on the extracts of such species. The active constituents belong to the two types of chemical compounds i.e., the saponins and polysaccharides. Pharmacologically, the most important properties of Astragalus include antiviral, hepatoprotective, and immunostimulant. The

hepatoprotective characteristics of the membranaceous extracts have been under extensive research and their active values and benefits have also been explained. According to the research, properties concerning anti-oxidation can play a vital role for the prevention of liver damage. According to animal studies on the effect of *A. membranaceus* roots on the occurrence of hepatic damage caused by the induction of CCL4, the roots were able to raise total serum levels of albumin and protein. Furthermore, it prevented a reduction in hepatic glycogen.^[10]

In terms of experimentation conducted on mice in case of chemical injury that was obtained through the induction of acetaminophen, D-galactosamine and CCL4 protective effects over the liver were observed by the saponins that were isolated from both, *A. sieversianus* and *A. membranaceus* against the injury occurred. All the observations were positive in terms of its consumption as the concentration of GSH (glutathione) increased and there was a decrease in the MDA (malondialdehyde) content. The saponins generated an increase in SGPT levels in the mouse liver.^[11] In case of evaluation of the same compounds on the rat hepatocytes, it was observed that the activity was driven by the anti-oxidation activity in the saponins as the level of protein present in the treated mice was beyond control. The level of microsomal cytochrome was also increased in the treated mice. Saponins are predicted to play a role in immune regulation and liver metabolism for the hepatoprotective effect. When the experiment was carried out and the activity of a membranaceous extract as well as the components of cycloastragenol-xylosyl-glucoside upon lipid peroxidation was closely analyzed in vitro and in vivo, very similar results were achieved. In both cases, the inhibition of in vitro production of the lipid's peroxides took place. It also restrained the lipid peroxidation that was increased by the Adriamycin among mice along with the considerable impact for triterpene derivative.

A modification of the response can be responsible for the anticancer as well as antiviral activities of *A. membranaceus*. The studies show that the main components of water from species i.e., astralagan I and II, caused the immunological response to potentiate after administering I.P. they increased the cell number and weight of the mouse spleen and elevated its response against the red blood cells. They also simulated the phagocytic activity of the peritoneal macrophages. The phagocytic function of the peritoneal macrophages was not affected when the compounds were P.O or I.V.^[10]

5. Licorice

Licorice is responsible for ascribing several different benefits by its consumption. For many decades, Licorice has been widely used in folk and herbal medicines to treat a variety of ailments and health conditions, including those connected to the respiratory system and gastrointestinal complaints.^[12]

Licorice is known to have anti-ulcer, immunological stimulatory, anti-microbial, and anti-viral actions, as well as anti-carcinogenic and hepatoprotective effects, which lead to the protection of the endocrine, pulmonary, cardiovascular, and neurological systems.^[13] Licorice also poses considerable impacts against all the gastrointestinal issues as it repairs the inner layer of stomach and cleanses the respiratory system. This occurs due to increase in production mucus.

Licorice contains over 300 components, including flavans, flavonoids, chalcones, phenolic acids, iso-flavonoids, and iso-flavans, as well as glabridin, which is the major compound found in the hydrophobic section of the licorice extract.^[12] The triterpenoid saponin glycyrrhizin, which accounts for 3 to 5 percent of the triterpenoid saponin glycyrrhizin content, is responsible for the sweet flavor in licorice and is also regarded to be the primary active component of licorice.^[14] According to studies, excessive licorice consumption can not only have a harmful impact on the cardiovascular system but can also cause hypertension. The drug under discussion has been composed considering these factors and contain a safe amount of licorice that will not harm the consumer in any way. Instead, it offers all the natural benefits that are mentioned above.^[15]

6. Eucalyptus (leaf)

The specific mechanism of eucalyptus responsible for anti-inflammatory properties in terms of analgesic effects is still unknown. However, it has been shown in several studies that certain of its components, such as eucalyptol, are the principal inhibitors for anti-inflammatory medications. In addition, eucalyptol has been found to create prostaglandin E2, leukotriene B2, and other arachidonic acid metabolites in human monocytes. There are also some documents that show that monoterpenes possess secretolytic characteristics against numerous inflammatory mediators. It can be concluded that due to the presence of these components in eucalyptus, it can be associated with the anti-inflammatory characteristics.^[16]

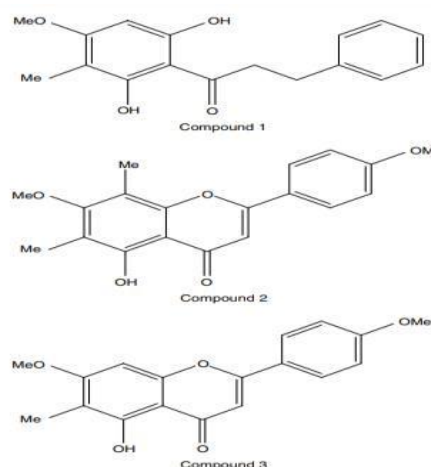


Figure 1: Antimicrobial compounds' structure that are isolated from the eucalyptus maculata.^[17]

Mangosteen (fruit)

Some of the following research can highlight the benefits of *Garcinia mangostana* Linn (GML) in terms of medicinal purposes.

- In order to test the capability of the plants against bacteria for inhibiting MRSA in 35 hospitals, the aqueous and ethanolic extracts were acquired from conventional Thai medicinal plants. Ethanolic extracts obtained from GML and *Quercus infectoria*, *Punica granatum* were found to have the highest ability to inhibit the growth of bacteria, having the MIC values of 0.05, 0.4 and 0.2 and 0.1 to 1.6 lg/mL respectively.^[18]
- It was observed that when b-mangostin was obtained from the *C. cochinchinense* roots, the IC₅₀ value was .2 lg/mL in contrast to *P. falciparum*.^[19]
- Another study proved that the a-mangostin was observed to have inhibitory activity contrary to MRSA and vancomycin resistant Enterococci (VRE) having the MIC values of 12.5 and 6.25 lg/mL respectively.^[20]

Grape Seed

Chronic diseases are mostly associated with higher morbidity and mortality rates worldwide. These are typically associated with the inflammatory process, which becomes extremely difficult to control using the existing interventions and therapies. It is strongly advised to consume anti-inflammatory nutrients in order to manage such chronic disorders. It was observed that grape seed oil decreased the platelet adhesion in vitro. It was reported to have been more effective as compared to pure resveratrol. Referring to another study that showed the effect of grape seed to reduce on oxidized LDL when observed in 61 healthy subjects, hence this shows that grape seed has potential for cardio protection. The grape seed contains polyphenols that are responsible for inhibiting release of AA (arachidonic acid) that is responsible for the activation of inflammatory response due to the production of prostaglandins and leukotrienes.^[21]

Black Currant

Black currant berries are an amazing source for bioactive compounds including flavonols, anthocyanins, phenolic acids and procyanidins. Black currant is also a good source for bioactive polyphenols and are present as 500-1342 mg/100g of the total polyphenols with mostly the anthocyanins present as 160–411 mg/100 g. Black currant polyphenol microcapsules are an excellent food supplement for use in functional meals. This is because of the antioxidant content. It is because it has bioactive elements that are good to human health.^[22]

Ash berry

Ash berries are mostly used for making medicines due to their treating capabilities. They offer benefits for treatment of multiple diseases such as deficiency of Vitamin C, menstrual issues, diabetes, diarrhea, arthritis, and various kidney diseases as well.

Other ingredients

It also contains other beneficial ingredients such as Molasses, Beet Sugar and Citric Acid. Molasses is widely utilized in the production of medicines to treat a variety of ailments such as neuralgia and rheumatism. Because of the antioxidant properties of molasses, such illnesses can be treated. It aids in the regulation of blood sugar levels.^[23] Citric acid is considered to be an excipient in the medicinal preparations due to the presence of antioxidant features. It stabilizes the active constituents and is also used as a preservative. It controls pH, hence can also be used as acidulant.^[24]

Nutrition Facts

Serving Size: 1 drop

Servings per container: 30

Amount Per Serving: %DV %VD

Calories: 6

Carbohydrate 2g 1%*

Total Sugars 1g †

Includes 1g Added Sugars 2%*

*Percent Daily Values are based on 2,000 calorie diet.

†Daily value not established

CONCLUSION

All the ingredients present discussed in the paper show that their regular consumption can have healthy effects on the consumer. All the ingredients are 100% natural and hence they help the consumer to enjoy the benefits of all these natural compounds conveniently. The combination of all these helpful components ensures that the product helps the consumer in protecting his body from environmental irritants and developing the immune system to boost the body's natural defenses.

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