

BENEFICIAL EFFECTS OF INGREDIENTS IN TERMS OF COGNITIVE CLARITY

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ABSTRACT

The Acumullit SA technology is comprised of three processes including fixation of active molecules in caramel mass, botanical mix, and its bio-activation. This technology is solely intended for the preservation and significant improvement in the availability of botanical benefits and constituents in food product. This technology is highly effective for helping the human body to maintain its regular functions. Acumullit SA offers a number of various products that contain all the necessary nutrients. This paper is made up of a variety of components that help to enhance and increase cognitive clarity for thinking, learning, attentiveness, and stress management.

Index Terms—Benefits, diseases, lozenges.

I. INTRODUCTION

In terms of medical field, lozenges are widely used in the forms of dosages to treat various health related issues. The primary goal of lozenges is to increase the time spent in the oral cavity. This helps to increase the bioavailability as well as reduce gastric irritation. It also circumvents the first pass metabolism. Lozenges provides very pleasant means of dosage. It has a distinguished position in the field of pharmacy due to its certain advantages. It can be composed by the incorporation of different ingredients and its utilization can be adopted for a wide range from local to systematic therapy.^[1] The combination of mentioned ingredients helps to maintain the already present function of the human body that includes alertness, mental performance, healthier cognitive functionality, concentration and focus. All of the ingredients used in it are extremely useful to the human body and help to improve a variety of physiological processes.

II. Benefits of Ingredients**1. Ashwagandha (root)**

Ashwagandha, *Withania Somnifera* or WS, is mostly used for making Ayurvedic medicines, a conventional medical system implemented in India. It is used for formulation of a number of different medicines for the improvement of musculoskeletal conditions, including rheumatism and arthritis. It is used as a general source of increasing energy and improvement of overall longevity and health. It is also very effective for the prevention of various diseases in elderly, athletes, and during pregnancy.

Several studies have been undertaken to demonstrate the diverse qualities of Ashwagandha, proving that it can be employed as a multi-purpose therapeutic substance. Some studies, for example, have discovered anti-inflammatory effects in dunal, sitoindoside, withaferin, winter cherry, solanaceae, and Indian ginseng.^[2]

2. Ginkgo (leaf)

Ginkgo Biloba is commonly known as a medicine that is used for treating the early stage of vascular dementia, Alzheimer's disease, tinnitus of vascular origin and peripheral claudication. A number of trials and studies for the treatment of dementia and cerebrovascular illness have been conducted, and the results demonstrate that the herb has properties for improving dementia symptoms. The treatment features of ginkgo are believed to be conducted by its characteristics as an antioxidant, stabilizer of membrane, neuroprotective agent as well as the activating factor of platelet through terpene ginkgolide B.^[3] In addition to it, multiple other effects that are observed include endothelium relaxation mediated by retardation of 3',5'-cyclic guanosine monophosphate (GMP), loss of α -adrenoceptors and muscarinic cholinceptors related to age. It has also been proven that Ginkgo is capable of inhibiting beta-amyloid deposition.

The results achieved due to the usage of Ginkgo showed that it decreased vaso-activity as a rejoinder to cold, asthma, macular degeneration and vasoactivity. The WHO (World Health Organization) has also recommended its use for treating acrocyanosis, Raynaud's disease and post-phlebotic syndrome.^[4]

3. Green Tea (leaf)

Tea, in both black and green varieties, is one of the most widely consumed beverages on a global scale. A lot of effort has been put into studying the biological properties of the major tea constituent EGCg (Catechin Epigallocatechin gallate) as well as its benefits as an antitumor medium. Tea also provides a lot of different benefits to the human body, which is primarily due to the presence of many important constituents in it. The features in its composition are either related to antioxidant features for black and green tea or improvement in atherosclerosis and cardiac health. Many of its constituents are also responsible for anticancer actions.

Extracts that are obtained via tea leaves are usually consumed as dietary supplements. Tea was discovered 5,000 years ago in Southwest China with the sole purpose of being used as a bitter potion as a medication for a variety of health conditions. It was proposed that

the younger leaves were high in catechins, which were then utilized.^[5] These extracts are made from raw *Camellia sinensis* leaves through a fermentation process. This process is controlled and involves the dimerizing of catechins to produce theaflavins. The process's main advantage was the mean percentage change in total cholesterol, HDL (high density lipoprotein cholesterol), and triglyceride levels when compared to the standard baseline. Green tea supplemented with theaflavin has been shown to be an effective adjunct in lowering LDL in hypercholesterolemic adults by a low fat-saturated diet and to be well tolerated.^[6]

It is evident that its fame has been increasing exponentially in the modern era as well. It has been shown that Siberian Ginseng, in conjunction with Eleutherosides, has a significant influence on the improvement of abilities connected to learning and memory. This is not observed from any other kind of Ginseng.^[8]

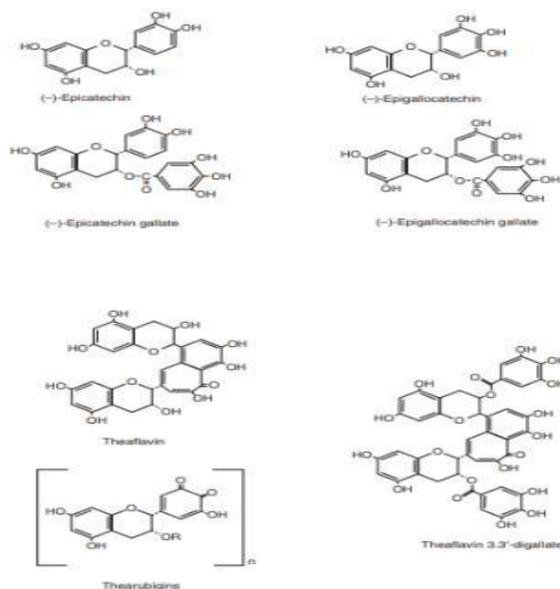


Figure 1: Chemical Structure of Constituents of Tea.^[7]

Siberian Ginseng (root)

Efficacy	Alzheimer's disease: effective Cerebrovascular disease: modest positive effects Dementia: modest positive effects Memory enhancement: ineffective in adults without dementia Intermittent claudication: modest positive effects Tinnitus: modest positive effects
Adverse effects	Rare: nausea, vomiting, diarrhea, headaches, dizziness, palpitations, restlessness, weakness, skin rash
Interactions	Warfarin (Coumadin), aspirin, antiplatelet agents, herbal medications such as feverfew, garlic, ginseng, dong quai, red
Dosage	120 to 240 mg per day, in 2 to 3 doses
Cost	\$15 to \$20 per month, depending on brand, for a dosage of 120 mg per day
Bottom line	Safe herbal medication; may be effective for treatment of symptoms of Alzheimer's disease, intermittent claudication, z

Figure 2: Key points about Ginkgo

5. Magnolia-Vine (fruit)

The Chinese fruit, magnolia vine, was initially used for the treatment of multiple diseases related to cardiovascular system, gastrointestinal tract, and respiratory failure, specifically in cases of insomnia, weakness, fatigue, and excessive sweating. This fruit has been popularly known in Russian conventional medicine. In this particular field, it was known to treat fatigue. It was known as a tonic for reducing hunger, delaying aging, improving mental health, and increasing vigor. Various investigations and studies on its qualities have shown that the biological activity from the extracts of this fruit, notably the primary component of this fruit, dibenzo [a,c]cyclooctadiene lignans, is capable of these activities.^[9]

6. Water Hyssop (leaf)

Siberian Ginseng or the Siberian Eleuthero is referred to as *Eleutherococcus Senticosus* botanically. It is branched as *Araliaceae* type. It is the same class as that of the Korean ginseng. The Siberian Ginseng is quite different due to the presence of Eleutherosides. It has been claimed that the Siberian Ginseng offers a lot of health benefits such as improvement in memory and learning abilities, enhancement in stress durability and the reduction of Bronchitis' symptoms. The active constituent in Ginseng is claimed to be ginsenosides. It is an exclusive compound that is found in Ginseng. In terms of class, ginsenoside shows a wide range of difficulties to characterize in isolated studies. It has been discovered that these ginsenosides are capable of boosting antioxidant enzymes, indicating that they have antioxidant properties. These also act as free radical scavengers. According to research, *Panax* is capable of performing multiple functions. For 2,000 years, it has been utilized and holds a major place in the usage of substitute medicines in Chinese medicine.

Water hyssop holds a prominent place in the realm of Ayurvedic therapeutic uses due to its capacity to stimulate the mind, particularly in terms of concentration and memory. It helps to increase focus and retention. Some of the organic elements of water hyssop are responsible for stimulating cognitive pathways and enhancing cognitive abilities in the brain.^[10]

One of the most notable benefits of water hyssop is a reduction in the onset of cognitive impairments as people age, such as Alzheimer's disease and dementia. According to studies, its consumption is an excellent approach for boosting the formation of neural connections and lowering oxidative stress in the brain, which enables the mind to stay well and bright even in old age.^[11]

In addition to the issues mentioned above, it is capable of treating other health issues and is highly beneficial for reducing stress, acting as an anti-inflammation and antioxidant agent, improving respiratory system health,

boosting immunity, treating Epilepsy, treating digestion issues, lowering blood sugar, and skin care.^[12]

Its extract can remove various disorders that occur due to oxidative stresses while acting as a strong antioxidant. According to studies, anthocyanins and phenolic compounds such as sugevals and gingerols have neuroprotective properties such as memory improvement, analgesic effects, and learning abilities that are affected by aging.^[18]

7. Damiana (leaf)

Damiana, also known as *Turnera diffusa*, has a history of reporting healthy benefits to the human body. Some of the benefits included concern digestive health, weight management, and many others. It also aids in maintaining healthy blood sugar levels and natural healing. Its extracts break down the sugar of fats and sugars for easy digestion. It increases the absorption rate of the body. Damiana extract consists of thymol. This compound is helpful for improvement of life and stimulation effects on the body and mind. Due to this property, it is generally recommended by the herbalists for stress and exhaustion of mood and nervous system. It is highly beneficial for menstrual support, weight management and healthy cell homeostasis and blood sugar levels.^[13]

8. Asparagus (root)

In Ayurvedic medicine, *Asparagus racemosus* is highly recommended for the treatment and prevention of dyspepsia, ulcers, and as a galactagogue. *A. racemosus* is also used by the Ayurvedic experts and practitioners for inflammation, nervous disorders, liver diseases and other infectious diseases. There are approximately 300 species of asparagus to have been found. Some of the species from Europe are known as *A. sprengeri*, *a. officinalis* and also the *A. acutifolius*. *A. officinalis* is a well-known vegetable that is also consumed as a vegetable in many countries of the world.^[14] The root of *A. racemosus* is dried and used for dyspepsia for Ayurveda. It demonstrates that the roots of *A. racemosus* were able to induce gastric emptying among the healthy participants in the experiment by oral ingestion. Its advantages are comparable to those of the synthetic dopamine antagonist metoclopramide.^[15]

Mortality is caused by the intra-abdominal sepsis that follows the bowel surgery and trauma. The properties of *A. racemosus* concerning immune modulating were observed on rats and mice, it showed that it protected them against the effects of abdominal sepsis that was induced on them for experiment purposes.^[16]

9. Ginger (root)

Ginger has been used in conventional medicines in Iran for the prevention of edema. It is used for the treatment of diseases such as gastrointestinal disorders, depression, nausea, ulcer, respiratory issues, migraine, atherosclerosis and cholesterol. Other advantages of ginger

include pain relief and relief from rheumatoid arthritis. It offers antioxidant and anti-inflammatory effects.^[17]

10. Turmeric (root)

Turmeric is a botanical spice that is used widely in Asia and Middle Asia. It is not just used for flavour, but it is also intended to provide health advantages as an ingredient in many traditional remedies. It has also been added to processed foods, beverages and nutraceuticals. It is a highly essential condiment that is used as an integral component of the culinary world in various cultures for spice and to get the desired degree of yellow color in foods. Turmeric is such a well-known and healthy condiment because it contains bioactive components known as curcuminoids. These are the main phenolic compounds' class that are present in turmeric. Their health benefits are attributed to curcuminoids that are linked with curcumin that is the chief constituent within curcuminoids. As per the scientific discoveries all sorts of clinical trials show that the extracts of turmeric that are rich with curcumin can show effective improvement for the subjects' status while reduction of risks concerned with diabetes and cardiovascular diseases while offering assistance for illness management.^[19]

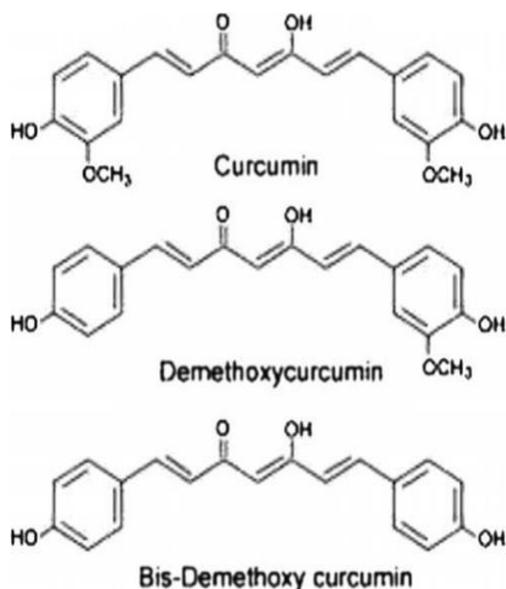


Figure 3: Structure of the curcuminoids.^[20]

11. Ginseng (root)

The botanical name for ginseng is derived from a Greek panacea word, Panax, which means cure to all. The English word is derived from a word from Chinese language that is rénshēn. It is because of the reason that it resembles to human legs. The most prominent and famous ginseng includes Siberian Ginseng, American Ginseng and Asian Ginseng. All of these have quite similar compounds, but they provide quite different effects in research. The active constituent in it ginsenosides.

Ginsenosides Rg3 and Rh2 has been observed, to inhibit the cancer cell, in the cell model study. It also has neuroprotective properties that have been shown to be beneficial in the treatment of Parkinson's and Alzheimer's diseases.^[21]

12. Bilberry

It is one of the richest sources for anthocyanins. Such phenolic compounds give black or blue color to the bilberry and also contain high antioxidant content. They are considered to be the bioactives that are reported as beneficial for bilberry as well as other berries. Apart from being marketed as a source of vision improvement, they are also likely to have anti-inflammatory and lipid-lowering properties. All while the promotion of antioxidant resistance and lowering of oxidative stress. Bilberry has been shown to be useful in the treatment and prevention of hyperglycemia, dyslipidemia, inflammation, cardiovascular disease, diabetes, cancer, increased oxidative stress, dementia, cancer, and other age-related disorders. According to various reports, bilberry also consist of antimicrobial activity.^[22]

13. Apple

It is evident that the consumption of vegetables and fruits can help to decrease the risk of chronic diseases such as cancer and cardiovascular diseases. The phytochemical including carotenoids, flavonoids and phenolics from vegetables and fruits play a vital role for reducing risk of chronic disease. Apples contain a large quantity of phytochemicals and as per the epidemiological studies, by consuming apples, the risk of cancer can be reduced along with prevention of diabetes, asthma and cardiovascular diseases. When tested in laboratories, it has been found out that these possess high antioxidant activity for the inhibition of cancer cell proliferation and lowering of cholesterol. Apples contain a range of phytochemicals, including chlorogenic acid, catechin, quercetin, and phloridzin, which are all powerful antioxidants.^[23]

14. Coffee

The features of coffee that are completely health oriented are attributed to as rich phytochemistry, caffeic acid, caffeine and HHQ (hydroxyhydroquinone) According to studies and examinations, there is an inverse association between numerous cancer lines, diabetes mellitus, Alzheimer's disease, and Parkinsonism. It can also improve the oxidative stress occurred due to the induction of mRNA and expression of protein as the mediation of Nrf2-ARE pathway simulation. Caffeine, along with its metabolites, is a source of cognitive functionality. Its lipid fraction kahweol and cafestol work as a protector against the malevolent cells through modulation of enzymes detoxification.^[24]

Other ingredients

It also contains other beneficial ingredients such as Molasses Beet Sugar, Coffee (natural flavor) and Caramel (natural color). All of these ingredients are non-synthetic and 100% natural.

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

III. CONCLUSION

As per Acumullit SA, a number of different combinations using botanical ingredients were developed separately for each of the products as per the special formula. The compatibility of all the biologically active components between those ingredients was checked and verified by computer modeling. This is why the effect of all these substances improves the effects and provides a prolonged and synergistic effect. All of the components of the combination are mixed together as per the certain degree that can be absorbed, conveniently, by the human body without initiating any side effects or discomfort to the consumer. Each of these formulas contains five to eight dried, standardized within a specific mode, using different parts of plants mixed in a specific sequence and crushed to 100 to 150 microns' fineness. The parts of the plants used, such as roots, flowers, fruits, and leaves, for the manufacturing were approved to be of certain quality and safety. There is no change in the structure or properties of the natural component as a result of such operations. Through drying, only the excess moisture is reduced from the plants and the nutrients of the component are stored in dry substance in a very concentrated state. None of the processes involves excessive heating and so none of the vitamins, pigments and antioxidants are damaged. The natural components or the raw material preserve their functional and sensory value.

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