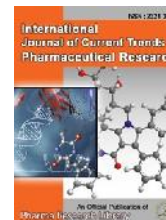




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Review Article

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## Wheat Grass as Green blood therapy: A Review

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### ABSTRACT

Juice of wheat grass is termed as green blood. Wheatgrass is a variety of grass that is used like as herbal medicine for its therapeutic and nutritional properties. The aim of this study is to concise the health benefits of green blood therapy. As wheatgrass juice bears a close resemblance to the “haemoglobin” in our blood, the juice is called as “green blood” and the therapy using it is called as “green blood therapy”. The WGJ is a complete food and contains carbohydrates, proteins, all essential minerals, and vitamins. Wheatgrass therapy is recommended for patients suffering from chronic diseases such as asthma, atherosclerosis, Parkinson’s disease, joint pains, TB, constipation, hypertension, diabetes, bronchitis, insomnia, eczema, sterility, haemorrhage, obesity, and flatulence. This review is concluded that the WGJ has higher degree of curative index and this can be last alternative therapy when the all therapy will. Wheatgrass Juice is one of the best sources of living chlorophyll available. Chlorophyll is the basis of all plant life, is responsible for giving plants their green colour, and, is the one which absorbs energy from the sun which then is transported throughout the plant. This chlorophyll is up to 40% similar to human blood. The chlorophyll molecule bears a close resemblance to haemoglobin- the red pigment in human blood. It differs only in the central element which, in case of blood is iron, and in case of chlorophyll is magnesium. Magnesium found in the protons of chlorophyll is essential and beneficial for our body. Many of the benefits of wheatgrass juice stem from the fact that it is a living food, which is a complete protein with about 30 enzymes and is approximately 70% crude chlorophyll.

**Keywords:** Chlorophyll, Enzymes, Haemoglobin, Health benefits, Wheatgrass

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## 1. Introduction

Wheatgrass juice contains Chlorophyll and bears a close resemblance to the “hemoglobin” in our blood, the juice is often called as “**green blood**” and the therapy using it is called as “**Green Blood therapy**”.[1] Wheatgrass juice is the juice extracted from wheatgrass. The juice from wheatgrass is high in chlorophyll, active enzymes, vitamins, and other important nutrients. Wheatgrass is a humble weed that is a powerhouse of nutrients and vitamins for the human body. Moreover, wheatgrass has 60% chlorophyll also known as wheatgrass chlorophyll which is the basis of plant life. Conditions such as osteomyelitis (infection and inflammation of the bone) postoperative infections, infections of the brain and other organs associated with formation of pus and bleeding from the gums have all been treated successfully with chlorophyll alone or in combination with other treatment modalities . Both chlorophyll and hemoglobin share a similar osteomyelitis to create their respective molecules. Human blood and hemoglobin consist of iron, while in chlorophyll the metallic atom is magnesium. Magnesium found in the proton of chlorophyll is essential and beneficial for about 30 enzymes of our body. Water-based (i.e. wheatgrass juice) and alcohol-based extracts of wheatgrass showed antioxidant levels in phenolic and flavonoid compounds. The WGJ may prevent myelotoxicity when applied with chemotherapy.

The WGJ is an effective iron chelator and it is used in reducing serum ferritin myelodysplastic syndrome, and other diseases. The wheatgrass sprout extract was tested for its ability to induce fetal hemoglobin (HbF) production using advanced DNA technology. There was a rapid three to fivefold increase which was significantly greater than any of the pharmaceutical inducers available. Wheatgrass found to be successful in the treatment of ailments including psoriasis, eczema soft tissue problems, shingles, inflammatory problems, and burns. The effect of the fermented wheat germ extract (Avenar) in patients with severe rheumatoid arthritis was investigated and showed significant improvements. The patients with thalassemia consuming WGJ on a daily basis used in blood transfusion. [2]

The WGJ is considered as a complete food. Astounding success has been experienced in the treatments of many diseases with the use of this juice for there juvenation process and the reversal of disease. The WGJ helps the body with nutrition for healing, and it also assists in the detoxification process by eliminating toxins which cause disease from the body. Wheatgrass lowers blood pressure, purifies the liver, heals wounds and sores, builds muscle and endurance, and treats cancer. There are several suggested ways that wheatgrass may inhibit cancer. One is that wheatgrass acts as an inhibitor of carcinogens. Wheatgrass has been shown to inhibit the effect of carcinogens that require metabolic activity. A second possibility is that wheatgrass may fight cancer due to the combination of enzymes it contains. It has been suggested that these enzymes can help dissolve tumors. Another

possible reason that wheatgrass can fight cancer is that it increases the amount of oxygen in the blood. Many of the other benefits of wheatgrass juice could also be explained if wheatgrass did oxygenate the blood. Chlorophyll derivatives may promote wound healing by subsequent cell regeneration with simultaneous increased oxygen uptake. Chlorophyll derivatives may increase the amount of oxygen present in the blood stream. Wheatgrass is one of the best sources of Chlorophyll; it is possible that when ingested, wheatgrass causes an increase in the amount of oxygen in the best. [3]

### History

The wheatgrass diet was developed by Boston resident Ann Wigmore, who immigrated to the United States from Lithuania. Wigmore believed strongly in the healing power of nature. Wigmore's notion that fresh wheatgrass had value came from her interpretation of the Bible and observations that dogs and cats eat grass when they feel ill. Wigmore claimed that the wheatgrass diet could cure disease. She later retracted her claims. In 1988, the Massachusetts Attorney General sued Wigmore again, this time for claiming that an "energy enzyme soup" she invented could cure AIDS. Wigmore was ordered to stop representing herself as a physician or person licensed to treat disease. Although Wigmore died in 1993, her Creative Health Institute is still active. Wheatgrass is readily available, and her diet is still in use. [4]

In grasses is the foundational food for most land based life. Wheatgrass was identified as the finest grass food of all after a series of intensive agricultural research studies spearheaded by dr. Charles Schnabel and assisted by dr. George Kohler, dr. Richard Graham, Conrad A. Elvehjem and E. B. Hart in the 1930s, 40s and 50s. Of particular note, they performed direct comparisons wheatgrass against other well regarded vegetables including spinach, broccoli and alfalfa. While animals fed these foods exclusively began to waste away, those fed only wheatgrass thrived on it. This spawned further research which showed that wheatgrass contains a broad spectrum of vitamins, minerals, antioxidants, amino acids, essential fatty acids and enzymes. In addition, their research also identified benefits that could not be associated with any of these known nutrients. The expression "grass juice factor" was termed to describe beneficial powers grasses that were distinct juicing origin. [5]

### Juicing Origins

Juicing wheatgrass was started in the 1950's by Ann Wigmore independent of the agricultural research above. Her story is fascinating "Medicine". The essence is that she was a Boston resident of Lithuanian descent who suffered from a variety of ailments in her early life. Her observations led her to conclude that wheatgrass was the best source of greens. [6]

### Evidence

On 2002 study tested fresh wheatgrass juice against a sham drink in a group of people with ulcerative colitis. The American Cancer Society's nutrition guidelines recommend eating a balanced diet that includes 5 or more servings a

day of vegetables and fruit, choosing whole grains over processed and refined foods and limiting red meats and animal fats. Choosing foods from a variety of fruits, vegetables and other plant sources such as nuts, seeds, whole grain cereals, and beans is healthier than consuming large amounts of one particular. [4]

#### Source

Although the major Indian sources of wheat are *Triticum aestivum*, *Triticum durum*, or *Triticum turgidum durum*. These species of wheat of commercial importance that is widely cultivated today. The *Triticum aestivum* of wheat is commonly used for green blood therapy. There are several other varieties of wheatgrass in the following plant genera: *Agropyron spicatum* (blue bunch wheat-grass), *Agropyron cristatum* (Crested wheatgrass), *Agropyron trachycaulum* (slender wheatgrass), *Elytrigia*, *Eremopyrum*, *Pascopyrum*, and *Pseudoroegneria*. Wheatgrass is obtained by allowing the sprouted organic wheat grains to grow up to a height of about 6 in. till the green leaf begins to form stem. In Indian climates, it is grown for 7 days for it to achieve this stage. It is then harvested at this 'jointing' stage when maximum beneficial nutrients are stored in its tender green blades of grass. Wheatgrass has the capacity to absorb 92 of the 108 minerals from the soil. [4]

#### Constituents of Wheatgrass Juice

Wheatgrass is a naturally rich source of vitamins, minerals, amino acids, enzymes, chlorophyll and dietary fiber. Wheatgrass is said to contain more than 90 different nutritious substances and 19 amino acids including 9 essential amino acids (EAA). The pH (hydrogen molecules) value of both human blood and wheatgrass is about 7.2 (alkaline) and is therefore quickly absorbed in blood and is highly beneficial. Wheatgrass powder is high in dietary fiber and thus helps maintain the blood sugar level, the cholesterol level, prevents constipation and cancer. The wheatgrass juice especially contains the following substances which are vital for the health and are prophylactic to any type of disease.

#### Life saving substances

**Vitamin A:** It enhances the skin lustre and provides glow to the outer skin and makes it disease free. It helps to cure the black spots and blemishes below the eyes and improves the eyesight. It is also helpful in checking the eyes, nose, and throat disorders. It nourishes hair and is helpful in fighting the problems of pollution.

#### Vitamin B:

It aids digestion. It is helpful in the treatment of digestive disorders, mental, depression, insomnia, premature aging, and anorexia.

#### Vitamin C:

It is a vital substance for healthy gums and teeth and maintenance of bones. It is essential for health and vitality and healing of sores and wounds. It is also a natural source for antibiotic elements.

#### Vitamin E:

It dilates the capillaries and enables free flow of the blood. It is helpful for the women during pregnancy, it prevents abortion and it is a helpful substance in the treatment of sexual impotency, diabetes, cancer, heart disorders, dysmenorrhea, etc. Proteins and amino acids; Proteins are

essential for muscular strength and physical elegance. Plasmas, hormones, and antibodies are obtained through proteins. Amino acids aid digestion, blood formation and provide potency to the heart.

**Enzymes:** Enzymes are the digestive elements. The substances in the WGJ are helpful for dyspepsia. These are helpful for digestion, building a healthy body and counteract the premature aging.

#### Minerals

**Iron:** Iron is an essential element for life. Iron deficiency creates shortage of hemoglobin in blood. It is helpful in pregnancy, for excessive sweating, pale complexion, laziness and lethargy, and insomnia

**Calcium:** Calcium is the prime instigator of vital activity. It strengthens the bones, it provides alkaline for the children and vitality for old. It is helpful in treatment of the diseases like hemorrhage, distension of body, slow movements, coldness, varicose veins, etc.

**Potassium:** Helpful for the radiance and lustre of youth, hypertension, dementia, palpitation, tiredness, suicidal instincts, depression, etc.

**Zinc:** Helpful in the prostate gland disorders and nourishes hair

**Sodium:** Sodium regulates the extracellular fluid volume. It also regulates the acid base equilibrium and maintains proper water balance in the body.

**Nutrients and other substances:** These provide nutrition to the tendons. These are the elements which are resistant to the disorders related to jaundice, menstruation, hydrocele, dysentery, mental debility, tooth problems, evacuation of bowels, and the cold related problems.

#### Chlorophyll

The WGJ is considered the elixir of life by the dieticians the world over, because the elements found in it are rare in the other substances. The WGJ is a source of the alkaline elements, prophylactic, and curative elements. It also supplements proteins, carbohydrates, and fat. The lacteal substances found in it are considered to be an effective element and the only remedy for curing cancer. [6]

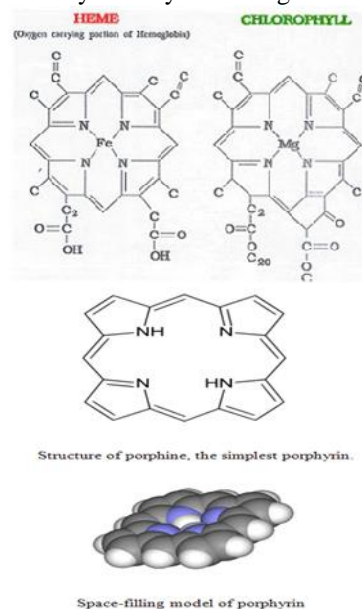


Figure 1: Structures of Haeme and Chlorophyll Molecules

### Wheatgrass Juice - Green Blood - Therapy Structures of Haeme and Chlorophyll Molecules:

The two structures are very similar. The most apparent difference between them is that the porphyrin ring of haemoglobin is built around iron (Fe), while the porphyrin ring of chlorophyll is built around magnesium (Mg). The porphyrins from chlorophyll could stimulate the synthesis of red blood cells in a variety of animals, but only when fed in small doses. Drs. Hughes and Latner fed several doses and forms of chlorophyll to anemic rabbits in 1936. Extremely small doses of purified chlorophyll or large doses of "a crude chlorophyll extract" a very favourable effect on haemoglobin regeneration". They suggested that the chlorophyll is acting as a physiological stimulant of the bone marrow and is not really concerned with the actual chemistry of regeneration of the porphyrin". The means that components of chlorophyll found in foods or when fed in very small purified amounts may stimulate the synthesis of red blood in the bone marrow. Porphyrins are a group of organic compounds of which many occur in nature, most well-known as the pigment in red blood cells. The macro cycles, therefore, are highly-conjugated systems and, as a consequence, have very intense absorption in the visible region and therefore are deeply colored; the name porphyrin comes from a Greek word for purple. [7]

#### Chlorophyll as green blood:

The analogy between chlorophyll and hemoglobin can be demonstrated with respect to the structure of their porphyrin heal. The structure of both the compounds depicts a striking similarity in having a tetra pyrrole ring structure, the only difference between the two being the nature of the central metal atom – magnesium (Mg) in chlorophyll and iron (Fe) in hemoglobin. The apparent resemblance between the two is thus considered to be responsible for the therapeutic effects shown by chlorophyll in conditions involving deficiency of hemoglobin. Hemoglobin and its congeners are protein bodies which act as the oxygen carrier in higher animals by binding two electrons attached to the oxygen molecule, whereas chlorophyll is the active metabolic agent in plants which assimilates carbon from the carbon dioxide of the atmosphere by producing two electrons which are then transmitted through electron transport chain. The structural similarity between the two compounds is stipulated to be the reason behind the limited use of chlorophyll as a blood substitute in conditions like chronic anemia, tissue hypoxia, thalassemia and other hemolytic disorders etc. [8]

#### The relationship between Wheat Grass Juice and The Human Blood:

Only the Colour of wheat grass is green because of chlorophyll unlike human Blood, which is red. It has been scientifically proved that molecule of human blood-Haemoglobin and that of wheat grass- Chlorophyll are exactly the same. The HEALTHY HUMAN BLOOD is bit Alkaline with pH 7.4 which is the case with the WHEAT GRASS also. Proportion of hydrogen molecules pH 7.4 is same Wheat grass possesses some of most essential requirements. CHLOROPHYLL contained in wheat grass, which 'GREEN GOLD' helps to increase the Haemoglobin count in the blood and the circulation of pure blood results

in healing process restoring good health. The factor 'Hemin' found in the human blood is similar to the Chlorophyll. [9]

#### Chlorophyll and Blood Re-generation:

- Chlorophyll is the substance which makes green plants green.
- The chlorophyll molecule has the unique capacity to convert the energy of the sun into chemical energy (through photosynthesis) which the plant uses to make carbohydrates from carbon dioxide and water.
- Ultimately, all living things plant and animal drive their energy, and therefore their life, from solar energy through photosynthesis.
- Chlorophyll is not so unique in its chemical make-up.
- It is built around a structure known as a porphyrin ring, which occurs in variety of natural organic molecule. [10]

**Table 1:** Nutritional Value of Wheatgrass [11]

Beta carotene	1,668 IU	20,253 IU in one raw carrot
Vitamin B12	0.05 mcg	1 mcg in 8 oz 2% milk
Calcium	15 mg	89 mg in 1/2 cup cooked broccoli
Magnesium	3.9 mg	47 mg in 1/2 cup cooked broccoli
Phosphorus	3.9 mg	37 mg in 1/2 cup cooked broccoli
Iron	0.87 mg	2.2 mg in one cup cooked macaroni

#### Dose of wheat grass juice

##### One shot of wheat grass = 2 pounds of vegetables

One may start consuming about 30 ml of juice per day and gradually increase to 100 ml that would be ideal. A 21-day course is recommended for best results. Observance of fast at least for a day during this course, containing to liquid intake only, would be of much help. For some of the severe ailments, natural diet is to be performed over cooked food, during the course treatment. Other medicines prescribed by other medical practitioners. For normal health maintenance it is 1-4 oz/30-120ml daily; therapeutic dosage is 4-8 oz/120-240ml daily. Wheatgrass is a powerful "detoxifier" of both the liver and large intestine. Consequently, people should gradually increase from one ounce a day to eight ounces spread throughout the day. Take about 60ml in the morning as well as in the evening. It shows the positive results in 15-20 days. It is advisable to take the juice early in the morning on an empty stomach. After taking the wheat grass or its juice, do not eat or drink anything for about half an hour. The juice gets absorbed in the intestines within half an hour of its intake. Those who find it inconvenient to take it in the early morning can take at any time during the day, when the stomach is empty. Wheat grass juice does not combine well with other foods and should always be taken on an empty stomach. [12]

## **Multifunctional role of green blood therapy to cure many disease:**

### **Cancer:**

The WGJ is an integral part of the macrobiotic diet under the complementary and alternative medicine (CAM) approach of anticancer therapy, due to its high antioxidant content. The WGJ is a highly placed source of chlorophyll, laetrile, and antioxidant enzyme superoxide dismutase. Wheatgrass intake enhances hemoglobin synthesis as chlorophyll bears a structural analogy to hemoglobin. This is indicated that the oxygen supply to all body cells including cancer cells which are highly vulnerable to high oxygen concentration due to the deleterious effects caused by the generation of reactive oxygen species. Wheatgrass implicated as an anticancer agent is the plant hormone abscisic acid (ABA). This hormone is 40 times more potent 4 h after cutting the wheatgrass plant. ABA can neutralize the effect of the hormone chorionic gonadotropin and a compound similar to this hormone has been found to be produced by the cancer cells.[13]

### **Diseases related to blood and the blood circulation system:**

Included among this category are anemia, high blood pressure, atherosclerosis, internal hemorrhage, clotting, and the like. Regular intake of the WGJ works wonders especially in the cases of anemia for which no other therapy has such quick cure. Having 200 ml juice twice a day is recommended. It is also useful for thalassemic patients.

### **Obesity and ulcerative colitis:**

The pilot study was conducted for the efficacy of WGJ in the treatment of ulcerative colitis. No serious side effects were found. The WGJ has a therapeutic role and offers a genuine therapeutic advantage in patients with active left colon ulcerative colitis.

### **Digestive diseases:**

Wheatgrass therapy is most effective in the case of digestive disorders, i.e. it shows its quick effect Constipation, indigestion, flatulence, nausea, vomiting, acidity, ulcers in the stomach and intestines, smelling on the intestines, and worms are some of the prominent diseases and disorders which wheatgrass can cure. However, the patients suffering from constipation are advised to chew wheatgrass well at first and then swallow the residual lump also afterward. If cabbage juice is added to the WGJ it yields quicker and better results in the complaint of ulceration in the stomach and intestines.

### **Anti-asthmatic and anti-allergic agent:**

The rich vitamin and antioxidant content is used for the anti-allergic actions of WGJ. In a study conducted to investigate the relationships between the intake of the antioxidant (pro)-vitamins C, E and -carotene, and the presence of respiratory symptoms and lung function, it was found that vitamin C intake was not associated with most respiratory symptoms (cough, wheeze, shortness of breath), but was inversely related with cough. Patients with a high intake of vitamin C had a higher forced expiratory volume in 1 (FEV1) and higher forced vital capacity (FVC) than those with a low vitamin C intake.

**Teeth and gum-related diseases:** Wheatgrass is an effective remedy for all the complaints of teeth and gums.

However, the cure would be better if wheatgrass is chewed and its juice is massaged on the gums.

### **Diseases of joints:**

Included in this category are swelling on the joints, pain in the joints, osteoarthritis bone rotting, etc. In the treatment of joints the wheatgrass therapy has to be employed patiently for long time. However, this much is assured that this therapy gives positive results.

### **Skin diseases:**

Wheatgrass extract (Dr. Wheatgrass Skin Recovery Cream), a topical anti-inflammatory immunomodulator, substance P inhibitor, topical hemostatic agent, and stimulant of fibroblastic activity with a wide range of healing properties, has been attracting attention.

### **Kidney-related ailments:**

The WGJ gives better results for stone, inflammation of the urinary bladder, and inflammation of the kidneys.

### **Disease connected with the reproductive organs:**

Sexual debility and dysmenorrhea are the two disease/disorders which this therapy can cure with comparative ease. Taking the wheat juice orally and applying the parts of the soft portion of the wheatgrass on the private parts help greatly cure the disease.

### **Ear diseases:**

It is used in relieving ear pain and curing the problem of septic discharge from the ear. The WGJ has shown very good results. In addition to taking the wheatgrass orally, some juice should be dropped in the ears to cure ear diseases.

### **Detoxifying agent:**

The vitality of liver is of high concern for the overall wellbeing of an individual as it is the major organ implicated in detoxification. In addition to the stimulating and regenerative properties of chlorophyll, other constituents of WGJ like choline and its high mineral content are responsible for the therapeutic benefits. In a study conducted to observe the effect of choline on liver, it was seen that choline prevents the deposition of fats in the experimental animals' liver when they were administered a diet rich in cholesterol. Choline promotes the removal of the esters of both cholesterol and glycerol, with the effect on the glyceride fraction preceding that on the cholesterol esters. The lipotropic action of choline is attributed to its in vivo conversion to an active compound which is retained within the hepatic cells and enhances oxidation of fatty acids and formation of tissue lecithins. The latter effect augments lipoprotein synthesis which acts as a transport form of fatty acids in plasma and thus helps in removal of lipids from a fatty liver. It has been demonstrated experimentally that the dietary indoles like indole-3-carbinol and ascorbigen increase the activity of phase I and phase II xenobiotic metabolic enzyme in the liver and intestinal mucosa.

### **General cure:**

WGJ's administration has been found to offer good remedy for general weakness, insomnia, headache, fever, etc. The WGJ therapy is an effective remedy even for those many other diseases which have not been included in the list given above and therefore it should be given a fair treat in the treatment of all those diseases.[14]

## 2. Benefits of wheatgrass, juice and powder

The following advantages show that juicing wheatgrass is very beneficial. [10]

- Wheatgrass energizes and reduces fatigue.
- It is an appetite suppressant.
- Wheatgrass juice improves metabolism.
- It improves digestion.
- Wheatgrass juice enriches the blood, removes blood disorders, & lowers blood pressure.
- Wheatgrass juice is antibacterial and helps cleanse the liver.
- It prevents tooth decay.
- It is good for skin problems and improves complexion, treats acne, and removes acne scars.
- Wheatgrass juice keeps hair from graying & removes dandruff.
- It boosts the immune system, calms the nervous system and promotes regularity & act as a constipation remedy.
- Wheatgrass helps with alkalizing your body reducing the side effects acids in your body.
- The chlorophyll present in wheatgrass will wash drug deposits from the body, neutralize toxins in the body, help purify the liver, and prevent ageing. The chlorophyll also stabilises blood sugar levels.
- Increases red blood-cell count and lowers blood pressure. It cleanses the blood, organs and gastrointestinal tract of debris.
- Wheatgrass also stimulates metabolism and the body's enzyme systems by enriching the blood.
- It also aids in reducing blood pressure by dilating the blood pathways throughout the body.
- Stimulates the thyroid gland, correcting obesity, indigestion, and a host of other complaints.
- Restores alkalinity to the blood. The juice's abundance of alkaline minerals helps reduce over-acidity in the blood.
- It can be used to relieve many internal pains, and has been used successfully to treat peptic ulcers, ulcerative colitis, constipation, diarrhea, and other complaints of the gastrointestinal tract. Is a powerful detoxifier, and liver and blood protector.
- The enzymes and amino acids found in wheatgrass can protect us from carcinogens like no other food or medicine. It strengthens our cells, detoxifies the liver and bloodstream, and chemically neutralizes environmental pollutants.
- Fights tumors and neutralizes toxins.
- Recent studies show that wheatgrass juice has a powerful ability to fight tumors without the usual toxicity of drugs that also inhibit cell-destroying agents.
- The life and abilities of the enzymes found naturally in our bodies can be extended if we help them from the outside by adding exogenous enzymes, like the ones found in wheatgrass juice.
- The second important nutritional aspect of chlorophyll is its remarkable similarity to

hemoglobin, the compound that carries oxygen in the blood.

- The many active compounds found in grass juice cleanse the blood and digest toxins in our cells contains beneficial enzymes.
- Whether you have a cut finger you want to heal or you desire to lose five pounds...enzymes must do the actual work.
- The "blood" of plants is absorbed in humans it is transformed into human blood, which transports nutrients to every cell of the body.
- Externally applied to the skin can help eliminate itching almost immediately. Will soothe sunburned skin and act as a disinfectant. Rubbed into the scalp before a shampoo, it will help mend damaged hair and alleviate itchy, scaly, scalp conditions. Is soothing and healing for cuts, burns, scrapes, rashes, poison ivy, athlete's foot, insect bites, boils, sores, open ulcers, tumors, and so on.
- Use as a poultice and replace every two to four hours.
- Works as a sleep aide.
- Merely place a tray of living wheatgrass near the head of your bed.
- It will enhance the oxygen in the air and generate healthful negative ions to help you sleep more soundly. Add some to your bath water and settle in for long soak. Sweetens the breath and firms up and tightens gums. Just gargle with the juice.
- Neutralizes toxic substances like cadmium, nicotine, strontium, mercury, and polyvinyl chloride.
- Benefits of a liquid oxygen transfusion since the juice contains liquid Oxygen are vital to many body processes: it stimulates digestion (the oxidation of food), promotes clearer thinking (the brain utilizes 25% of the body's oxygen supply), and protects the blood against anaerobic bacteria.
- Cancer cells cannot exist in the presence of oxygen. Turns gray hair to its natural color again and greatly increases energy levels when consumed daily.
- Is a beauty treatment that slows down the aging process when the juice is consume Wheatgrass will cleanse your blood and help rejuvenate aging cells, slowing the aging process way down, making you feel more alive right away.
- It will help tighten loose and sagging skin .Lessens the effects of radiation. One enzyme found in wheatgrass, SOD, lessens the effects of radiation and acts as an anti-inflammatory compound that may prevent cellular damage following heart attacks or exposure to irritants. [15]

### Wheat grass juice analysis: [16]

#### Pharmacokinetics:

The proteins, lipids, and carbohydrates in wheatgrass are digested, absorbed, and metabolized by normal physiological process. [14]

**Contraindications:**

Supplement Wheatgrass is contraindicated in those who are hypersensitive to any component of a wheatgrass containing. [14]

**Adverse reactions:**

The WGJ is safe and the incidence of side effects is very low. It may cause nausea and headache if excessive quantities are taken. Throat swelling may occur in hyper sensitive to individuals.

**Pregnancy and Breastfeeding:** Because it is grown in soils or water and consumed raw, wheatgrass may be contaminated with bacteria, molds or other substances. Wheatgrass is not recommended in pregnant or breastfeeding women due to a lack of available scientific evidence. [14]

**3. Side Effects of Wheatgrass****Nausea:**

Many people complain of experiencing a feeling of nausea after they have had a glass of wheatgrass juice. However, if this is the situation then it could be because the individual consumed the juice either with his meal or just after having it. It is best to consume it either on an empty stomach, early in the morning or at least an hour before having a proper meal. You should consume organic wheatgrass juice if you want to enjoy the health benefits mentioned above.

**Headache:**

Either along with the feeling of nausea or even without it, it is possible to have headache after having consumed wheatgrass. However, this is often attributed to the detoxification effect that the body undergoes after one has consumed a glass of juice. As the body rapidly gets rid of the toxins like heavy metals, fats and metabolic wastes in the body, one experiences headache and nausea. Once the toxins have been removed from the body the effects of nausea and headache also subside. These effects are also often, although incorrectly associated with mold in wheatgrass.

**Diarrhea:** Those who drink wheatgrass juice for the first time or too much of it at one go, may suffer from upset stomach and diarrhea. Some may suffer from loss of appetite and constipation.

**Allergic Reactions:** Some people are allergic to wheat. Needless to say, such individuals must avoid wheatgrass juice supplements.[17]

**4. Conclusion**

Wheatgrass juice generally contains no harmful substances with the exception of a possible allergic reaction. This review was concluded that the WGJ has higher degree of curative index and can be recommended to treat many diseases such as asthma, atherosclerosis, Parkinson's disease, joint pains, TB, constipation, hypertension, diabetes, bronchitis, insomnia, eczema, sterility, hemorrhage, obesity, flatulence, and cancer, help minimize fatigue, improve sleep, increase strength, naturally regulate blood pressure and blood sugar, support weight loss, improve digestion and elimination, support healthy skin, teeth, eyes, muscles and joints, improve the function of our heart-lungs and reproductive organs, heal ulcers and skin

sores, slow cellular aging, improve mental function, and is beneficial in arthritis and muscle cramping. It is proven to be beneficial under various conditions, such as anemia, diabetes, cancer, eczema, constipation, kidney swelling, and common cold. Thus, it should be made part of daily dietary intake in order to explore its maximum benefits.

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