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Wheatgrass: Magic of green

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ABSTRACT : Wheatgrass (*Triticum aestivum* L.) refers to young grass of the common wheat plant. It is the nature's finest medicine used for human consumption in the form of dried powder, pills or fresh juice. It is a powerful health food supplement packed with nutrients and enzymes. Being similar in structure to haemoglobin it provides numerous positive health effects to the human body. Wheatgrass is excellent source of phytonutrients and antioxidant which play a major role in cure and control of degenerative diseases. The chlorophyll present in the wheatgrass is a magic ingredient which holds the capacity to fight with various diseases and disorders with its anti-inflammatory, antioxidant, anti-carcinogenic, immune-modulatory, antibacterial and anti-aging properties.

KEY WORDS : Wheatgrass, Powerful health food

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Nature has its own power of healing. The basic principle of nature cure is that all forms of disease are due to accumulation of toxins or waste materials in body. When toxins pile up in the body through years due to faulty habits of living then this contributes to many health related problems. The modern medical system treats the symptoms and suppresses the disease but does little to ascertain the real cause. Toxic drugs which may suppress or relieve some ailments usually have harmful side-effects. Drugs also produce dietary deficiencies by destroying nutrients, using them up, and preventing their absorption (Asokh, 2011). The only way to cure disease is to employ methods which will enable the system to throw off the toxic accumulations. All natural treatments are actually directed towards this end.

Wheatgrass is the young grass of the wheat plant (*Triticum aestivum* L.) which belongs to the family Gramineae. Since long it has been a part of ancient medicine systems such as Ayurveda and Chinese medicine system. Although all the parts of wheat grass

i.e. above-ground parts, roots and rhizome are used for making medicine but the shoot of wheat plant is known as wheatgrass. Wheatgrass is favourably grown in moderate temperature regions. It can be grown at home, both outdoors, as well as indoors. A common method for sprout production indoors is often on trays in a growth medium such as a potting mix. Leaves are harvested when they develop a "split" as another leaf emerges. These can then be cut off with scissors and allow a second crop of shoots to form (Kulkarni *et al.*, 2006). Sometimes a third cutting is possible, but may be tougher and have less sugars than the first. It is harvested for juicing and done so at its nutritional peak. By cutting the grass at this stage, when plant is between 7 to 11 inches tall, it is best time to capture the peak of its chlorophyll content. It can be consumed as fresh juice, powdered form or in form of tablets. All these forms provide chlorophyll, amino acids, minerals, vitamins, and enzymes. It is also known as "living food" and is a superior source of chlorophyll - appropriately referred to as the "green blood".

Nutritional superiority of wheat grass:

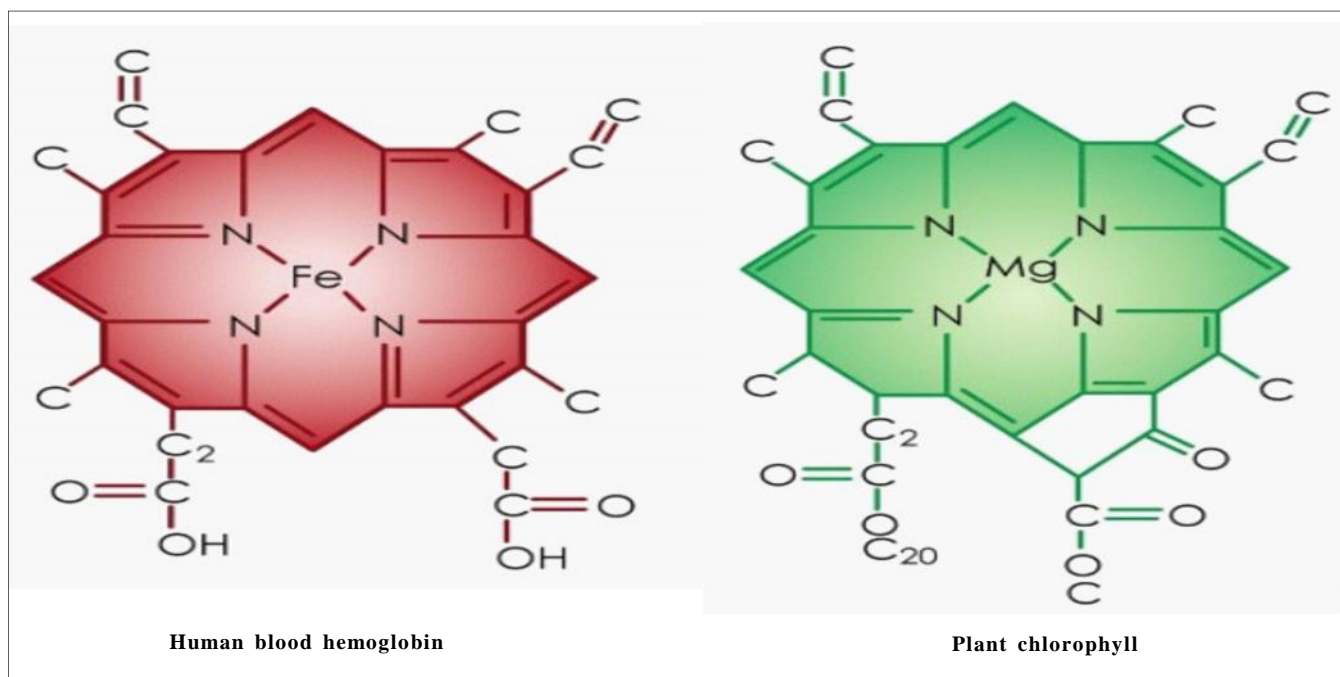
The proponent of wheatgrass was Charles Franklin Schnabel. He was an American Agricultural Chemist, known as the father of wheatgrass. He claimed in the 1940s that “fifteen pounds of wheatgrass is equal in overall nutritional value to 350 pounds of ordinary garden vegetables” a ratio of 1:23 (Steve, 1999). Wheatgrass is nature’s finest medicine as it is a concentrated source of nutrients. The juice of wheatgrass is considered as powerful concentrated liquid nutrient. It’s an excellent source of chlorophyll and vitamins especially vitamin A, vitamin C and vitamin E. Above all wheatgrass contains above 100 earth elements including minerals *viz.*, phosphorus, calcium, iron, magnesium and potassium as well as essential enzymes and amino acids (Monaco 2017). At split stage nutritional content of wheatgrass is many times more compared to green leafy vegetables and fruits. For example, wheatgrass has twice the amount of vitamin A as carrots and is higher in vitamin C than oranges. It contains good amount of B vitamins, as well as calcium, phosphorus, magnesium, sodium and potassium in a balanced ratio (HHI, 2017). Wheatgrass is a complete source of protein, supplying all of the essential amino acids and more. This protein is in the form of poly peptides, simpler and shorter chains of amino acids that the body uses more efficiently in the blood stream and tissues. The major clinical utility of wheat

grass juice is due to its antioxidant action which is derived from its high content of bioflavonoid. Other compounds present, which make this grass therapeutically effective is choline (Mathur *et al.*, 2017).

Wheatgrass contains several nutritional compounds and phytonutrients which possess antioxidant and anti-inflammatory activity which makes it the best detoxifier. It helps neutralize toxins and environmental pollutants in the body. It cleanses the body from head to toe of any heavy metals, pollutants and other toxins that may be stored in the body’s tissues and organs. It also contains a chemical that seems to kill bacterial infections. Due to these chemicals it possess various therapeutic and healing effects (William, 2001).

Wheatgrass chlorophyll : An important phyto nutrient :

All life on this planet comes from the sun. Only green plants can transform the sun’s energy into chlorophyll through the process of photosynthesis. One of the ingredients with major benefit in wheatgrass is chlorophyll, which has the ability to draw toxins from the body like a magnet. Considered the “blood of plants”, chlorophyll can soothe and heal tissues internally. Wheatgrass juice contains upto 70 per cent chlorophyll. Chlorophyll is almost identical to human blood, except for one factor: the center element in chlorophyll is magnesium, while the center



Source: www.pinterest.com

element in human blood is iron. The chlorophyll in wheatgrass is high in oxygen and light energy, which can provide the brain and body tissues with an optimal environment in which to function. The high content of oxygen in chlorophyll helps deliver more oxygen to the blood. Red blood cell counts rise and blood oxygen levels rise very quickly with the regular drinking of wheatgrass juice (Melina *et al.*, 2003). The chlorophyll in wheatgrass also has antibacterial properties, which can stop the development of harmful bacteria in the body. Chlorophyll of wheatgrass contains several enzymes and super-oxide dismutase (copper containing protein) found in mature red blood cells. This enzyme helps in decomposing superoxide radicals in the body into a more manageable form, thereby helping to slow down the aging process. Wheatgrass juice is one of the best sources of living chlorophyll available. However, chlorophyll must come fresh from a living wheatgrass plant to explore its full benefit. According to Hall (2017) chlorophyll can be extracted from many plants, but wheatgrass is superior because it has been found to have over 100 elements needed by man. If grown in organic soil, it absorbs 92 of the known 115 minerals from the soil

Role of wheatgrass in various health conditions:

Wheatgrass as a herb is valued for its medicinal quality. Herb plants produce and contain a variety of active substances that act upon the body to provide various health benefits. Wheatgrass is believed to have much nutritional value. Various studies suggest that wheatgrass helps in stimulating metabolism, helps in restoring alkalinity to the blood, its abundance of alkaline minerals helps reduce over acidity in the blood. Wheatgrass also acts as detoxificant and helps in restoring healthy cells. It has been shown to have anti-inflammatory, antioxidant, anti-carcinogenic, immune-modulatory, laxative, astringent, diuretic, antibacterial and anti-aging properties (Dutta and Raja, 2016). The role of wheatgrass in some of the health conditions is described below.

Wheatgrass and blood disorders:

As stated above the molecular structure of chlorophyll, found in wheatgrass, is extremely similar to hemoglobin (the oxygen carrying compound in human blood) except the central component. The chlorophyll present in wheatgrass help in rebuilding the bloodstream. More recent research indicates that some porphyrins (ringed structures in chlorophyll) stimulate the formation

of the protein portion of the hemoglobin molecule. This explains the effect of chlorophyll in blood production (Vogel *et al.*, 2006). Other than chlorophyll, iron, niacin (B3), cyanocobalamin (B12), folic acid, copper, potassium and protein in wheatgrass, are all involved in healthy red blood cell production, making wheatgrass an excellent remedy for anemia and other blood disorders. In a study done by Marawaha *et al.* (2004) in their study intervened 16 transfusion dependent thalassemia patients with 100 ml of wheatgrass juice daily. The result indicated the beneficial effect of wheatgrass juice as decrease in the requirement of packed red cells (measured as grams/kg body weight/year) by 25% or more. The blood transfusion requirement fell by >25% in 8 (50%) patients with a decrease of >40% documented in 3 of these. Several studies have shown wheatgrass use may help to restore hemoglobin levels in patients with thalassemia, a special form of anemia that may require blood transfusions.

Wheatgrass and cancer:

Cancer is a generic term for a large group of diseases that can affect any part of the body. One defining feature of cancer is the rapid creation of abnormal cells that grow beyond their usual boundaries and which can then invade adjoining parts of the body and spread to other organs. According to WHO (2013) 8.2 million people worldwide died from cancer in 2012. Wheatgrass fight against cancer by boosting the immune system. After building a strong immune system, the key to killing cancer cells is oxygen. Wheatgrass holds great promise in overcoming the ill effects of oxygen toxicity and decreases oxidative stress. It fights against cancer by producing more oxygen and helps building and renews blood cells in the body and increase the oxygen available to fight the cancer cells (Ferruzia *et al.*, 2007). Chlorophyll also has been shown to provide some protection from carcinogens by strengthening the cells. In a study reported in the *Journal Mutation Research* comparing the anticancer effect of chlorophyll to beta-carotene and vitamins A, C and E, chlorophyll was proven to be a more effective antimutagen than any of them (American Cancer Society, 2008). The anticancer activity of alcoholic extract of wheatgrass on cervical cancer cell line has already been studied and positive effect has been proved by Singh *et al.* (2012). In another study done by Gore *et al.* (2017) on the effect of wheatgrass on oral cancer, the results indicates that there was decrease in oral carcinoma cells proliferation with increase in the concentration of aqueous

extract of wheatgrass.

Wheatgrass and diabetes:

Diabetes is among one of the most prevalent chronic disease which is caused either due to inability of pancreas to produce enough insulin or body's inability to use the insulin it produces. Insulin is a hormone produced by pancreas and has a key role in controlling blood sugar levels. According to the International Diabetes Federation (2013) sixty one million population of India in 2011 was suffering from diabetes which is estimated to rise upto 101.2 million by the year 2030.

Wheat-grass juice is powerful in regulating blood sugar levels. Glycemic index is the measure of how various foods can increase or decrease blood sugar levels. According to a study published in Journal of Herbal Medicine and Toxicology (2009) issue, wheatgrass as part of their diet in one meal was given to a group of diabetic patients. The GI index of some foods reduced quite significantly after wheatgrass was included in the diet. This meant that blood sugar levels in these diabetic patients improved. After certain tests, it was found that even triglyceride levels improved in diabetic patients who included wheatgrass in their diet. Another study has found that raw vegan food that included wheatgrass helped to relieve the pancreas of the task of digesting cooked food. This helped improve insulin sensitivity (Vanta, 2017). Liver toxicity is also linked to diabetes and eating wheatgrass as part of a vegan diet help detoxify the liver and colon and clear them of harmful toxins, therefore, indirectly helping with diabetes.

There are many other possible benefits of wheatgrass for diabetics – the fibre contained in wheatgrass can regulate absorption of cholesterol and sugar. This can prevent sudden rise in blood sugar levels that many diabetic patients experience (Shakya *et al.*, 2016). Wheatgrass contains magnesium that is important in improving insulin sensitivity. This could delay the start of type 2 diabetes and other complications that result from this like nephropathy, retinopathy and cardio-vascular diseases.

Wheatgrass and thyroid :

The thyroid gland is located in the front of the neck below the voice box. It is just about the same size and shape – and is in the same location – as a small bow tie. The thyroid secretes two hormones that are crucial for

regulating metabolism: triiodothyronine (T_3) and thyroxine (T_4). The numbers refer to the numbers of iodine atoms each molecule of hormone contains. T_4 is the major player, because it affects virtually every cell in the body. Hypothyroidism refers to a low level of thyroid hormone. Hypothyroidism is a common problem, affecting perhaps one out of five women and a smaller percentage of men. According to Bar-Sela *et al.* (2015) wheatgrass can effectively cure this condition by stimulating and normalizing the thyroid gland and by maintaining the hormonal balance. Freshly extracted juice from a wheatgrass stops TSH from binding to its thyroid receptor sites, slows or even quells the uptake of iodine by the active transport sites on thyroid cell surfaces, suppresses the iodination of tyrosine residues and appears to also impede stored thyroid hormone release from the thyroid gland. Normalizing of thyroid gland is helpful in correcting obesity and indigestion Dreher (2014).

Wheat grass and rheumatoid arthritis:

Rheumatoid arthritis (RA) is a chronic inflammatory condition that affects the entire body but especially the joints. The joints typically involved are the hands, feet, wrists, ankles and knees. Joint stiffness and vague joint pain may precede the appearance of painful, swollen joints by several weeks. Several joints are usually involved in the onset, typically in a symmetrical fashion, *i.e.*, hands, wrists, or ankles. Wheatgrass is found to be very much beneficial in rheumatoid arthritis due to its anti-inflammatory effect. The high alkalinity property in wheatgrass contributes to its anti-inflammatory action, like rheumatoid arthritis as well as in osteoarthritis (Mogra and Rathi, 2013).

Conclusion:

It is a known fact the green colour affects the human body. Green holds vitality, healing and soothing power. So, the wheatgrass does. Wheatgrass may appear like a simple grass, but it is actually among the most powerful natural detoxifying agents. Cleansing the body is important and the basic rule on which wheat grass works in various health condition is by offloading toxins and harmful chemicals from our body. It is one of the highest and most nutrient-dense super foods. It's high in phytonutrients and chlorophyll. Chlorophyll is the "queen bee" of plant life. If we are getting plenty of it in our diet, it will move us towards optimal health and vitality.

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