

Thalassemia: Wheatgrass Shows Promise As An Effective Inducer Of Fetal Hemoglobin

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I wish to report some evidence that may have an important bearing on the treatment of beta-thalassemia (thalassemia major, Cooley's anemia, Mediterranean anemia) and sickle cell disease. A wheatgrass extract I use frequently in clinical practice may well have the potential to improve the quality of life of many sufferers of this debilitating, often life-threatening disorder. There is both clinical evidence and some state-of-the-art science that supports this finding.

Thalassemia major is an inherited disorder of hemoglobin, the protein in red blood cells that binds oxygen and transports it around the body. Just one gene determines whether or not a child will have the disorder or is simply a carrier of the abnormal gene. The disorder affects children of mainly South-East Asian (eg. 600,000 cases in Thailand), Indian, Mediterranean and Central African origin. Patients can suffer from an enlarged liver and spleen, heart failure, growth retardation, endocrine disorders and various other symptoms. Current treatment for thalassemics includes regular blood transfusion, chelating or iron-removing drugs, and drugs that induce the production of fetal hemoglobin such as hydroxyurea. Without adequate support and management, the disease can be fatal.

Wheatgrass and other cereal grasses have been thoroughly researched and reported as a therapeutically effective substance since the 1930's. Traditionally, chlorophyll, or its synthetic derivative, chlorophyllin, has been implicated as the biological active responsible for reported healing effects. A number of animal studies have shown quite marked improvement in anemia following chlorophyll ingestion. (1,2,3). Other studies up to the present day have shown positive results in the treatment of suppurating wounds(4), burns(5), liver cancer(6), ulcerative colitis(7) and many other conditions. My own experiences in treating numerous patients with a wheatgrass extract since 1995, although anecdotal, strongly support many of these research findings. I am almost certain however that neither chlorophyll nor chlorophyllin is the therapeutic agent responsible.

In my [February, 2004 newsletter](#), I mentioned a clinical pilot study carried out by Dr. R. K. Marwaha et al at the Advanced Pediatric Centre, Postgraduate Institute of Medical Education and Research, Chandigarh, India. Entitled "[Wheat grass juice reduces transfusion requirement in patients with thalassemia major: a pilot study.](#)", the study was performed between February 2000 and May 2003. Sixteen out of 38 (42%) blood transfusion dependent thalassemics fulfilled the trial criteria for final analysis.

To summarise the findings during period of wheatgrass juice ingestion:

- all participants experienced lower blood transfusion requirements
- 50% had at least 25% reduction in transfusion requirements
- the mean interval between transfusions increased 29.5%
- overall, hemoglobin levels were not compromised by reduced transfusion volumes

Dr. Marwaha's conclusion was that "wheat grass juice has the potential to lower transfusion requirements in thalasseemics." He was not prepared to speculate on the "mechanism of action of wheat grass juice in transfusion dependent thalasseemics" being of the opinion that the concept of chlorophyll enhancing hemoglobin production "sounds too simplistic". I support his position and seriously doubt whether chlorophyll has any function other than to drive photosynthesis. (See my newsletter "[Chlorophyll - Healer or Humbug](#)"). Add to this the fact that my wheatgrass extract is clinically effective in most, if not all the areas described in the substantial literature about wheatgrass healing - but contains **barely detectable amounts of chlorophyll**.

It is interesting to note that twenty of the original trial participants were withdrawn due to **"indiscipline in intake and an insufficient duration of intake of wheat grass juice."** This does not surprise me considering they were asked to consume 100mls per day. Many find fresh wheatgrass juice unpalatable, as I do. Some of these children were as young as four and, unless they really enjoyed the taste, would have found it very difficult to comply with the regime. They would I believe, have found it much easier to ingest a dilute solution of my extract.

I contacted Dr. Marwaha, mentioning the extract and wheatgrass website. At the time it did not seem likely he would want to repeat or extend the pilot study using the extract, so I did not suggest it. Nonetheless, because of the substantial clinical experience I have had using wheatgrass as a therapeutic agent and the extensive scientific literature available on the topic, I felt quite certain that it would work just as well as fresh wheatgrass juice. More importantly, the extract is infinitely more palatable and the dose required would amount to **no more than 1 to 3 mls. a day**. Also, wheatgrass cultivation is unnecessary as the extract's potency lasts for years, if not indefinitely. The next development was totally unexpected.

The [Murdoch Children's Research Institute](#) at the Royal Children's Hospital in Melbourne (Australia) is involved in a number of research projects, one of which is thalassaemia. This unit, the Cell & Gene Therapy Research Group is headed by [Professor Panos Ioannou](#) who has spent a large part of his working life researching thalassaemia. Also, because of his work in the production of artificial chromosomes, he made a significant contribution to the Human Genome Project. On 3rd May he requested a sample of wheatgrass extract saying, "We have recently developed **very specific assays for the induction of foetal haemoglobin**, (*"The assay is based on detecting production of HbF in human erythroleukaemia cells using a fluorescent protein gene that is used to replace the genes for HbF"*) to facilitate the discovery of pharmacological agents that might be therapeutic for thalassaemia. Given the reported effects of wheatgrass juice on thalassaemia, (*Dr. Marwaha's pilot study*) we would very much like to test wheatgrass juice (*extract*) whether it can cause a significant increase in foetal haemoglobin."

This point is important. Fetal hemoglobin, (HbF) which has a substantially higher affinity for oxygen than adult hemoglobin, develops in the fetus during the last six months of gestation. As both mother and fetus share the same blood supply, fetal hemoglobin essentially draws off oxygen from the mother's blood. This enables the fetus to survive in the uterus. After birth, fetal hemoglobin levels fall rapidly and in the adult represents less than two percent of total hemoglobin in the body. It has been found that stimulation or induction of fetal hemoglobin in thalassaemia can improve the patient's clinical condition. Although drugs exist that have this function, e.g. hydroxyurea, they lack specificity and may have a variety of serious side effects.

Professor Ioannou assayed the wheatgrass extract for fetal hemoglobin induction on three separate human cell clones.

On 14 July he reported that over a 5 day period:

"Our measurements suggest a 3-5 fold increase in the production of HbF by the wheat grass extract. This is a substantial increase and could certainly provide an explanation why some thalassaemia patients may derive significant benefit."

Of course, these laboratory results may or may not bear a relationship to what one could expect in the thalassemic patient. However, given the quite significant reduction in transfusion requirements noted in some of the patients in Dr. Marwaha's pilot study, Professor Ioannou's findings strongly suggest they could have resulted from induction of fetal hemoglobin by wheatgrass.

I think it is worth noting again that the Murdoch Institute results were achieved using a wheatgrass extract that contained virtually no chlorophyll. This fact further supports my belief that chlorophyll, like hemoglobin, has a specific function to perform in nature. As hemoglobin transports oxygen within the red blood cell, so does chlorophyll assist photosynthesis within the chloroplast. Nothing more, nothing less.

In conclusion, I believe the two new studies relating to wheatgrass and induction of fetal hemoglobin mentioned here give more than a glimmer of hope to thalassemic patients. Commercial wheatgrass products such as fresh juice, tablets, powders and nutritional supplements are cheap, readily available and virtually devoid of adverse effects. While more studies are clearly necessary, thalasseemics may have nothing to lose and possibly much to gain from ingesting wheatgrass, in one form or another, daily. While it is not possible from the current studies to predict the optimal dose of wheatgrass extract for a beneficial effect on thalassaemia, I recommend that in order to benefit fully from the biological activity of the herb, thalasseemics, like anyone taking wheatgrass, need to hold it in the mouth for at least a minute before swallowing.

References:

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