CHAPTER 2

INTRODUCTION
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Medicinal plants are widely used by all sections of community. According to WHO report, over 80% of the world population relies on traditional medicine largely plant based for their primary health care needs. Wheat (*Triticum* species), a cereal grass of the Gramineae (Poaceae) family, is the world’s largest edible grain cereal-grass crop. Wheat has been a food crop for mankind since the beginning of agriculture. Wheat grass is a young, green cereal grass originating from a wheat plant that is harvested before it develops gluten-forming grain kernels. Because of this early harvest, wheat grass contains no wheat gluten. Wheat grass is a nutritional powerhouse, rich in chlorophyll, antioxidant vitamins, minerals and other nutrients that support optimal health (Wigmore 1885, Meyerowitz 2006, Poutinen 2003).

Wheat grass has been traditionally used, since ancient times, to treat various diseases and disorders. Wheat Grass cleanses and detoxifies the body and purifies the blood. It is an anti-oxidant that support the body during chemotherapy, radiation treatments and removes toxic metabolites, support weight loss, digestion and immune system, helps to overcome nutrition deficiencies, helps to improve natural immune system, powerful natural antioxidant, helps to resolves foul odors of breath and sweat, helps in blood purification and to balance hemoglobin production, helps in combating thalassemia and Anemia, helps to resolve digestion related problems such as constipation, acidity, piles, colitis, ulcers, diabetes, kidney malfunction, etc., which may act as a very effective energizer and health rejuvenator, helps to overcome skin disorders and to improve skin / muscle tone. It helps in treating skin problems like eczema or psoriasis, It helps in scalp treatment for lusterless hairs, benefits the body cells, glands, hair, lungs, kidneys, liver, muscles, spleen and teeth, helps in combating diseases such as cancer, blood pressure, menstrual problems, paralysis, leukemia, arthritis, insomnia, asthma, etc. Wheat grass powder is high in dietary fiber and thus maintains blood sugar level, cholesterol level and prevents constipation, highly
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effective for weight loss / gain along with diet plans, paste of wheat grass powder with milk applied like a face pack helps to overcome skin problems such as acne, black / white heads, freckles, skin tan / burn, etc. Presently, there are a number of wheat grass suppliers, in almost all cities of India, supply fresh wheat grass, on daily basis to their regular customers by home delivery system for various ailments and as health tonic (www. scortishealthcare.com).

Dr. Ann Wigmore, Founder & Director of Hippocrates Health Institute, Boston, was one of the proponents of the ‘Wheat Grass Therapy’. She utilized the chlorophyll present in the wheat grass as a body cleanser, rebuilder and neutralizer of toxins. She claimed that wheat grass is a safe and effective treatment for ailments such as high blood pressure, cancer, obesity, diabetes, gastritis, ulcers, anemia, asthma and eczema (Wigmore 1985, Marwaha 2004). Scientific reports on nutritional analysis of wheat grass have been published in various journals (Hamilton 1988, Ben-Ayre 2002). These reports revealed that wheat grass was rich in chlorophyll, minerals like magnesium, selenium, zinc, chromium, antioxidants like beta carotene (pro vitamin A), vitamin E, vitamin C, anti-anemic factors like vitamin B_{12}, iron, folic acid, pyridoxine and other minerals, amino acids and enzymes, which exhibited significant nutritious and medicinal value.

Cancer is a disease characterized by out-of-control cell growth. There are over 100 different types of cancer, and each is classified by the type of cell that is initially affected. Leukemia is cancer that starts in the tissue that forms blood. Leukemia is either chronic (which usually gets worse slowly) or acute (which usually worse slowly) (Kohler G 1953, www.medicinenet.com).
There are four common types of leukemia (Kohler G 1953):

- **Chronic lymphocytic leukemia**: Affects lymphoid cells and usually grows slowly.
- **Chronic myeloid leukemia**: Affects myeloid cells and usually grows slowly at first.
- **Acute lymphocytic (lymphoblastic) leukemia**: Affects lymphoid cells and grows quickly.
- **Acute myeloid leukemia**: Affects myeloid cells and grows quickly.

There are many treatment options in leukemia like chemotherapy, targeted therapy, biological therapy, radiation therapy and stem cell transplant. Many people with leukemia are treated with chemotherapy. Chemotherapy uses drugs to destroy leukemia cells. Chemotherapy kills fast-growing leukemia cells, but the drug can also harm normal cells that divide rapidly, which causes many side effects: anemia, low red blood cell count, low white blood cell count (which leads increased risk for infection), hair loss, or thinning hair, bleeding or bruising due to low platelet count, dry skin, rashes, fatigue, diarrhea, constipation, nausea or vomiting, muscle and nerve problems, lung problems and difficulty in breathing; coughing excessively, fertility and sexuality problems, etc (www.medicinenet.com).

Leukemia and its treatment can lead to health problems, so supportive care before, during, or after cancer treatment needed. Supportive care is treatment to prevent or fight infections, to control pain, to relieve the side effects of therapy and to improve comfort and quality of life during treatment. Supportive treatment includes anti-emetics, analgesics, anesthetics, antibiotics, anti-fungals, anti-allergics, anti-diarrhoeals, colony-stimulating factors (CSFs) and RBC transfusion (www.medicalnewstoday.com).

Wheat grass is an effective natural supportive in cancer. Wheat grass contains eleven times the calcium of cow's milk, five times the iron of spinach, four times the vitamin B1 of whole wheat flour, seven times the vitamin C in oranges and an
abundance of vitamin B12, 80 mcg per hundred grams. But the therapeutic benefits of grass go beyond its vitamins and minerals. Wheat grass contains vitamins including B12, many minerals and trace elements, including selenium, and almost all amino acids. It also contains the hormone abscisic acid, the antioxidant enzyme Superoxide Dismutase (SOD), a novel isoflavonoid and vitamin E succinate (VES) and over thirty other enzymes, the antioxidant enzyme cytochrome oxidase, laetrile, and a lots of nutrients. (www.cancersupportivecare.com, www.sprountnet.com).

The hormone Abscisic acid (ABA) is forty times more potent 4 hours after cutting the wheat grass than it is at the time of cutting. Abscisic acid is a supplement that will not find in a health food store. Dr. Livingston-Wheeler determined that Abscisic acid neutralizes the effect of chorionic gonadotropin, the hormone that protects the fetus from being rejected, and she classed it as prime supplement in treating cancer. Livingston-Wheeler discovered that cancer cells (or the microbes associated with them) produce a substance very similar to chorionic gonadotropin.

Another claimed benefit of wheat grass is its anti-cancer ability, specifically due to laetrile which is anti-cancer compounds found abundantly in wheat grass (www.cancertutor.com).