Background: Previously it was thought that the chlorophyll of wheat grass (Triticum aestivum) may be the substitute of haemoglobin of RBC having resemblance of similar structure. A group of Australian scientists tried to prove that wheat grass juice increases the foetal haemoglobin level 35 folds in intermediate thalassaemia patients. A pilot study with wheat grass juice in major thalassaemia patients were done by Dr. Marwa et al in JPGMR, Chandigarh, India. But there is no satisfactory explanation behind the reduced blood transfusion requirements after consumption of wheat grass juice for a long period. The aim of our study was to see the effect of wheat grass juice in blood transfusion requirement in intermediate thalassaemia patients and also do the biochemical analysis of the wheat grass juice. Material & Methods: During period from January 2003 to December 2006 we selected 200 intermediate thalassaemia patients (E-thalassaemia, E-Beta & Sickle thal) in the paediatric oncology department of Netaji Subhash Chandra Bose Cancer Research Institute. The age range of the patients was 1 year to 35 years (median age 12 years). The different types of thalassaemia were E-Beta Thalassaemia 80% (160 patients), E-Thalassaemia 40% (30 patients) and Sickle Thalassaemia 5% (10 patients). When the wheat grasses were 57 days old, the fresh leaves including stems were made fresh juice and had given 30ml of juice daily to all our 200 patients for continuous 6 months. Wheat grass juice was analysed by column chromatography and found to be rich in oxalic acid and malic acid which might have some role in dietary absorption of iron from intestine. Besides that the wheat grass juice was found to contain a unique iron chelating property which was performed by deoxyribose degradation assay. We compared aqueous soluble extract of 57th day plant and our dose dependent study showed a significant iron chelating activity of crude extract in comparison to known standard iron chelator desferrioxamine (DFO). The active compounds of crude extract of wheat grass may chelate catalytic iron in iron overloaded disorders when taking systematic dose. Result: The mean levels of haemoglobin before starting wheat grass juice were 6.2gm%. After 6 months of wheat grass therapy the mean value for haemoglobin was 7.8gm% (pvalue < .005). Twenty four patients (12%) require blood transfusion (haemoglobin < 6gm%). The performance status was improved from 50% to 80% (Karnofsky) after wheat grass treatment. The ferritin level of all patients before the study was found to be decreased significantly after wheat grass juice consumption. The mean interval between transfusion was found increased. Being a natural potent iron chelator and H2O2 quencher, it prevents the hydroxyl radical production by Fenton reaction in the RBC. Thus it may prevent the breakdown of plasma membrane of RBC and haemoglobin level becomes stable for a prolonged period. Conclusion: We may conclude that wheat grass juice is an effective alternative of blood transfusion. It's use in intermediate thalassaemia patients should be encouraged.