

Effect of Lucerne Concentrate on Nutritional Status of Chronic Myeloid Leukemia Patients

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In India, cancer is emerging as a public health problem among non-communicable diseases. Cancer is a group of disease caused by the uncontrollable abnormal multiplication of cells. The word leukemia tends to be used as an umbrella term for cancers in which bone marrow cells multiply abnormally and is called blood cancer in non professionals language. The present study was undertaken on 21 patients suffering from chronic myeloid leukemia (CML) attending the OPD ward of Birla Cancer Research Centre, SMS Hospital, Jaipur. Lucerne leaf concentrate (LC) an extract from Lucerne leaf is a medium energy food rich in micronutrients. Anemia and weight loss is very common in CML patients.

10 g of LC was given as a supplement to the subjects to assess its effect on the nutritional status for three months. Baseline and Post Intervention Nutritional assessment was done, weight loss was preventable, there was significant increase in hemoglobin, and RBC count. Decline in Platelet count was also prevented. Thus it can be concluded, that LC supplementation improves overall health status and supplementation for a longer duration may further improve body weight, and blood counts of the CML patients.

INTRODUCTION

In India, cancer is emerging as a public health problem among non-communicable diseases cancer is a group of disease caused by the uncontrollable abnormal multiplication of cells. The world leukemia is used as an umbrella term which starts when bone marrow cells multiply abnormally and is called blood cancer in non professionals language. Chronic Leukemias are distinguished by the excess we build up of relatively mature but still abnormal blood cells. Chronic Myeloid Leukemia (CML) takes months to years to progress in cancer the cells are produced at a much higher rate than normal cells, resulting in many abnormal white blood cells in the blood. Chronic Myeloid Leukemia (CML) is a clonal myeloproliferative disorder characterized by over production of myeloid cells. These myeloid cells retain the capacity for differentiation, and normal bone marrow function is maintained during the early phases. The disease usually remains stable for years and then transforms to a more overtly malignant disease. ^(1,2)

Malnutrition in cancer patients is very common, due to the disease itself and the therapies administered in course of treatment, Anemia, weight loss and decline in platelet count results in impaired health status and poor tolerance to subsequent therapies. Patients often need supplements to regain health and become fit enough for the next therapy. Leaf concentrate (LC) is a dark green extract from Lucerne leaf, which is cheap and easily available. LC is rich in micronutrients as can be seen in Table no. 1. ^(4,5)

Table – 1: Proximate Analysis of Lucerne Concentration

Nutrients	Value/ 100 gms
Energy	344 Kcal
Protein	60 gm
Fat	22.5 gm
Carbohydrate	12.5
Fiber	1.0 gm
Carotene	86700 mcg
Thiamine	0.5 mg
Riboflavin	0.5 mg
Niacin	24.2 mg
Folic acid	330.0 mcg
Ascorbic acid	2.2 mg
Calcium	1865.0 mg
Iron	99.0 mg

Materials and Methods

The present study was undertaken on CML patients registered at RK Birla Cancer Research Centre, SMS Hospital, Jaipur. The objectives were to assess the nutritional status of CML patients using anthropometric measurements, biochemical profile and dietary assessment and to study the effect of LC supplementation on the nutritional status of patients.

21 CML patients registered at the study site were selected after obtaining written consent. Baseline nutritional assessment (weight, BMI, Hemoglobin RBC, Leukocyte and platelet counts) was done before supplementation. 10 g of LC in powder form was given daily for three months. Nutritional assessment was repeated after intervention. (See Figure 1)

Result and Discussion

The present study was conducted on 21 chronic myeloid leukemia patients registered at R.K. Birla Cancer Research Centre, SMS Hospital, Jaipur. After taking written consent, information regarding their socioeconomic background, nutritional status and

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medical history was taken. Data regarding anthropometry and biochemical profile was taken prior to intervention and after 3 months of intervention.

Out of 21 patients, 13 were male and 8 were females. The results indicate that there was a statistically significant increase in weight, BMI, Haemoglobin and RBC count of CML patients after intervention with 10g LC supplementation for 3 months as seen in **Figure- 2**.

Despite a decline in food intake due to the above mentioned factors the patients were able to either gain or maintain their original body weight which could be an effect of Lucerne. The chemotherapy being administered to the patients was also being tolerated well due to the improvement in general well being. Significant gain in body weight was not observed, but weight loss which is a common feature in CML patients did not occur.

A small gain of 1.8 kg was seen post intervention.

The significant increase in Haemoglobin is very positive as anemia is virtually inevitable in leukemia patients. The change is hemoglobin however was positively significant with Hb levels showing 3.7% increase. Anemia is a major issue of concern in CML patients as it aggravates the usual symptoms of fatigue and ill feeling in patients. It may be present as an impact of prolonged period of medication. In severe cases, transfusion of RBC's may be given. Various factors like anorexia, nausea, change in taste perceptions, sensory changes and learned food aversions prevent normal dietary intake in patients. (6). The weights of male patients were lower than the females, both pre and post intervention. However hemoglobin levels were found to be lower in female patients as seen in Figure no. 3.

It may be concluded that LC supplementations helps in maintaining or bringing about an increase in body weight, hemoglobin levels, thereby increasing RBC counts. It also improves overall health status by contributing to the nutrient intake. Supplementation for a longer duration may improve the body weight, hemoglobin, WBCs and RBCs even further.

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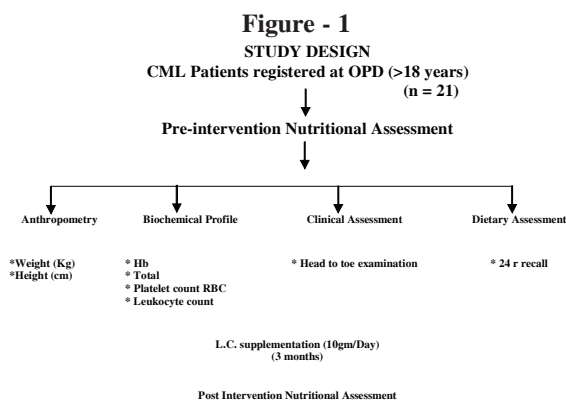


Figure - 2

Figure - 2: Baseline & Post Intervention Nutritional Assessment

Variables	Baseline Nutritional Assessment	Post Intervention Nutritional Assessment	% Change	Significant (p<.05)
Weight (Kg)	60.2 ± 15.8	61.3 ± 15.5	+ 1.8	0.05*
BMI	21.8 ± 4.8	22.3 ± 4.7	+2.2	0.050
Hb (gm/dl)	10.8 ± 1.3	11.2 ± 1.1	+3.7	0.021*
RBC (milli/cumm)	3.4 ± 0.4	3.7 ± 0.5	+8.8	0.024*
Platelet count (Lacs/ml)	211190.5 ± 115402.6	205714.3 ± 61601.25	-2.5	0.757

*Significant at 95% level

Figure - 3

Table - 3: Comparison of Biochemical profile between males and females

Variables	Male		Female	
	Pre Intervention	Post Intervention	Pre Intervention	Post Intervention
Weight (kg)	53.7 ± 14.9	55.3 ± 13.7	64.2 ± 15.9	65.1 ± 15.9
Body mass index	22.04 ± 4.5	22.35 ± 4.89	21.33 ± 5.08	22.01 ± 5.21
Haemoglobin* (gm/dl)	11.28 ± 0.69	11.46 ± 0.88*	10.26 ± 1.71	10.8 ± 1.3*
Total RBC (milli/cumm)	3.59 ± 0.36	3.76 ± 0.29	3.22 ± 0.51	3.66 ± 0.92
Total leukocyte count (milli/cumm)	18304.62 ± 42896.3	16411.54 ± 30106.92	6218.7 ± 1446.9	5793.7 ± 1575.7
WBC	4138 ± 2035.05	5576.1 ± 2655.3	6218.7 ± 1353.4	5793.7 ± 1575.7
Platelet count (Lacs/ml)	215846.2 ± 126431.3	216000 ± 60158.1	197125 ± 38514.4	192500 ± 63351.6

*Although haemoglobin changes are not significant but Severe decline in Haemoglobin which is a common feature was prevented.

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