

## Liv.52 Therapy in Hypoproteinaemia

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Cases of malnutrition and avitaminosis, associated with secondary anaemia, are seen in large numbers at the Out-patient Department in a general hospital. Several factors like nutrition, socio-economic factors, malabsorption, chronic liver disorders, etc. are responsible for the ultimate clinical picture. There is a protein-calorie deficiency in these patients.

High protein diets with therapeutic doses of vitamins are usually prescribed for such patients, but the addition of anabolic steroids represents more specific pharmacologic therapy, since they induce a positive nitrogen balance in the living organism.

Encouraged by the beneficial effects of Liv.52—an indigenous drug—in various hepatic disorders, malnutrition states and by the recent findings that it increased nitrogen retention, the present series was subjected to Liv.52 therapy along with the standard adjuvant therapy of multivitamins and high protein diet. The standard high protein diet provided in the general hospital consists of 95-100 gms of protein and 2,000-2,2000 calories in a day.

The present series consisted of 75 patients, who were carefully screened clinically and by routine biochemical investigations like Proteins, Albumin, Globulin, S.G.O.T., S.G.P.T., Serum Electrophoresis and radiological studies. All the patients primarily suffering from hypoproteinaemic state were included in the trial. The trial period was extended to six weeks in all cases.

### METHODS

There were 44 male patients and 31 female patients varying between the ages of 17 years to 65 years.

11-20		21-30		31-40		41-50		51-60		61-70	
M	F	M	F	M	F	M	F	M	F	M	F
3	1	12	8	14	10	7	7	4	3	4	2

Total male patients	44
Total female patients	31
	75 patients

The trial was not double-blind control.

All the patients after initial screening studies received the drug Liv.52 two tablets t.i.d. They were weighed weekly. Protein estimation along with clinical evaluation was done at weekly intervals.

### RESULTS

The assessment of the results was done on the following criteria:

- 1) Weight gain
- 2) Regression and/or disappearance of oedema
- 3) Rise in serum protein
- 4) Improvement in skin and hair texture
- 5) Improvement in appetite
- 6) Amelioration in diarrhoea

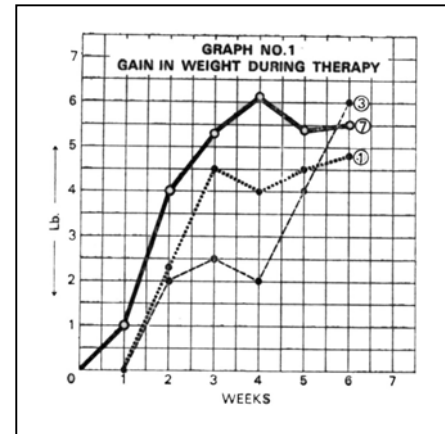
## 7) Improvement in anaemia

### 1. Effect on weight:

Twenty eight patients (37.3%) out of 75 gained an average of 5.6 lb. in six weeks, the rise was seen from the third week onwards. Twenty-nine patients (38.7%) gained in weight upto an average of 4 lb. in 6 weeks. The rise in weight was not uniform.

Eighteen patients (24%) did not respond to the therapy. One of them died due to liver abscess and one patient developed pulmonary Koch's.

Graph 1 and Table II show the progressive rise in weight in three random cases. In all these three patients the rise was fairly uniform with minor fluctuations.



### 2. Effect on oedema:

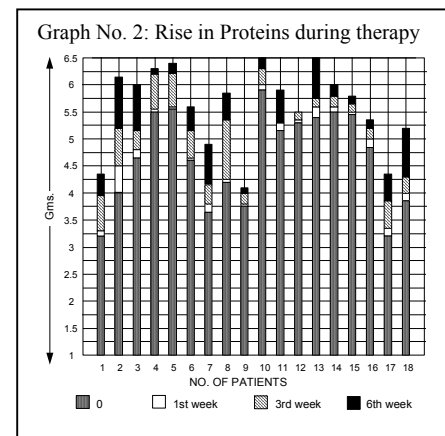
In all the patients (89.4%) except 8, the oedema disappeared by the second week and did not recur. Surprisingly the protein estimates done at the end of the second week did not show significant enough increase to account for the disappearance of the oedema.

### 3. Effect on serum proteins:

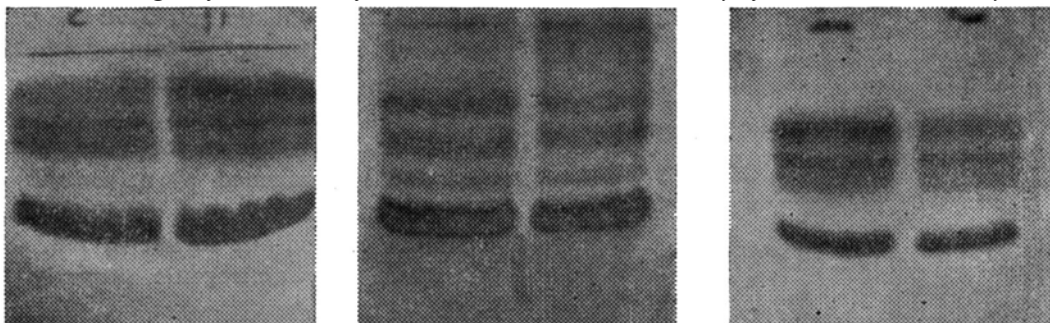
The serum proteins were estimated initially and at weekly intervals. In selected cases the serum electrophoretic studies were also done. The average rise in total proteins was 2.4 gms by the end of 6 weeks. The rise in albumin was more consistent in all patients.

Graph 2 reveals the demographic presentation of rise in proteins in 18 patients. Every fourth patient from the trial series is selected for the graphical presentation.

It can be seen that the rise was more marked in the latter half (i.e. from the 3rd to the 6th week) period of therapy.



*Electrophoretic pattern of serum proteins from 3 patients. Upper tracing represents pretreatment pattern and lower tracing is after 6 weeks of treatment. The increase in density after treatment is clearly visible.*



The electrophoretic patterns were grossly of normal pattern with a distinct reduction in the albumin fraction initially. Later on there was a consistent rise in the albumin fraction at the end of 6 weeks.

There were no qualitative changes in the electrophoretic patterns and hence were of limited value. Fig. No. 1 exhibits the patterns of three randomly selected cases.

Case No.		Weight on admission (Kg.)	Gain in weight in weeks					
			1	2	3	4	5	6
1		50	50	52.3	54.5	54	54.5	54.8
	Gain		Nil	2.3	4.5	4	4.5	4.8
3		80	80	82	82.5	82	84	86
	Gain		Nil	2	2.5	2	4	6
7		55	56	59	60.3	61.2	60.4	60.5
	Gain		1	4	5.3	6.2	5.4	5.5

#### **4. Improvement in skin and hair texture:**

The majority of patients started showing the improvement in the texture of skin and hair at the end of the third week and the changes were progressive in all these cases. This could be due to better utilisation of proteins and vitamins following Liv.52 therapy.

#### **5. Appetite:**

Fifty patients subjectively noticed the improvement in appetite at the end of the first week. In the remaining patients the appetite was improved by the second week. The first indication of the improvement was disappearance of nausea and this was noticed by the 5th or 6th day.

#### **6. Diarrhoea:**

In the majority of the patients the change in the consistency of the stool was observed in the first ten days after the therapy. Frequency of stools with semi-solid consistency was noticed in 32 patients throughout the trial period. This could be due to the high intake of proteins or to intestinal malabsorption.

#### **7. Effect on anaemia:**

The average rise in haemoglobin per cent was 3 grams in 64 patients (85.3%) out of 75 at the end of 6 weeks; the rest of the patients required specific iron therapy.

#### **8. Effect on serum cholesterol:**

All the patients had very low levels at the start of treatment but serum cholesterol levels rose to normal or near normal at the end of the trial. The rise was inconsistent.

### **DISCUSSION**

Liv.52 is an indigenous drug and each tablet of Liv.52 contains:

<i>Capparis spinosa</i>	65 mg
<i>Cichorium intybus</i>	65 mg
<i>Solanum nigrum</i>	32 mg
<i>Cassia occidentalis</i>	16 mg
<i>Terminalia arjuna</i>	32 mg
<i>Achillea millefolium</i>	16 mg
<i>Tamarix gallica</i>	16 mg
<i>Mandur bhasma</i>	33 mg

(Prepared in the juices and decoctions of various hepatic stimulants).

Among these *Capparis spinosa*, has diuretic and aperient actions. It is a powerful stimulant of hepatic functions.

*Cichorium intybus* is also a diuretic and antidiarrhoeal drug.

*Solanum nigrum* is also a strong diuretic drug.

*Cassia occidentalis* and *Tamarix gallica* are hepatic stimulants and have the property of improving protein synthesis. They have anabolic properties.

The nitrogen retention property of Liv.52 has been known for quite some time and is confirmed by Srinivasan *et al.* (1968), Kulkarni *et al.* (1970, 1971).

Studies carried out earlier in 1967 did not reveal any androgenic property of Liv.52.

Sheth *et al.* (1960) showed regression of deglycogenation and stimulation of albumin synthesis in animal experiments.

For the first time, significant gain in weight was seen by Kale *et al.* (1966) in albino rats. In their experiment the gain in weight was more significant from the third week onwards.

Liv.52 can promote growth even in the presence of corticosteroids (in catabolic dosage) Kulkarni *et al.* (1970).

The dietetic improvement in appetite and more efficient utilisation of food is partly responsible for the weight gain. This property has been confirmed earlier by Srinivasan *et al.* (1968). The uniform gain in weight in this series can be explained and results are also compatible with the previous work. The regression in the oedema may be due to the diuretic property of the drug in conjunction with the anabolic effect and protein synthesis.

The protein synthesis and better utilisation of the protein is demonstrated by the rise in serum proteins at the end of observation period.

The improvement in the haemoglobin level may be due to improvement in the nutritional status in all these hypoproteinaemic individuals and also to the presence of Mandur bhasma (Iron).

Though the present series is quite small and the period of observation was limited the improvement with Liv.52 in hypoproteinaemic states has been impressive. The time required for initial improvement was definitely shorter. Further studies with double-blind control will be valuable. So also studying the selective ingredients for anabolic properties.

## **SUMMARY**

Seventy-five patients with hypoproteinaemia were treated with a high protein and high calorie diet together with Liv.52, 2 tablets t.i.d. for a period of 6 weeks at the Sassoons Hospital, Poona. Results were assessed by the effects of therapy on body weight, oedema, serum proteins, skin and hair texture, appetite, diarrhoea and anaemia.

Fifty-seven out of 75 (76%) patients gained on an average 4 to 5.6 lb. in 6 weeks.

In 67 (89.4%) patients the oedema disappeared by the second week of therapy. Surprisingly the serum proteins estimated at the end of the second week did not increase significantly enough to account for the disappearance of oedema.

An average rise in serum proteins of 2.4 g was seen. The rise was more marked from the 3rd to the 6th week. At the end of the 6 weeks the albumin fraction consistently showed a rise.

Most patients showed improvement in skin and hair texture at the end of three weeks.

There was marked improvement in appetite in 50 of the 75 patients at the end of the first week of therapy and in the remaining 25 patients by the second week.

Forty-three patients showed overall clinical improvement with particular reference to diarrhoea. There was a sense of well-being.

The average rise in Hb was 3 g in 64 patients (85.3%) out of 75.

Though the series is small and the period of observation limited, the improvement with Liv.52 has been impressive in the hypoproteinaemia states. The time required for initial improvement was decisively shorter.

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