

## Observation on the Anabolic Effects of Liv. 52 on Burns

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Burns trauma continues to baffle the clinicians and the research workers alike. With improved understanding of the pathology of burn shock, death in the first few days from hypovolaemic shock has decreased considerably; but the intricate and complicated metabolic derangements which occur after thermal trauma, still pose a challenge to all those, who are interested in this field. Toxaemia, infection, prolonged morbidity have all played and continue to play a decisive role in delayed mortality of burns.

It is an established fact that, burns, trauma, surgery, infection or mere inactivity in a patient confined to bed, for as little as 48 hours, result in a negative nitrogen balance, as a result of protein catabolism. This has been demonstrated by an increased excretion of urinary nitrogen after trauma, which persisted according to the severity of trauma. This catabolism changed into that of anabolism leading to a gradual positive nitrogen balance, once the patient became ambulatory (Taubenhans, 1950). In burns, all the above mentioned factors (injury; infection; prolonged immobilisation) contribute to a prolonged state of negative nitrogen balance, at times continuing for 10 weeks even. Until recent times this "post traumatic protein breakdown was considered as obligatory."

Anabolic steroids, in recent times have

shown to inhibit this protein breakdown, thereby converting a negative nitrogen balance into a positive one. This resulted, in the appearance of many steroids, both naturally occurring ones and synthetic ones, each claiming beneficiary effects on this tissue breakdown. But many of these steroids especially the hormones, in addition to their anabolic effects manifested undesirable masculinising effects in females.

Liv. 52 is a herbal product (marketed by Himalaya Drug Company) claiming all the beneficiary effects of anabolic steroids excepting the masculinising ones. Since the majority of the burn accidents, in this part of the country, occur in females, it was considered worthwhile to undertake a study on the effects of this drug in burn patients.

### **Method and Material**

The study was carried out in 50 acutely burnt patients admitted to the Plastic Surgery Department of Patna Medical College Hospitals.

These patients were divided into 2 groups—a control group of 20 patients and treated group of 30 patients. Control group received the routine treatment; whereas in the treated group, in addition to the routine treatment, Liv. 52 as an additional therapy was instituted. The dosage schedule of the drug is as follows :

Two tab. three times daily in adults.  
Children below 6 years received Liv. 52 drops,  
5-10 drops three times a day, according to age.

The treatment was started immediately after the patients recovered from burn shock which was usually after 48-72 hours. Patients were observed for the return of appetite for a period of 8 weeks. The following investigations were carried out before institution of treatment schedule and at weekly intervals thereafter till the end of 8 weeks.

Urinary nitrogen (this was not carried out in the first few days as the urine output in some cases fluctuated widely) plasma protein, SGOT and A/G ratio. A comparative study on epithelialisation of superficial burn wound, and 'take of skin graft' in deep burns was undertaken in the control and treated groups.

#### **Observations and Discussion**

Return of appetite was found to be a definite prognostic index in evaluating the efficacy of this therapy. "An increase in appetite appeared to be the most striking and uniformly produced effect of anabolic agents and was generally accompanied by weight gain, and less constantly, by a feeling of increased strength" (Payne, 1959).

In the present study 63% of patients in treated group regained their appetite by 5th to 8th post burn day. The remaining 37%, which did not show such a favourable result were patients with extensive, poor

infected. From this it is evident that post traumatic protein breakdown, is not merely related to the nature of injury, but other complicating factors may also have an influence on it.

In the control group only 2 patients (10%) regained their normal appetite by the 5th post burn day. These two cases had only 8% and 18% of their body surface burnt. The observation are tabulated in Table I.

There are reasons to say that the increase in appetite leading to better intake of food is the "primary decisive factor, for the ultimate prognostic of the severely burnt patients, as seen by the fact that all the patients of treated group who regained the appetite and maintained it showed an all round improvement and soon got cured." The beneficial effects of anabolic agents on appetite has been reported by a number of workers (Dolecek, 1963; Kalina, 1963).

#### **Effects on Urinary Nitrogen**

The turn over of protein can be determined fairly easily in terms of nitrogen balance, for nitrogen content of urine accounts for about 9/10 of the protein broken down in the body. It can be assumed that any protein broken down in excess of the food intake must be derived from the patient's tissues" (Jamieson & Kay, 1969).

The present study also confirmed the fact that, estimation of urinary nitrogen is a reliable index indicating protein metabolism. The excretion of urinary nitrogen after burn injury was found to be considerably elevated

leak through the burned surfaces. After an extensive burn the urinary loss alone may exceed the dietary intake by the patient 30g/day and there are additional large losses of nitrogen in the exudate from burnt area which may continue for several weeks (Jamieson & Key, 1969). By increasing appetite and thereby intake of food, the intake of protein and other body building food is indirectly assured.

In patients treated with Liv. 52, the urinary nitrogen returned to normal level much earlier, when compared to the control group, 63% in treated group showed normal urine nitrogen excretion by the beginning of 1st week. Most of these patients had burn involving 35% of body surface. In control group only 25% of patients had normal value of urinary nitrogen excretion in spite of the fact that many of them had far less body was involved in the burn. This action of Liv. 52 is a direct one on protein metabolism and not through its beneficiary action on appetite, since after moderate or severe trauma increasing the protein intake without use of anabolic steroids merely increase the nitrogen loss, the balance remaining constantly negative (Jamieson & Key, 1969). The values obtained are tabulated in Table II.

#### **Effect on Plasma Proteins, A/G Ratio**

After burns there was a fall in the level of plasma proteins which was gradual and sustained. In the treated group, the fall was minimal and in many cases by 5th week it started returning to normalcy. A/G ratio was not found to be disturbed much.

SGOT level (Normal 4-50) showed a considerable increase in the post burn period, depending upon the severity of burn wound. It was seen that all these investigations, indicated improvement, and was closely related to the regaining of appetite. It may be concluded that all these are secondary to the return of appetite and increased intake of food.

In control group, 10 patients had their deep burn grafted. Good take was noticed in 50% of the patients. In the other half the procedure had to be repeated. The two cases of superficial burn took 4-4½ weeks time for complete epithelialisation.

In treated group 14 patients underwent grafting procedure. In 9 (64%) the take was good and in the remaining 5 (36%) the grafting had to be repeated.

There were 5 cases with superficial burns only and they took only 2-2½ weeks for complete epithelialisation. This finding is of great interest to surgeon for whom, resurfacing of burnt wounds in presence of infection and hypoproteinaemia is a problem riddled with great difficulties.

#### **Summary & Conclusions**

The study was carried out in 50 burn patients, admitted in the Plastic surgery department of Patna Medical College Hospitals. They were divided into 2 groups: one in which the patients received Liv. 52 tablets or drops (in children), in a dosage of 2 tab. or 5 to 10 drop three times daily in addition to the routine therapy, 30 were included in this group. A control study of 20 patients in whom this drug was not given

**Table I**—Showing Appetite Improvements in Weeks.

Number of cases	% of burnt area	Ist week	IInd week	IIIrd week	IVth week	Vth week	VIth week	VIIth week	VIIIth week	Results
<i>Control Group :</i>										
1	8%	Good	Good	Good	Good	Good	...	...	...	Cured
1	18%	Poor	Good	Good	Good	Good	Good	...	...	Cured
9	12—35%	Poor	Poor	Good	Good	Good	Good	Good	Good	Cured
1	32%	Poor	Poor	Poor	Good	Good	Good	Good	Good	Cured
3	25—30%	Poor	Poor	Poor	Good	Good	Poor	Poor	Poor	Died
5	32—40%	Poor	Poor	Poor	...	...	...	...	...	Died
<i>Treated Group :</i>										
1	12%	Good	Good	Good	Good	...	...	...	...	Cured
18	8—35%	Poor	Good	Good	Good	Good	Good	Good	Good	Cured
1	35%	Poor	Poor	Poor	Good	Good	Poor	Poor	Poor	Died
3	30—38%	Poor	Good	Poor	...	...	...	...	...	Died
2	30—35%	Poor	Poor	Poor	Good	Poor	Poor	Poor	Poor	Died
5	30—40%	Poor	Poor	Poor	...	...	...	...	...	Died

*Control Group* - 55% patients regained appetite by 3rd week.

*Treated Group*—63% patients regained appetite by 2nd week.

**Table II**—Showing Weekly Urine Nitrogen Excretion in Control and Treated Group.

<i>Control Group</i>										
3	8—12%	...	H	N	N	N	N	...	...	Cured
2	15—18%	...	H	H	N	N	N	...	...	Cured
3	20—22%	...	H	H	H	N	N	N	N	Cured
3	25—32%	...	H	H	H	H	H	N	N	Cured
1	35%	...	H	H	H	H	H	H	N	Cured
5	32—40%	...	H	H	...	...	...	...	...	Died
3	25—30%	...	H	H	H	H	H	H	H	Died
<i>Treated Group</i>										
3	8—12%	...	H	N	N	N	N	N	N	Cured
16	12—35%	...	H	H	N	N	N	N	N	Cured
8	30—40%	...	H	H	...	...	...	...	...	Died
3	30—35%	...	H	H	H	H	H	H	H	Died

H = High, N = Normal.

*Control Group*—25% of patients showed normal urine nitrogen excretion by 4th week. By 7th week 55% of patients showed normal urine nitrogen excretion,

*Treated Group*—63% of patients showed normal urine nitrogen excretion by 4th week.

was also undertaken.

All patients tolerated this drug well, and there was not a single case of any undesirable side reaction.

A definite improvement in appetite was observed in 63% of the treated group within 5-8 days. In control group only 10% of the patients regained their appetite within this time. This improved appetite led to better food intake and a general sense of well being.

Reduction of the urinary nitrogen values were observed within 5-8 weeks in majority of patients in the treated groups. In control group only 25% reached normal values within this time. Most of them took as long as 10-11 weeks to attain normalcy. Raising of plasma protein to the preburn values, restoration of A/G ratio to normal and reduction in SGOT values were the other things observed with this drug. Whether this is a direct action of Liv. 52 or through its beneficial effects on appetite is debatable. From the effect of Liv 52 on regeneration of liver cells in cases of Infective Hepatitis, it can be

safely assumed that Liv 52 has beneficial effects also on injured liver cells in burns also, and which could explain the increased appetite, weight and sense of well being.

None of the female patients exhibited any masculinising tendency even after prolonged therapy.

Earlier epithelialisation of superficial burns, and the take of skin graft in deep burns were definitely found to be better when compared to the control group. These beneficial effects indirectly reduced the infection rate of the burnt area, thereby curtailing the number of days of hospitalisation.

Liv 52 was however found to have no effect on burn toxæmia and the resulting mortality from it.

#### Acknowledgement

We record with great pleasure our thankfulness to Himalaya Drug Company for their very kind assistance and provision of the drugs etc., for carrying on the project.

#### REFERENCES

1. Kalina, J. : Acta. Chirug. Plast., 4:214, 1963.
2. Dolececk, R. : Acta. Chirug. Plast., 4:214, 1963.
3. Jamieson, A. R. & Kay, A. W. : Text Book Surg. Physiol., E & S Livingstone, London, 1969.
4. Payne, R. W. : "Anabolism, Appetite, Ambition" Acad. Gen. Prac., 1959.
5. Taubenhans : Quoted from Organon Ref. Book.