

SUMMARY

1. The effect of malnutrition with special reference to protein deficiency on the activities of some of the liver enzymes namely, catalase, gamma amylase, transaminases has been investigated in the group of albino rats.

2. The experimental animals grouped into 3, the first group was fed with the normal diet, the second group by 10% protein and the 3rd group by 20% protein upto a period of 25th day.

3. The gain of body weight in all the 3 groups at fixed interval of time was recorded. The mean average body weights in gms on 25 days in the 3 groups have been noted as 36.46 ± 0.67 , 24.00 ± 1.00 and 34.60 ± 1.0 respectively in the range of 35.0 - 40.0, 20.0 - 32.0, and 30.0 - 40.0. The animals of group II fed with 10% protein had a significantly low body weight gain and no difference has been observed in the body weight between the groups fed with normal laboratory diet and with 20% protein.

4. Blood was collected from the heart at 0, 14, 25 days interval and Hb was estimated. The mean Hb level in gm% on 25th days of experiment in the 3 groups was 14.5 ± 0.45 , 11.3 ± 0.38 and 15.1 ± 0.36 within the range of 11.4 - 16.8, 9.5 - 14.5, 12.3 - 17.8 respectively and significant differences has been noted between groups I & II and II & III but without any difference between the groups I & III.

5. At the end of 25th day the animals were sacrificed and liver tissue were collected for estimation of the activities of the different tissues enzymes.

6. The weight of the liver in each animals of the 3 groups was recorded and the mean liver weights in gms in the 3 groups were noted as 8.22 ± 0.39 , 6.07 ± 0.18 , 7.69 ± 0.39 within the range of 5.6 - 10.4, 5.1 - 7.5 and 5.8 - 10.5 respectively. Significant low liver weight was observed in the animals fed with 10% protein and no significant difference in liver weight was recorded in the animals fed with normal laboratory diet and the 20% protein diet.

7. The mean total plasma protein in gm% observed in the 3 groups on 25th day, was 7.1 ± 0.25 , 5.8 ± 0.19 , 7.1 ± 0.24 within the range of 6.0 - 8.5, 5.1 - 7.5 and 5.8 - 8.7 respectively. A significant reduction in total plasma protein was noted in the animals fed with 10% protein diet but no significant differences were recorded in the animals maintained at normal laboratory diet and the diet with 20% protein.

8. The mean liver catalase activity values in the 3 groups on 25th day were 1.73 ± 0.13 , 1.91 ± 0.04 and 1.70 ± 0.13 within the range of 1.10 - 2.76, 1.15 - 2.79 and 1.38-1.91 respectively. Though higher liver catalase activity values were observed in the animals fed with 10% protein, but the values were not significantly different from the values observed

in the other two groups namely animals fed with normal laboratory diet and with 20% protein.

9. The mean hepatic gamma amylase activity recorded in the 3 groups on 25th day were 44.40 ± 0.92 , 24.13 ± 1.77 and 45.26 ± 1.95 within the range of 40.0 - 50.0, 16.0 - 38.0 and 32.0 - 62.0 respectively. A significantly reduction in the activity of the hepatic gamma amylase was observed in the animals fed with 10% protein diet but no significant difference values were noted in animals fed either with normal laboratory diet or 20% protein diet.

10. The mean values of hepatic GOT in IU/mgm liver tissue protein in the 3 groups were noted as 226.0 ± 22.19 , 126.0 ± 5.76 and 226.0 ± 4.79 within the range of 182.0 - 266.0, 75.0 - 168.0 and 196.0 - 258.0 respectively. A significantly marked reduction level ($P < 0.01$) in the hepatic GOT in the animals fed with 10% protein was noted but no difference in the hepatic GOT activity was observed between the animals fed with normal laboratory diet and 20% protein diet.

11. The mean values of hepatic GPT in the groups of animals fed with normal laboratory diet, 10% protein diet and 20% protein diet were 75.73 ± 4.46 , 50.93 ± 5.33 and 77.73 ± 4.71 within the range of 50.0 - 100.0, 20.0 - 100.0, 48.0 - 109.0 respectively. The range of variation in the hepatic GPT values was wider in group II animals fed with 10% protein diet

and a significantly reduction in the mean hepatic GPT value was observed in the same group, however no significant difference was recorded between the animals belonging to group I and group III.

12. Triiodothyronine (T_3) was estimated on 25th day. The average values of T_3 in ngm/ml in the 3 groups recorded were 1.30 ± 0.11 , 0.63 ± 0.07 and 1.49 ± 0.16 within the range of 0.72 - 2.2, 0.28 - 1.2 and 0.77 - 2.6 respectively. A significantly low value ($P/0.01$) of T_3 in group II animals fed with 10% protein difference was observed between the animals fed with normal laboratory diet and 20% protein diet.

13. The mean values of Thyroxine (T_4) in the 3 groups of animals were noted as 7.16 ± 0.6 , 8.6 ± 2.9 and 7.6 ± 3.7 microgram% within the range of 5.5 to 9.8, 5.8 to 11.5 and 5.5 to 10.2 $\mu\text{gm}\%$ respectively. A wide range of variation amongst the animals belonging to group III was noted however, no significant differences were noted in all the 3 groups.

14. The significance of the findings were described and it has been suggested that diet with 10% protein was sufficient to produce a state of protein deficiency but animals can be kept at 20% protein diet without producing protein malnutrition.