Abstract
Protein-restriction or deficiency is associated with many pathological disorders. We have made an attempt to study the effect of marginal tryptophan deficiency and supplementation of adequate tryptophan on the activity of antioxidant enzymes in the liver and neuronal tissue of rats. Marginal tryptophan deficiency was created in the animals (group-C) by feeding them with diet consisting of casein (6%) and gelatin (12%). Control animals (group-A) received 20% casein in their diet. Another set of animals (group-B) received the marginal tryptophan deficient diet with 0.05% tryptophan. We have observed a decrease in body weight and organ development in the deficient animals. However, a protective mechanism has been observed in the tryptophan deficient animals that received 0.05% tryptophan. Biochemical studies have shown a decrease in protein content, reduced glutathione (GSH) levels, activities of catalase, glutathione-s-transferase (GSTs) and tryptophan-fluorescence in tryptophan deficient rats. There is an increase in lipid peroxidation and AGE-fluorescence suggesting the oxidative stress due to tryptophan deficiency. However, in deficient rats that received 0.05% tryptophan in diet there was an increase in protein content, glutathione levels, catalase, glutathione-s-transferase (GSTs) levels, tryptophan-fluorescence and inhibition in AGE-fluorescence and lipid peroxidation. Our findings suggest that adequate tryptophan administration to tryptophan deficient animals has a protective influence as revealed in the activity levels of antioxidant enzymes in relation to deficient animals.

Keywords
Tryptophan, Reduced glutathione, Antioxidant enzymes, AGE-fluorescence, Tryptophan fluorescence, Protein carbonyls.