Abstract:

An erythroid hypoplasia characterized by falls in red cell precursors, haemoglobin, packed cell volume, reticulocytes and sometimes platelets, resembling that which occurs in marasmus and kwashiorkor, has been produced experimentally in baboons on a synthetic riboflavin-deficient diet. The red cell uptake of59Fe on the 8th and 12th days was 40 per cent lower in the riboflavin-deprived animals and thus agreed with the low marrow activity estimated cytologically. The haematological abnormalities were accompanied by gross skin changes, falls in serum folate, and sometimes intramuscular and intestinal haemorrhages. Striking macroscopic and histological abnormalities were also present in the adrenals. All the abnormalities disappeared when riboflavin was given, and re-appeared when it was again omitted from the diet. When prednisone was given to the deprived animals instead of riboflavin, only the erythroid hypoplasia disappeared. Since the diet was adequate in all respects and contained 20 per cent of its kilocalories in the form of animal protein, the abnormalities cannot have been due to protein deficiency. The pair-fed controls on a similar diet but with added riboflavin developed no abnormalities. It is suggested that as riboflavin is an important co-enzyme in many vital metabolic processes, its absence may affect marrow activity directly or by disturbing corticosteroid metabolism, as well as being associated with serum protein changes.