

SUPPLEMENTATION OF LOW-TRYPTOPHAN-NIACIN-DEFICIENT DIETS WITH BEANS
AND LIME TREATED CORN IN RATS. Robert L. Squibb, J. Edgar Braham^o,
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Pellagra, traditionally associated with high corn consumption, is rare in Mexico and Central America where diets often contain as much as 80% corn. The use of beans and the fact that corn is consumed as tortillas appear to explain this. Lime treatment of corn for the preparation of tortillas consistently increased rat growth on low tryptophan-niacin-deficient rations despite losses of 32 to 42% of the niacin originally present. In three experiments 154 rats were depleted with low tryptophan-niacin-deficient rations containing 19% protein with 0.12% tryptophan. These rats failed to grow and developed severe alopecia. Daily oral administration of 1 mg. of niacin per rat or increasing the tryptophan content of the basal ration to 0.4% restored normal growth without influencing the alopecia. When corn or tortillas were substituted for the zein and sugar of the basal ration, growth was significantly improved and the hair returned. No morphological changes in depleted rats were observed from exposure of shaved areas to ultraviolet or infrared light. However, the niacin-deficient rats were more light sensitive as indicated by their tendency to huddle. Beans added to the tortilla ration at the level of 15%, as commonly consumed in local diets, resulted in further growth and an increase in the niacin content of leg muscle from 3.52 to 6.29 mg/100 g.