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Excess dietary tyrosine and corneal lesions

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Abstract

Rats fed an abnormally high concentration of L-tyrosine developed a reproducible corneal disease. By biomicroscopy the corneal lesion was seen to progress through definite stages: overall diffuse epithelial haze; discrete, stellate-shaped epithelial opacities; stromal thickening; vascular ingrowth; and finally regression of the opacity.

Tyrosine levels were determined spectrofluorometrically at all stages of the disease. Initially, tyrosine in both serum and aqueous humor rose rapidly. The concentration of this amino acid in the aqueous humor exceeded that in serum. While remaining higher than normal, the absolute concentration of tyrosine in serum varied little with time. The content of tyrosine in the aqueous humor decreased slowly. Only the dietary dose of tyrosine was correlated with the elevation in the serum and aqueous humor tyrosine concentrations ($P < 0.001$). Other factors tested, including sex, presence or absence of pigmentation, and type of ambient light, did not modify the corneal disease.





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