can be roughly estimated by microscopic observation and, more accurately, by nucleic acid analyses of the nuclei and of the tissue. It is probably below 10 percent.

The reasons for the differences in osmotic behavior reported by Brown are not known to us, but we have had wide experience with varying degrees of nuclear fragility depending upon such variables as age of thymus, concentration of Ca^{++} or Mg^{++} ions, the molarity of the sucrose solution, temperature, shaking, and so forth. We do not feel that such differences by themselves should be taken to show either the presence or the absence of whole cells, especially when they lead to conclusions that are not in accord with direct observations by light or electron microscopy.

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Skin Symptoms of Vitamin-B_6 Deficiency in the Dog

About 20 years ago György (*1*) named the "rat antipellagra factor" vitamin B_6 and selected skin symptoms in the rat as the basis of a biological method of assay (*2*). He and his coworkers (*3*) referred to the dermatitis as acrodynia. It affects the peripheral parts of the body—nose, mouth, ears, paws, and tail. Affections of the skin and hair in vitamin-B_6 deficiency have been seen in other species—notably in the hamster (*4*), monkey (*5*), and pig (*6*)—but they do not show close similarity to one another or to the dermatitis that occurs in the rat.

In 1938 György (*7*) suggested the possibility of a relationship between insufficiency of vitamin B_6 and certain skin lesions in man, and in 1940 Smith and Martin (*8*) reported the successful treatment of human chielosis with pyridoxine. More recently Vilter and his associates (*9, 10*) reported the occurrence of seborrheic dermatitis about the eyes, nose, and mouth of human subjects given desoxypyridoxine, a compound usually regarded as a B_6 antivitamin. An ointment containing pyridoxine alleviated the seborrhea and was also effective in some other cases of dermatitis (*10*).

For a number of years I have been conducting experiments on vitamin-B_6 deficiency in rats and dogs. In the former I have induced the recognized effects on growth and metabolism, and in the latter, the typical hematological symptoms. In only a small number out of hundreds of such rats have I seen acrodynia, and then only after a period of months on the deficiency regimen. This is at variance with the impression given by the reading of a standard textbook treatment of vitamin-B_6 deficiency. If desoxypyridoxine is given, however, rats usually develop skin symptoms in a relatively short time that are indistinguishable from those of simple vitamin-B_6 deficiency. In dogs deprived of vitamin B_6, I have never seen effects on the skin or hair, even with severe hematological symptoms. However, in a few young dogs that have been given desoxypyridoxine, I have seen rather severe skin lesions that seem to resemble those which Vilter and his associates induced in human subjects. This has always been associated with the feeding of desoxypyridoxine in a diet containing 40 percent casein, it has occurred only in pups a few months of age, and only in three out of nine that have been studied on this particular regimen.

Since no description of this effect appears to have been published, I report it here, for it may be of interest to those who are concerned with vitamin B_6 and the health of the skin. Any conclusions of nutritional significance from such observations should, however, be made with caution. Desoxypyridoxine is effective in much smaller amounts than other so-called "antivitamins" (*11*), and it has a quick and profound effect on an animal. The question still remains whether its action is entirely the result of metabolic interference with vitamin B_6.

In these dogs the eyes are particularly affected, and the animal appears to be conscious of soreness in them. There is a conjunctivitis with mucous discharge, blepharitis, and a "spectacle-eye" effect from denudation. The skin about the eyes, nose, and mouth shows a pink coloration. These symptoms rapidly improve upon withdrawal of desoxypyridoxine and with the administration of a small amount of pyridoxine, but the denudation about the eyes is rather persistent.

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