

RELATION OF HAIR ZINC TO AGE IN CHILDREN

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Reservations have been expressed by a number of authors, including Deeming and Webber (1978) and McKenzie (1979), as to whether measurement of levels of metals in human hair can be used as a sensitive indicator of nutritional status. Among their reasons are doubts about the relation between age and metal accumulation and how this could affect interpretation of results. Gentile et al. (1981) have underlined these problems with regard to zinc. The results reported here from a study of zinc in hair of two groups of children indicate that the relationship is indeed complex.

Hair samples from some 50 children of European origin living in Brisbane and from 15 Aboriginal children in Cherbourg, Queensland, were collected and analysed according to the method of Reilly and Harrison (1979). Brisbane, but not Cherbourg, samples were all from the nape of the neck, close to the scalp surface. Details of sex, age and place of residence were requested with samples. In some cases, especially in Cherbourg, exact age was not given. Since it had already been ascertained that there was no significant difference between levels of zinc in hair of boys and girls, results for each local group were pooled. The mean levels of zinc (\pm SE) were 161.1 ± 6.4 mg/kg and 219.2 ± 15.6 mg/kg for Brisbane and Cherbourg children, respectively. When individual results were plotted against age, a statistically significant positive regression was obtained for Brisbane children ($r = 0.6074$, $P < 0.001$, number of observations 46). This represented an annual increase of approximately 7.6 mg zinc/kg of hair. No significant correlation was found for Cherbourg children.

Smith et al. (1982) found a significant correlation between age and hair zinc, with an annual increase of 7.5 mg/kg hair in Adelaide children, almost the same as reported here for Brisbane children. But they also found a correlation between age and hair zinc, though with an annual increase of only 4.3 mg/kg hair, in Aboriginal children in North-west Australia. In this their results differ from the Queensland study. They also found significantly lower levels of the metal in hair of Aborigines (106 ± 2 mg/kg) than in hair of Adelaide children (120 ± 5 mg/kg). This was not found with the Queensland children. The small number of samples of hair from Cherbourg (15) and their origin from different parts of the scalp may account to some extent for these contrasts. However, the possibility of differences in nutritional status of Queensland and Western Australian Aborigines, with consequent effect on metal accumulation in hair, should also be considered. Further investigation will be necessary to resolve these questions.

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