

## CARTAS AL EDITOR

### **Selenium intake and congenital malformations in humans**

Gentlemen:

Among the many manifestations of selenium toxicity in various animal species are congenital malformations. This teratogenic effect of selenium ingestion has been observed in chicks, lambs, calves and rats (1). There are only a few reports of a possible teratogenic effect of selenium intake in humans.

Accounts from Colombia of the 18th century cited by Benavides and Silva Mojica (2) quote travelers who described monstrous-looking infants born to Indian women living in the so-called "Peladero" zone, known today to be highly seleniferous. Robertson (3) gives a short account of six women who had handled selenite during the preparations of *Salmonella* culture media. Four certain and one probable pregnancies ended in abortion; one woman went to term and the infant had bilateral club-feet. However, inquiries at other laboratories carrying out similar work have found no evidence of such trouble.

Recently, studies of selenium intake in humans determined by urinary selenium excretion in school children have been conducted by one of the authors (4). The other author compared the geographical distribution and incidence of infant mortality due to congenital malformations on the basis of published Public Health Statistics for the years 1960-1967 (5). The results of both studies have been compared in an attempt to find a possible correlation between selenium intake in humans and its presumed teratogenic effect.

As can be seen from Fig. 1, the areas of high selenium ingestion and the areas of highest incidence of congenital malformations do not coincide. The correlation coefficient was found to be 0.0305, i.e. no significant correlation existed.

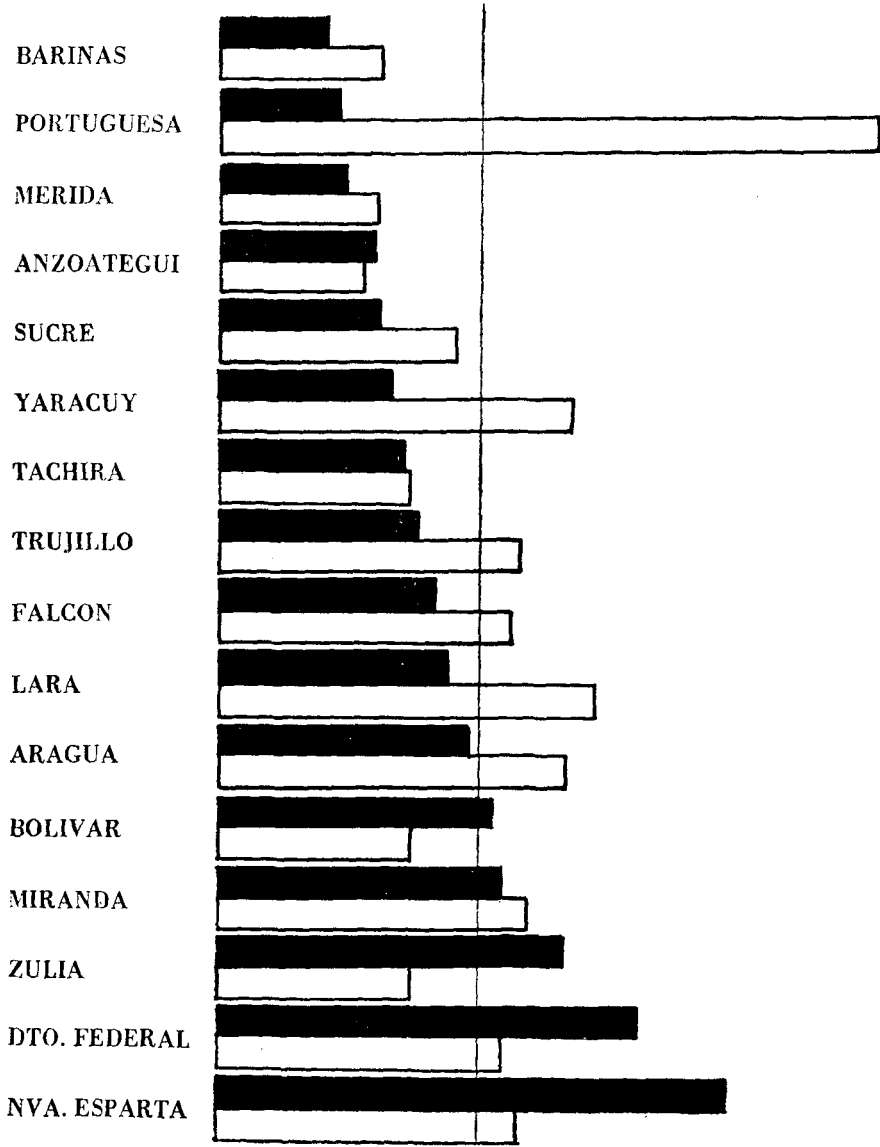
The reasons for the non-uniform regional distribution or incidence of congenital malformations are not clear. Our observations make it unlikely that selenium intake in dose levels which result in mean urinary excretion of 0.38 ppm would have a teratogenic effect because this was the highest value observed in the State of Yaracuy where congenital malformations were rare. Definite conclusions, however, cannot be drawn until the causes for the occurrence of high and low incidence-areas of congenital malformations is explained.

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MORTALITY RATE DUE TO CONGENITAL MALFORMATION AND SELENIUM LEVEL IN URINE OF SCHOOL CHILDREN IN DIFFERENT VENEZUELEAN STATES



AVERAGE  
 0.152 ppm urinary Selenium  
 18.4 mortality (1/10,000)  
 due to congenital malformation

Mortality rate 1/10,000	4.6	9.6	13.8	18.4	23.0	27.6	32.2	36.8		
Selenium level p.p.m.	0.038	0.076	0.114	0.152	0.190	0.228	0.266	0.304	0.342	0.380



Malformations



Selenium level