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Endemic Goiter In Latin America

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Both the first conference on nutrition problems in Latin America held in Montevideo in July 1948 and the second held in Rio de Janeiro in June 1950 recognized that endemic goiter is a serious public health problem in most of the countries of Latin America and made recommendations aimed at its prevention. In the 2 years since the Rio de Janeiro conference, considerable progress has been made by a number of Latin American countries in determining the extent of their endemic goiter problem. The report of the successful treatment of endemic goiter with potassium iodate in Central America (*1*) and the effectiveness of iodized salt distribution begun in certain districts of Colombia in 1949 (*2*) give new assurance as to the practicality of prophylactic measures.

Although the problem of endemic goiter in Latin America is more widely recognized than ever before, and present technical knowledge is sufficient to insure the elimination of goiter as a public health problem, few specific additional measures have been taken toward this goal since the Rio de Janeiro conference. New legislation, the implementation of existing laws, and voluntary efforts have lagged behind scientific studies of the problem.

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Treatment and Prophylaxis

The second Latin American nutrition conference recommended that the governments for which endemic goiter is a health problem take the necessary steps to bring about the iodization of salt. In 1950 the distribution of iodized salt was begun in the northern zone of the Department of Caldas in Colombia. Examination of nearly 9,000 school children in this zone in 1952 revealed an average incidence of endemic goiter of 33 percent compared with 90 percent in the 1945 survey (*2*). This represents a decrease of 64 percent in the incidence of endemic goiter in the areas in which salt iodized to 1 part in 20,000 was distributed. Several other Latin American countries are known to have salt iodization programs in at least the planning stage.

The instability of potassium iodide, especially under tropical conditions, and the necessity for drying and packaging salt iodized with this compound have been major obstacles to the introduction of iodized salt in many parts of Latin America. The report from Central America of the effectiveness of potassium iodate in the treatment of endemic goiter may be of far-reaching importance in this regard (*1*). Eight hundred and eleven school children in El Salvador and 197 in Guatemala with an initial incidence of goiter of 34 and 57 percent, respectively, were treated with placebo, 6.5 mg. of potassium iodide, or 8.5 mg. of potassium iodate weekly. During administration periods of 15 and 20 weeks in El Salvador and 25 weeks in Guatemala, the incidence of goiter did not change significantly among the groups receiving placebo, whereas the reduction in endemic goiter among the groups treated with potassium iodide was 40, 33, and 62 percent, respectively, in the three trials, and among the groups treated with potassium iodate, the reduction was 44, 44, and 69 percent. At the end of the treatment

period in Guatemala, the average protein bound iodine level in the blood serum was 2.68 in 24 children receiving placebos, 5.10 in 26 children receiving iodate, and 4.97 in 27 children receiving iodide.

Discussion

Although the goitrogenic factors which result in the development of endemic goiter in one area or cultural group and not in another receiving the same amount of iodine are not understood, there is no reason to doubt that endemic goiter can always be prevented by providing the amount of iodine needed. Where soils are naturally deficient in iodine, the food plants and water supply will not furnish enough of this element to prevent goiter and it becomes necessary to supply it by artificial means. Such measures as the use of iodized candy or drops of an iodine-containing solution, while effective for limited groups, do not generally reach those segments of the population with the greatest physiological need, especially pregnant women and adolescent girls. For these reasons, the iodization of salt is almost universally recommended as the prophylactic method of choice.

Since tropical temperatures, excessive moisture, economic factors or local customs have made the iodization of salt with potassium iodide economically impractical or otherwise unacceptable for many areas of Latin America, the demonstration that the iodine of potassium iodate is effective in the treatment of human goiter is of considerable practical significance. Potassium iodate possesses desirable chemical and physical properties which give it potential importance for the iodization of crude salt and pilot plant preparation of such salt has already begun in Guatemala. On the basis of the available evidence (*1*, *3*) as to its physiological effectiveness, the WHO Study Group on Endemic Goiter which met in London in December 1952 concluded that where it is not practical to prepare or market a salt which is dry and free from impurities, potassium iodate should be used if the iodization of salt is indicated.

In doing so, however, the WHO Study Group recommended that the rate of iodization be 1 part of iodine per 100,000 parts of salt, whereas the Rio de Janeiro conference had previously recommended a level of 1 part of iodine in 10,000 parts of salt. Argentina and Brazil have legislation specifying a ratio of 1:66,666; Mexico, 1.5:100,000; Colombia, 1:20,000; and the countries of Central America are planning to specify a ratio of 1:10,000. In the United States 1 part of potassium iodine in 10,000 parts of salt is employed, and for many years 1 part in 5,000 was used in salt that did not contain a stabilizer.

In view of the unknown extent to which goitrogenic factors are present in Latin American diets, as well as the lack of information concerning the amounts of salt consumed, and taking into consideration the lack of toxicity of the compounds employed for iodization, the Pan American Sanitary Bureau favors retaining 1 part of iodine in 10,000 parts of salt as the standard. This can be furnished either by iodate or iodide and should result in an intake of at least 100 to 300 micrograms of iodine daily. This is the level employed in the field studies in Guatemala and El Salvador and twice the level used in Colombia. A strong argument against the 1 in 100,000 standard is the observation that the salt commonly used in Central America already has a higher iodine concentration than 1:100,000 even in areas in which endemic goiter is very prevalent (*4*).

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