

cities. We have found that Zn deficiency was present in village adolescents without geophagia.

We have measured plasma Zn levels by atomic absorption spectrophotometry (Perkin-Elmer, model 103) in 30 villages and in 20 city children as control. Our results have been shown in Table 1 indicating that serum Zn levels were significantly lower in village children as compared to their counterparts in the cities ($P < 0.05$).

Since the studied individuals were active and were considered normal under the village conditions, zinc deficiency could be explained on a nutritional basis. However, multiple factors primarily inadequacy of Zn intake, and accelerated loss through the body sweat may play a role together. Turkish villagers have nutritional status similar to Iran, consuming large amounts of wheat and its products with high phytate contents, which decreases availability of dietary Zn.

Our experiences also differed from Dr. Gupte's, in regard to Zn therapy. In our study the children with Zn deficiency who

received Zn supplementation showed marked improvement in growth and sexual maturation.

It is more likely that the author from India must have been dealing with a different entity as has been indicated. Furthermore, no statement about Zn measurement was made in his letter. It would have been more appropriate to assess Zn values in his patients and then to decide whether they respond to Zn supplementation.

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TABLE 1
Comparison of village and city children

Age	Village		City		P
	No. of cases	Mean	No. of cases	Mean	
10-15 yr	30	96 ± 4.8	20	120.4 ± 4.7	<0.05

Allergic reactions to chocolate

Dear Sir:

In reply to a recent inquiry (1) about the allergic reactions to chocolate, I wish to bring the following two reports to the attention of Dr. C. A. Frazier and other interested readers of this *Journal*.

The first study by Dr. J. H. Fries (2) involved 25 patients, mostly children, with clinical sensitivity to chocolate. All of these patients were atopic, and receiving treatment for bronchial asthma, allergic rhinitis, and/or atopic dermatitis. All gave positive histories of allergy among family and imme-

diately collaterals. The clinical symptoms, induced by the ingestion of chocolate, in these patients were categorized as follows: 1) cutaneous: urticarial, eczematous rashes, local or generalized pruritis, circumoral erythema, morbilliform or scarlatiniform eruptions, and redness of ears; 2) respiratory: nasal clogging, sneezing or itching, coughing, and wheezing; 3) gastrointestinal symptoms: abdominal pain, vomiting, and itching of the linings of the mouth and throat.

The second study by Drs. L. Maslansky



and G. Wein (3) was designed to establish a correlation between clinical symptoms, skin test findings, and provocative double-blind feeding tests on those patients who apparently manifested well-defined allergic symptoms after eating a consistent amount of chocolate. On the basis of a questionnaire survey of 500 allergic patients, selected at random, it was found that 69/409 patients (i.e., 13.8%) who had eaten chocolate claimed that they had allergic symptoms. Similarly, 12 of the remaining 92 patients who did not eat chocolate thought it produced allergic symptoms. In summary, a total of 32.8% were told to avoid chocolate — by physicians (27.8%), by allergy testing laboratories (2.2%), by laity (2.8%). Of these 500 allergic subjects, 10 manifested very specific allergic reactions within a reasonable period of time. By double-blind study method, 8/10 patients, in the age range of 4 to 60 years, received both placebo and defatted chocolate in capsulated form. The results were matched with history and skin tests. The suspected allergic symptoms in these patients included: severe headaches, sneezing, tension-fatigue syndrome, hives, wheezing, rhinorrhea, nausea, and cramps. In 3 of the 8 cases, the suspected allergic reactions (fatigue syndrome, hives, nausea, and cramps) were re-

produced after the ingestion of cocoa capsules. Only one of these three had a positive skin test to chocolate. A review of the records of the 500 allergic patients revealed an incidence of 67% positive intracutaneous tests to chocolate, regardless of clinical symptomatology.

Unfortunately, two other reports on the subject of hypersensitivity to cocoa (4, 5) were not available at the time of writing, and hence could not be included in the present communication. I hope Dr. Frazier and others will find this summary informative and useful.

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Assessing malnutrition with the mid-arm circumference

Dear Sir:

The mid-arm circumference has recently been recommended as an alternative to weight in the epidemiological assessment of protein-energy malnutrition (PEM) (1, 2). The advantages inherent in its use are clear: it is more convenient to measure, the apparatus required is less liable to error under field conditions, standards are available (3), and in children whose ages fall in the range 1 to 6 years old an age-constant standard may be used (2).

The Wellcome classification (4) defines PEM as being present when weight-for-age falls below 80% of standard (using the Boston data as the standard (5)). If the mid-arm

circumference is to be used to diagnose PEM it must be shown to reliably differentiate normal from PEM children in the same manner as weight-for-age. Two recent reports (1, 2), based on a study of Iraqi children have claimed that this is the case. Most children aged 13 to 72 months old with PEM (based on weight measurement) had mid-arm circumference values less than 85% of standard. Using 85% as the cut-off level the false-negative PEM diagnosis rate was under 3% and the false-positive rate was about 20%. Shakir claimed that mid-arm circumference, expressed as a percentage of the age-constant mid-arm circumfer-

