An unconventional legume–Prosopis cineraria

Dear Sir:

While carrying out a nutrition survey in connection with a field program to assess the prophylactic potential of various dosage schedules of massive oral doses of vitamin A (unpublished data), we gathered certain information that we think may be interesting to the readers of this journal. This survey was carried out in four villages of Khol Block in Mahendragarh district in the southwest region of the state of Haryana, India. The climate of this area is marked by semidesert conditions, with scanty rainfall and meager agricultural production. The general socioeconomic condition of the people is poor. We were happily surprised to find an almost total absence of severe grades of protein–calorie malnutrition (PCM) in the community. A study of their food habits revealed that they consume a substantial quantity of an unconventional food in the form of *Prosopis cineraria* pods. *P. cineraria* D. (Syn. *P. spicigera* Linn. and *Mimosa cineraria* Linn.) belongs to the family Leguminosae and is locally known as jant. The tree and the pods resemble, to some extent, the well-known acacia species. It is a prized tree of the desert areas and has been described in detail in the *Wealth of India* (1). The practice of eating the pods of this tree has been in vogue for a long time and has been documented earlier (2).

Locally, the unripe pods are called sangar and are used for making curry and pickle. These are also dried and preserved for later use. The ripe pods are called khoka or jheenh and their pulpy coverings are well relished by the children. A resin occurring naturally on the tree, known as mesquite gum, is also occasionally eaten by people and has been analyzed recently (2, 3). The leaves and pods are routinely fed to the cattle that provide the milk consumed by the people. As this plant supplements the diets of the local people and is the major source of food for their dairy cattle, we thought it worthwhile to study the food value of its pods. Review of the existing literature revealed that no such study had been undertaken in the past.

Ripe and unripe pods at two different times were collected from 10 trees. The standard analytical procedures as described by Association Official Analytical Chemists (AOAC) were used (4). The crude protein was estimated by measuring the total nitrogen content by the Kjeldahl method as described by Fawcett (5), with slight modifications and then multiplying it by 6.25. The dried, unripe, whole pods were found to contain protein, 15.8; fat, 3.0; and carbohydrate, 50.8 g/100 g, with the caloric value of 293.5 kcal/100 g. The pulp and coverings of the ripe pods contained 10.8 g/100 g protein, 2.1 g/100 g fat, and 47.4 g/100 g carbohydrate with a caloric value of 252.1 kcal/100 g. The composition of ripe and unripe pods was essentially similar.

In terms of local availability, the method of cooking and cultural acceptability the nearest simile of *P. cineraria* pod is *Vigna catjang* or cowpea, which is locally known as lobia (6). It is interesting to compare (Table 1) the food composition of sangar (*P. cineraria* pod) with that reported (7) for lobia (*V. catjang* pod). In our opinion, the custom of eating *P. cineraria* pods seems to be the major factor in the prevention of PCM in these areas. This is especially applicable to young children who, while playing about in the fields, pick up ripe pods and eat the pulp and outer covering with relish, discarding the seeds. This soft portion is a fairly rich food, providing 10.8 g/100 g protein and 252.1 kcal/100 g.

During the course of our field trips we learnd that with the erosion of village life by urban trends, local people, especially the younger generation, are abandoning the habit of eating *P. cineraria* pods. This is particularly regrettable in a semidesert area at a time when the global food prospects in general and the local food supplies in particular are alarming. In an era when serious efforts are afoot to develop new sources of food like the algae and the petrosyn-

TABLE 1
Comparison of nutritional value of unripe pods of *Prosopis cineraria* and *Vigna catjang*[a]

	Protein, g	Fat, g	Minerals, g	Carbohydrate, g	Energy, kcal
P. cineraria	18.2	3.5	6.2	58.5	338.3
V. catjang[b]	23.81	1.37	6.12	55.10	326.5

[a] In terms of per 100 g/dry weight. [b] Derived from Gopalan et al. (7).

thetic proteins, it is all the more desirable to be looking for all the existing sources of unconventional foods and to promote their wider use. This is clearly an area where nutrition education can play a positive role in improving the nutritional status of underprivileged communities.

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Dietary intake of creatine or creatinine

Dear Sir:

The authors of the paper, "Protein-sparing effect in obese women fed low calorie diets," *Am. J. Clin. Nutr.* 27: 3, 1974, comment on the continuous (progressive) reduction in urinary creatinine excretion in their patients fed diets of varying nitrogen intake but lacking creatine or creatinine. They speculate that the decrease may have been due to lack of creatine or creatinine in the diet, or to a reduction in rate of turnover of muscle tissue or in muscle mass. Their previous study (10) showed a decrease in urinary creatinine excretion in young men taking creatine-free diets, even when muscle mass did not decrease appreciably.

Turnover of ingested creatinine is slow in relation to rate of ingestion in diet. In normal individuals, dietary creatine and creatinine expand the body pool of creatinine above the level of endogenous metabolism because of the slow turnover of these substances in the body (*J. Lab. Clin. Med.* 59: 945, 1962). Normal individuals eating natural food are in a steady state of urinary creatinine excretion. That component of excretion due to pool expansion by ingested precursors is removed when they eat creatine- and creatinine-free diets. We found that 24-hr urinary creatinine excretion and serum creatinine decline progressively, whereas creatinine clearance is maintained when a creatine- or creatinine-free diet is ingested (loc. cit.). Four days of ad libitum intake of natural foods restores urinary creatinine to the previous level.

The concept of pool expansion is important in interpretation of creatinine excretion. For example, the lower creatinine excretion in vegetarians reflects decreased pool expansion, not muscle mass.

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Reply to Dr. Schedl

Dear Sir:

As implied in our paper, we favor the idea that the continuous fall in the urinary creatinine excretion is the result of a decrease in dietary intake of creatine and creatinine rather than of any change in muscle turnover. Support of this contention is found when subjects are