CHAPTER VII

FOOD ANALYSIS
Food analysis of rare foods of Kamars deals about the analysis of these foods under the following sub-titles:

1. Introduction
2. Earlier work
3. Results and discussion
4. Conclusion

INTRODUCTION

The necessities of the Kamar tribe are very few mostly limited to the bare necessities of life and as such their standard of living is also very-very low. Kamar is an omnivorous tribe eating almost everything which could be eaten. Their main pursuit in the life is, still, search of food. They have not yet been able to rise above the starvation level. For their subsistence they partly depend on forest produce yet they have never faced actual famine conditions. On the other hand it is also true that they have not known the fortunes of plenty.

There are a number of food items consumed by the Kamars which other tribes do not eat. In the past the staple food of the Kamars was "madia" a variety of coarse millet. Today they are not able to grow enough of "madia" but even then "madia" is their favourite cereal. They also relish rice but all cannot afford. Some of them cultivate paddy in their small fields. Some take it in lieu of labour in fields while few purchase it from the market.

"Goihajighai Bhaji", Khonjhiyari Bhaji", Gundur Bhaji" and different types of green leafy vegetables are also commonly consumed by the Kamars. Besides these "tamarind leaves", "young pipal leaves" and "bamboo shoots" (Karil) are also their food of choice. "Mahua flowers" and "Chhin flowers" are consumed when available. Animal foods commonly consumed by the Kamars are "field rats", "red ants" "wild cats" and "goh", "snake", "crocodile" and "monkeys" are eaten by only those Kamars, who live in the interior dense forest. These Kamars rarely come in contact with the urban inhabitants.

EARLIER WORK

A number of studies have been performed in India & abroad to study the nutrient content of various food items. Mandal and Majumdar (1995) studied the protein content of some nuts sold in different markets in the Calcutta City. In that study they covered four species viz-almond, cashew, walnut and pistachio. The protein content of these nuts was calculated by estimating their nitrogen percentage by the micro-Kjeldahl method and then multiplying the value in each case with 6.25.

Gloria Urbano et al., (1995) carried out a study on nutritional assessment of raw, heated and germinated lentils. In this study nitrogen was determined by Kjeldahl method. The protein conversion factor was 5.7. Moisture content of the raw and processed lentils was obtained by drying to constant weight in a vacuum oven (20mm Hg, 35°C). Ash was measured by calcination at 500°C to a constant weight. Ether extraction was performed by gravimetry of the ethyl ether extract. They found that the protein and fat contents did not show any changes after heating and germination procedures.

Ajay Singh and I.S. Singh (1991) evaluated chemical composition of mahua seed in their study "Chemical Evaluation of Mahua (Madhuca
Indica) seed". In that study protein, oil, crude-fibre, ash and tannin contents were determined by AOAC (1980)\textsuperscript{290} methods. Total carbohydrates were calculated by difference.

A study "Nutritional Evaluation of Leaf Protein Extracted from three Aquatic Plants" was conducted by Anjana Dewanji and Shyam Matai (1996)\textsuperscript{291}. In that study nitrogen was analyzed by the micro-Kjeldahl method and crude protein was calculated as $N \times 6.25$. Serum proteins were estimated by the Biuret method (Rajagopalan and Ramkrishanan, 1983)\textsuperscript{291} with bovine serum albumin as the reference. They found that the protein content of the dietary ingredients used was as follows: Casein, 76.6 per cent; Wheat flour, 13.3 per cent LP(A. Phitoxeroides), 45.3 per cent LP (L. minor), 38.3 per cent LP (P. Stratiotes) in diet D4, 50.2 per cent and LP. Stratiotes) in diet D5, 51.1 per cent.

Marlett and Vollendorf (1993)\textsuperscript{292} carried out a study on dietary fiber content and composition of vegetables was determined by two methods of analysis. Total dietary fiber content was determined according to the AOAC procedure (Prosky et al., 1988)\textsuperscript{292} in quadruplicate so that nitrogen and ash contents of the fiber residue could be determined in duplicate. The second method used was the Uppasala methods of fiber analysis (Theander et al., 1990).\textsuperscript{292} They found that the mean ($\pm$SD) total dietary fiber content of the 41 vegetables was $1.8 \pm 0.8$g/100g (fresh weight) when it was measured using the Uppasala method, or $2.2 \pm 0.9$g/100g, when it was determined using the AOAC procedure.

Ravindran et al., (1995)\textsuperscript{293} studied the Biochemical and nutritional assessment of Tubers from 16 cultivars of sweetpotatoes (Ipomoea batatas L.), in which all determinations were carried in triplicates. Moisture, nitrogen, crude fibre, ash were determined according to AOAC (1980)\textsuperscript{292} method. Crude protein contents were calculated as $N \times 6.25$ and determination of
starch was based on the method Pucher et al., (1948)292**. They found that the significant differences were observed among sweet potato cultivars with regard to their proximate composition, starch and total sugars contents.

The average crude protein content of the tubers was 4.41g/100g on a dry weight basis. Mineral analysis was carried out on samples digested with perchloric and nitric acids. Phosphorous was determined calorimetrically using the ammonium vanadate reaction (Chapman and Pratt; 1961).293*** All other minerals were determined using an atomic absorption spectrophotometer (Perkin Elmer model - 2380).

Charanjeet K. Heera et al., (1991)294 evaluated Protein, lysine, Mineral and Phenol contents of some Indian Wheat (Triticum Aeslivum L.) varieties. In this evaluation crude protein (N × 5.7) was determined using macro-Kjeldahl method. Calcium and phosphorous using titrimatric and molybdate methods respectively, as described by AOAC294* and the trace elements iron, zinc, copper and manganese were estimated using Atomic Spectrophotometer after triple acid digestion.

Seenappa and Fornando (1986)295 studied the availability of L. Ascorbic acid in Tanzanian Banana, in which Ascorbic acid was determined by the AOAC procedure295* in all mature green, and ripe bananas as soon as they were obtained. Only the malindi variety was used to estimate the loss of ascorbic acid during cooking by boiling and roasting. Ascorbic acid was estimated every 10 minutes for 40 minutes during the cooking process.

According to N.J. Miller-Ihli (1996),296 rugged accurate, and precise analytical methods are needed for elemental analysis, and atomic spectroscopic techniques are the best choice because of their widespread availability and ease of use. Flame atomic absorption spectrometry (AAS) and inductively
coupled plasma atomic emission spectrometry (ICP-AES) methods were compared, focusing on the detection capability, precision, and accuracy obtainable with each technique. Ca, Cu, Cr, Fe, Mg, Mn and Zn were determined by AAS and Ca, Co, Cu, Dr, Fe, Mn, Ni, P, V and Zn were determined simultaneously using ICP-AES. Precisions obtainable with both techniques were similar.

Funete et al., (1995) carried out a study on "Manganese and Zinc analysis in Milk by Microwave oven Digestion and Platform Graphite Furnace Atomic Absorption spectrometry. This study describes the application and evaluation of a commercial microwave digestion of milk samples prior to determination of Zn by flame atomic absorption spectrometry (FAAS) and traces of Zn and Mn by GFAAS (Graphite Furnace Atomic Absorption Spectrometry). Validation of this method has been achieved using certified reference material and by comparing the results obtained in real samples with those carried out by dry ashing.

White (1988) employed the microwave oven to digest samples of different foodstuffs with HNO₃ and H₂O₂ in open and semiclosed reflux vessels. Mineralization periods that exceeded 60 minutes were required. In view of the positive results obtained in an earlier study with the use of HNO₃ for the digestion of milk samples (De la Funete and Juarez, 1995).

In general, the preparation of milk samples to determine trace elements is achieved by using conventional wet digestion (Emmett, 1988; Krushevska et al., 1992; Koops and Westerbeek, 1993; Alkanani et al., 1994) or dry ashing (Juarez and Martinez - Castro, 1979; Koops et al., 1986; International Dairy Federation, 1992) or dry ashing (Juarez and Martinez - Castro, 1979; Koops et al., 1986; International Dairy Federation, 1992). Microwave oven digestion of a variety of samples has proven to be faster, safer and more efficient (Taylor et al., 1994).
According to A.J. Macleod in many respects the preparation of the sample is the critical step in any food analysis. It involves the conversion of the chemically highly complex food into a much simpler form, in which the component to be analysed is present (i) as free as possible from interfering substances, (ii) as concentrated as possible, and (iii) in appropriate state for introduction to the particular analytical method to be used.

Several acids have been used for the extraction of vitamin C from food including oxalic acid, trichlorocetic acid, metaphosphoric acid and mixture of metaphosphoric acid and acetic acid. The most popular is a freshly prepared solution of 5.6 per cent metaphosphoric acid. Since this solution is not only a good extractant for the vitamin but can also stabilise it for a limited period by complexing metal ions and minimizing the rate of oxidation.

A more powerful reducing agent, 2-3 dimercapto-1 propanol is claimed to be superior to either metaphosphoric or oxalic acid as a stabilising agent. It has also been claimed that ascorbic acid can be stabilised by means of dilute perchloric acid solution. An alternative method of extracting vitamin C by forming a slurry of the frozen food with absolute ethanol has been found to be as effective as extraction with metaphosphoric acid.

Many methods are available for the determination of ascorbic acid in food, most of which are associated with the reducing power of vitamin C. Of the many reagents employed, 2, 6-dichlorophenol indophenol is by far the most popular even though it is seriously affected by interfering substances, for it is convenient and succeeds in giving a rapid estimate of the ascorbic acid content with simple equipment. Other titrimetric methods have been proposed in recent years including the use of cupric sulphate or cupric acetate, which are claimed to be unaffected by reductones, and thallic perchlorate.
The Kjeldahl procedure continues to occupy a dominant role with respect to the determination of nitrogen and the estimation of protein in foods, and this is so despite the improvement of existing alternative methods and the introduction of several new techniques. The Kjeldahl procedure was introduced in 1883 and until recently it seems to have been the only method available to the food analyst for the determination of nitrogen.308

A study "Chemical Composition of Tetracarpidium Conophorum (Conophur nuts)" was conducted by Ogunsua and Adebona (1983).314 In the study moisture content was determined in an air oven at 100°C. Ash was determined in a muffle furnace and fibre as described by the AOAC (AOAC 1975).314* Free lipids were extracted in a Soxhlet apparatus and determined as described by the AOAC (AOAC 1975). Total lipids was determined by acid hydrolysis. Nitrogen was determined by the micro-Kjeldahl method. The percentage nitrogen were converted to crude protein by multiplying by 6.25, and total soluble sugar was determined by the phenol-sulfuric acid method of Dubois et al., (1956).314**

Vinas et al., (1993)315 analysed the copper in Biscuits and Bread using a fast program slurry electrothermal atomic absorption procedure. In this analysis, a method for the determination of copper in biscuit and bread samples reciding the sample disolution step is reported. The direct suspension of the powdered samples is an ethanol/water mixture which allows copper determination by ETAAS (electrothermal automization atomic absorption spectrometry). This procedure represents a considerable saving of time for the conventional dry ashing followed by acid dissolution procedure. The reproductibility and accuracy of the results for 15 samples suggest that the procedure could be useful for routine purposes, although the use of an autosample with a slurry sampling accessory is recommended.
Yang et al., (1995)\textsuperscript{316} determined the trace Cadmium in 24-h diets by Graphite Furnace Atomic Absorption Spectrometry. In this study Cd was determined in 28 diet samples collected during 7 days at four locations in Belgium. To evaluate the bias of the method, reference materials were analysed and the results are in good agreement with the certified values. The precision of the method was evaluated by the analysis of a total diet sample and the repeatability and reproducibility are 1.4 per cent and 7.3 per cent respectively.

The main two kinds of usual nitrogen to protein conversion factors (Ka and Kp) were investigated by Jacques Mosse' (1990).\textsuperscript{317} The protein conversion factors were investigated from the amino acid composition of seed samples with widely varying N content for 10 cereal species and for several legumes and oilseeds. The variations of these factors as a function of seed N content were determined and their values were compared with the few data from the literature. It was shown that these two factors are the upper and lower limits, respectively, of the total seed N to true protein conversion factor K, which is close to the average of $K_A$ and $K_p$. This enabled determination of the factor K with an improved reliability and also comparisons of K values either within a species for distant seed N contents or for a given N content between different species. The conversion factor K varied from 5.1 for N - poor rice grains to 6.0 for N - rich foxtail millet grains. On an average per species, all other species ranged between those two extreme values. They are lower than generally acknowledged until now.

Kerepesi et al., (1996)\textsuperscript{318} analysed the water-soluble carbohydrates in dried plant. Total water soluble carbohydrate determination based on the phenol - sulfuric acid method (Dubois et al., 1956)\textsuperscript{314} involved adding 1 ml of 5 per cent phenol solution and 5ml of concentrated sulfuric acid to 200 ml of samples and reading the absorbance at 510 nm after 20 min. Sucrose
was used as standard. They concluded that the extract of oven dried plant materials are adequate to study the fructon metabolism. Neither glucose, fructose and oligosaccharide content nor the DP (Degree of Polymerization) of fructons of dried plant are similar to the fresh one.

DESCRIPTION OF TUBERS

The rare eight food items consumed by the Kamar tribe but not by other person or tribe are "Karu Kand", "Marda Kand", "Keu Kand", "Dasmoor Kand", Gondli Kand", "Peeth Kand", "Amti Bhaji" and "Madia". The first six food items are tubers which are found in the forest. Seventh food item, i.e. Amti Bhaji is a leafy vegetable. These seven food items have got natural growth in different seasons of the year. The eight food item is madia, a favourite food of Kamar. It is cultivated in summer season of the year and reaped in rainy season. The particulars of these food items are as follows:

1. **KARU KAND**

   Karu Kand is found in different shapes and sizes. Its outer surface is hard and rough. The colour of the skin is dark brown to black. The texture of the inner part of the tuber is crispy and fibery. It is flavourless, pale white in colour and bitter in taste. Since its taste is bitter it is not consumed raw. It becomes consumable after boiling two-three times in water.

2. **MARDA KAND**

   This tuber is generally found in round or oval shape. Its outer surface is very smooth like pomegranate and dark grey in colour. Its skin is very thick and hard. Just opposite to its outer surface its inner side is very soft,
crispy and juicy like pears. The colour of nucleus is pale white with mild flavour. Its taste is very sour. The Kamars like to eat it in raw form because in raw form it is very tasty. Before eating its skin is removed. Sometimes it is eaten with rice adding little salt after boiling. Its skin is removed before boiling.

3. KEU KAND

The appearance of this tuber is like Arbi Kand. The outer surface is not smooth. Various thin roots are found on the surface. The skin of this tuber is very thin and its colour is yellowish green. Its inner part is compact, flavourless and pale white in colour. It is tasteless.

For consumption first it is boiled 2-3 times in water then the skin which is very thin is removed. It is eaten with adding salt. Some times it is also eaten with rice. It is also cooked as a vegetable. Since it is tasteless and creates itching sensation in the mouth and throat Kamars eat it only when other tubers are not available. The speciality of this tuber is that its juice is used for digestion.

4. DASMOOR KAND

This tuber is found in thin long and cylindrical shape attached with the root from 12 to 20 numbers. Because of its numbers attached with roots it is called Dasmoor. The skin of tuber is very thin and stiff. The texture of this tuber is crispy like apple. It is flavourless, tasteless and watery and pale white in colour. Generally it is eaten raw with or without skin. When it is found in large quantity it is eaten after boiling. Some variety of this tuber creates itching sensation when eaten raw.
5. **GONDLI KAND**

This is not actually a tuber but a bulb. In shape and appearance it is like onion. Like onion it has got various layers. It can be differentiated from onion by viewing its leaves. It can also be differentiated from onion by cutting it, because after cutting it becomes sticky. The upper layer of this tuber is compact while the interior layers are soft. Its colour is watery and taste is just like ground nut. It is generally eaten after boiling. After boiling its taste becomes a bit sweet. Kamars also like to eat it raw. Its speciality is that its juice creates much itching sensation in the hand while cutting it. It also gives itching sensation in throat when eaten in raw form and in large quantity.

6. **PEETH KAND**

It is found in small sizes and irregular shape. Its surface is rough having dark brown colour. Very thin and small roots are found on the body of this tuber. The inner part of the tuber is compact, pale white in colour, without any taste and flavour. It can be eaten raw or after baking or boiling. It is consumed with or without salt.

7. **AMTI BHAJI**

It is a kind of leafy vegetable with small leaves which is a bit hard and fresh green in colour, having ordinary flavour. Its plants are found scattered, small in size, hardly 8-10 inches in height. Generally it is eaten after boiling. Some times when oil is available it is cooked in oil like other green leafy vegetables.

All the above 6 tubers and amti bhaji have got natural growth.
8. MADIA

It requires simplest possible input vegetation ash as fertilizer. The Kamars immensely like madia grain. Madia grow on high land in unbunded fields with poor soil. It is unaffected by the vagaries of monsoon; even in the case of failure of monsoon it yields good harvest. Being an early ripening crop it yields food as early as in August. A few Kamars produce it in their fields while others purchase it from the market. When it is procured in sufficient quantity they eat it like cooked rice. But generally they consume it in liquid form adding a little salt.

CHEMICAL ANALYSIS

All the above mentioned eight food items have been chemically analysed for their protein, fat, carbohydrate, crude fibre, moisture, ash, zinc, copper, calcium, iron, magnesium and vitamin C contents. The moisture and vitamin C contents have been taken out from the fresh foods. The other contents of these foods have been calculated in 100g of dry samples. The copper, zinc and iron are analysed in ppm. The detailed chemical composition of these rare foods has been given in Figure 28, 29. The result of analysis of these food stuffs is given below:

1. KARU KAND

The moisture content of this tuber is 76.90 per cent and ascorbic acid is 4.60mg/100ml. The other contents are protein 2.71g, fat 3.60g, carbohydrate 69.26g, fibre 0.22g, calcium 300mg, iron 14mg, zinc 2mg, copper 1mg, magnesium 100mg and total ash 4.53g. The energy content is 320.04 Kcal/100g.
2. **MARDA KAND**

The moisture content of Marda Kand is 85.1 per cent while ascorbic acid content is 4.6mg/100ml. The other contents are protein 2.71g, fat 0.1g, carbohydrate is 25.56g, fibre 0.76g, calcium 3300mg (highest in all the eight food stuffs), iron 1mg, zinc 2mg, copper 0 mg, magnesium 1000mg and total ash content 8.44g. From this tuber 111.94 Kcal/100g is obtained.

3. **KEU KAND**

The moisture in this kand is 75.4 per cent and ascorbic acid content is 4.8mg/100ml. The other contents are protein 3.06g, fat 0.62g, carbohydrates 24.38g, fibre 1.04 g, calcium 700mg, iron 18mg, zinc 3mg, magnesium 410mg and total ash content 11.27g. Iron and total ash contents are highest in this tuber while copper is totally absent. 115.34 Kcal/100g is obtained from this tuber.

4. **DASMUR KAND**

The moisture content in this food stuff is 81.05 per cent and vitamin C content is 4.5mg/100ml. The other contents are: protein 3.12g, fat 1.06g, carbohydrate 93.05g, fibre 0.98g, calcium 500mg, iron 17.2mg, zinc 1mg, magnesium 130mg, total ash 4.95g and 394.22 Kcal/100g energy is received. Copper is again absent in this tuber.

5. **GONDLI KAND**

The moisture content in this kand is 84.8 per cent and ascorbic acid is 2.7mg/100ml juice. The other contents are: protein 2.27g, fat 1.7g, carbohydrate 37.74g, fibre 0.34g, calcium 1300mg, iron 5mg, zinc 2mg, magnesium 120 mg and total ash 3.38. Copper is nil in this tuber. 175.34 Kcal energy is generated by 100 g of this tuber.
6. **PEETH KAND**

The moisture in this tuber is 71.9 per cent, and ascorbic acid content is 4mg/100ml juice. The other contents are protein 3.08g, fat 1.16g, carbohydrate 74.7g, fibre 0.36g. Calcium content of this foodstuff is 100mg, which is the lowest of all the eight foodstuffs analysed. Iron content is 12mg, zinc 1mg, copper content is 1mg, magnesium 70mg and total ash content is 7.84g. This tuber gives 324.44 Kcal/100g.

7. **AMTI BHAJI**

The moisture and Vitamin C contents in Amti Bhaji are the highest of all the eight foodstuffs. They are respectively 90.2 per cent and 18.18mg/100ml. The other contents are: protein 5.01g, fat 0.26g, carbohydrate 5.63g, fibre 1.26g, calcium 100mg, iron 17mg, zinc 2mg, magnesium 500mg, total ash 7.84g and energy received from this green leafy vegetable is 247.58 Kcal/100g.

8. **MADIA**

The moisture content in this millet is 18.7 per cent which is the lowest and Vitamin C content is 7.3mg/100ml juice. The other contents are protein 8.76g, fat 9.05g, carbohydrate 47.44g, fibre 0.96g, calcium 500mg, iron 12mg, zinc 2mg, magnesium 110mg and total ash 3.66g. Protein and fat contents are the highest in this foodstuff. Copper is not found in Madia. This millet gives 306.25 Kcal/100g energy.

**CONCLUSION**

Food analysis of rare foods describes the various items of rare foods eaten by Kamar tribe. It also deals about the chemical analysis of these rare
foods. Karu kand, Keu kand, Peeth kand, Marda kand, Dasmur kand, Gondli kand, Amti bhaji and Madia are the rare food items. Only millet is produced in the fields and the rest food items of tubers and leaf have got natural growth in the forest area. These tubers and leaf are collected from the forest during September to November. These food items were chemically analysed for their nutrient composition, for example, Protein, Fat, Carbohydrates, Calcium, Iron, Magnesium, Zinc, Copper. Total, Ash, Crude Fibre, Ascorbic acid and Moisture. Madia contains Protein (8.76 g) and Fat (9.05 g) in large quantity. "Amti Bhaji" a leafy vegetable contains 18.18 mg. Ascorbic acid which is higher than any other analyzed food. Calcium and Magnesium are present in highest quantity, for example, 3300 mg. and 1000 mg. respectively in Marda kand. In Keu kand, the quantity of Iron is the highest (18.0 mg).
FIGURE-31

FOOD ANALYSIS OF THE EIGHT RARE FOOD ITEMS* CONSUMED BY THE KAMARS

<table>
<thead>
<tr>
<th>S. N.</th>
<th>FOOD STUFF</th>
<th>MOISTURE (%)</th>
<th>PROTEIN (g)</th>
<th>FAT (g)</th>
<th>CARBOHYDRATE (g)</th>
<th>ENERGY (Kcal)</th>
<th>FIBER (g)</th>
<th>ASCORBIC ACID** (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>KARU KAND</td>
<td>76.90</td>
<td>2.71</td>
<td>3.60</td>
<td>69.26</td>
<td>320.04</td>
<td>0.22</td>
<td>4.60</td>
</tr>
<tr>
<td>2.</td>
<td>MARDAB KAND</td>
<td>85.10</td>
<td>2.54</td>
<td>0.10</td>
<td>25.56</td>
<td>111.94</td>
<td>0.76</td>
<td>11.00</td>
</tr>
<tr>
<td>3.</td>
<td>KEU KAND</td>
<td>75.40</td>
<td>3.06</td>
<td>0.62</td>
<td>24.38</td>
<td>115.34</td>
<td>1.04</td>
<td>1.04</td>
</tr>
<tr>
<td>4.</td>
<td>DASMUR KAND</td>
<td>81.05</td>
<td>3.12</td>
<td>1.06</td>
<td>93.05</td>
<td>394.22</td>
<td>0.98</td>
<td>4.50</td>
</tr>
<tr>
<td>5.</td>
<td>GONDLI KAND</td>
<td>84.40</td>
<td>2.27</td>
<td>1.70</td>
<td>37.74</td>
<td>175.34</td>
<td>0.34</td>
<td>2.70</td>
</tr>
<tr>
<td>6.</td>
<td>PEETH KAND</td>
<td>71.90</td>
<td>3.08</td>
<td>1.16</td>
<td>74.7</td>
<td>324.44</td>
<td>0.36</td>
<td>4.00</td>
</tr>
<tr>
<td>7.</td>
<td>AMTI BHAJI</td>
<td>90.20</td>
<td>5.01</td>
<td>2.26</td>
<td>5.63</td>
<td>247.58</td>
<td>1.26</td>
<td>18.18</td>
</tr>
<tr>
<td>8.</td>
<td>MADIA</td>
<td>18.70</td>
<td>8.76</td>
<td>9.05</td>
<td>47.44</td>
<td>306.25</td>
<td>0.96</td>
<td>7.30</td>
</tr>
</tbody>
</table>

* Estimations were done in 100g of dry sample
** ascorbic acid was estimated in 100ml of juice.
### FIGURE-32

**FOOD ANALYSIS OF THE EIGHT RARE FOOD ITEMS CONSUMED BY THE KAMARS IN TERMS OF THEIR MINERAL CONTENT**

<table>
<thead>
<tr>
<th>S. N.</th>
<th>FOOD STUFF</th>
<th>CALCIUM (mg)</th>
<th>IRON (mg)</th>
<th>ZINC (mg)</th>
<th>COPPER (mg)</th>
<th>MAGNISIUM (mg)</th>
<th>TOTAL ASH (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>KARUKAND</td>
<td>300</td>
<td>14.0</td>
<td>2</td>
<td>1</td>
<td>100</td>
<td>4.53</td>
</tr>
<tr>
<td>2.</td>
<td>MARDA KAND</td>
<td>3300</td>
<td>1.0</td>
<td>2</td>
<td>-</td>
<td>1000</td>
<td>8.44</td>
</tr>
<tr>
<td>3.</td>
<td>KEUKAND</td>
<td>700</td>
<td>18.0</td>
<td>3</td>
<td>-</td>
<td>410</td>
<td>11.27</td>
</tr>
<tr>
<td>4.</td>
<td>DASMURKAND</td>
<td>500</td>
<td>17.2</td>
<td>1</td>
<td>-</td>
<td>130</td>
<td>4.95</td>
</tr>
<tr>
<td>5.</td>
<td>GONDLIKAND</td>
<td>1300</td>
<td>3.0</td>
<td>2</td>
<td>-</td>
<td>120</td>
<td>3.38</td>
</tr>
<tr>
<td>6.</td>
<td>PEETH KAND</td>
<td>100</td>
<td>12.0</td>
<td>1</td>
<td>1</td>
<td>70</td>
<td>2.97</td>
</tr>
<tr>
<td>7.</td>
<td>AMTI BHAIJ</td>
<td>1100</td>
<td>17.0</td>
<td>2</td>
<td>-</td>
<td>500</td>
<td>7.84</td>
</tr>
<tr>
<td>8.</td>
<td>MADIA</td>
<td>500</td>
<td>12.0</td>
<td>2</td>
<td>-</td>
<td>110</td>
<td>3.66</td>
</tr>
</tbody>
</table>

*Estimations were done in 100g of dry sample.*