ASSESSMENT OF SUPPLEMENTARY FOOD IN MUKTAGACHA PILOT NUTRITION INITIATIVE OF BRAC

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CONTENTS

Page

Abstract

Food supplementation refers to providing additional food to the nutritional deprived population in addition to their regular diet to reduce or meet the gap between intake and requirement in order to improve their nutritional status. Since 1993 BRAC, through its Women's Health and Development Program (WHDP), has been operating a pilot Nutrition Initiative in 158 villages of Muktagacha thana. The initiative used supplementary food as the vehicle to communicating nutritional messages to the community in addition to providing nutritional supplements to the target beneficiaries. This study was carried out to determine the nutritional quality and the cost of the supplemental foods as well as the actual additional calorie consumption of the recipients from the food supplementation project. Nutrient analysis of the foods was performed at the Institute of Nutrition and Food Science (INFS), Dhaka University on 12 packets of supplemental foods which were randomly selected. It was revealed from the cost calculation that the cost per packet of adult and child food was Tk.7.50 and 4.30 respectively. It was estimated that supplementary food, if taken completely, could provide energy equivalent to 752 kcal to a mother and 212 Kcal to a child under two years of age. However, mothers consumed around 75% of the food which provided 564 Kcal/day. It was observed that the food was shared mostly with young children and husbands. In-depth interview with mothers also suggest that they usually skip breakfast if the food is given in the morning. The children liked the food because of the taste and unless the child was sick or had some food before coming to the center, he ate the food completely (212 Kcal/day). Although the main purpose of the project was to provide nutrition education, it was observed that the activities at the feeding center was limited to food distribution and had very little to do with communication of nutritional messages. Therefore in the conclusion it was recommended that the service providers should be trained to communicate nutritional messages effectively as a part of understanding the goal of the initiative.

INTRODUCTION

Background

Food supplementation refers to providing with additional food to the nutritionally deprived population in addition to their regular diet in order to reduce or meet the gap between intake and requirement to improve the nutritional status. Since 1993 BRAC through the Women's Health and Development Programme (WHDP) has been operating a Pilot Nutrition Initiative in 158 villages in three areas of Muktagacha thana with overall goal to improve nutritional status of women, children and adolescent girls. Food supplementation is one of the basic components of this initiative which provides extra calorie and other nutrients to the targeted population along with other health and development packages. The initiative uses supplementary food as a vehicle for communicating nutritional massages to the targeted individuals and communities.

Information on nutritional impact of such a community based nutrition initiative so far not available in Bangladesh. The Research and Evaluation Division (RED) of BRAC has planed to initiate a prospective study in Muktagacha to assess both short and long term impact of the pilot nutrition initiative on nutritional health and behavior of the target population. Before initiation of the prospective study, it was thought to be essential to assess some important aspects of the project inputs particularly the nutritional quality, cost and consumption aspects of the supplemental foods. The knowledge that could be gained from the present study is expected to help explaining impacts of the initiative on nutritional status of the target groups.

Objective

This study aimed to assess the nutritional quality, consumption and cost of the supplemental foods including the processes involved in its purchase, preparation and distribution. Specifically the study intends to:

1. analyze the nutrient contents of foods;
2. determine the cost of the foods; and

3. assess the **average additional calorie consumption** per day by each recipient from food supplementation.

Definition of Terms

Gram Committee (GC) : A village committee, consists of 9-11 female members, selected from the members of Village Organization (VO) based on those who are interested to work voluntarily for the villagers. A total of 158 such committees in 158 villages were organized to assist food supplementation programme. GC members purchase, prepare and distribute the food supplementation to the beneficiaries with close supervision of Shastho Karmi (SKs).

Target population (Beneficiaries) :Three groups of population were targeted for this supplementation project: pregnant and lactating mothers; adolescent girls and the children under 2 years of age . The following criteria were used to select the target population :

- *Pregnant and lactating mothers* who had Body mass Index (BMI) less than 18.5 measured during the regular monthly visits at the ANCCs (Ante natal care center). BMI is an indicator of chronic energy deficiency in adults.
- *Adolescent girls* who were enrolling in the BRAC Non-formal Primary education (NFPE) schools within the programme area.
- *Children under 2 years of age*: Those who had low birth weight directly enroll in the programme from the age of 6 months or children under 1 year, who did not show a gain of 500 gms between 3 successive weighing or Children of 1-2 years not showing a gain of 300 gms between 4 successive weighing.

Feeding Center (FC): Feeding centers located in the community (one center/village) either provided by the community or GC members in where mothers bring the children every morning to receive food supplementation. The GC members with close supervision of the Sks distribute the food to the children.

Opportunity cost for Time: Costs for time which were needed in purchase, preparation and distribution of supplemental foods to the beneficiaries by the GC members.

Shastho Karmi (SK): A village based married woman with around 8 years of schooling. She is a full time paid worker of BRAC assigned. The basic responsibilities of a Sk are to look into the health and nutrition needs of the community, specifically registration of new pregnancies, births, deaths and to impart health and nutritional education to the community as well as to assist in the implementation of the food supplementation programme.

METHODS AND MATERIALS

Study Design

Study Area

The study was conducted in 3 areas of the Pilot Nutrition Initiative in Muktajacha thana under Mymensingh district, namely, Paratangi, Chechua and Gaptali. Muktagacha thana is located about 15th km south of Mymensingh. The 3 major programmes of BRAC namely Rural Development Programme (RDP), Non-formal Primary Education (NFPE) and Reproductive Health and Disease control programme (RHDC) are being implemented in this area.

Study subjects and sampling producers

Following sample were selected randomly from three study areas:

- 12 packet of supplemental foods : 4 packets from each area (2 of mothers and 2 of children).
- 15 (5 from each area) pregnant or lactating mothers and their elder family members.
- 3 groups (1 group per area) of GC members with 6-8 persons in each group.
- 6 feeding centers and 6 food preparation places (2 from each area).

Data collection

The field work was conducted between 2nd February and 14th February, 1996. Data were collected through in-depth interview, focus group discussion (FGD), field observation and laboratory analysis of food. Structured check list were used for collecting data from the field. An agreement was made between RED and the Institute of Nutrition and Food Science, Dhaka University to analyze nutrient contents of the supplementary foods. The supplementary food selected randomly for this study were sent to the INFS laboratory to perform necessary analysis.

RESULTS

Purchase, preparation and distribution of supplemental foods

GC members are primarily responsible for the purchase, preparation and distribution of the supplemental foods to the beneficiaries with close supervision of the Sks. Each GC member takes responsibilities for a week to prepare and distribute the food. The supplemental food for the target mothers is a mixer of fried flat rice, peanuts and molasses which are prepared into balls called *moa*. Each mother is supplied with one packet of *moa* per day that contains 3-4 pieces of moa depending on the size. The moa is supplied to the mothers at every morning (6 days per week) through household visits by the concerned GC members. In case the mother is absent from house during food distribution, it is given to an elder family member of the same household.

The target children are supplied with supplemental food daily morning (7 days a week) at the FCs. Mothers along with the target children gather in the center who are then supplied with packets, one for each mother, containing crashed fried rice, pulse powder and a piece of molasses. The mothers mix the 3 types of ingredients in a small bowl supplied at the center with little water and

one spoon of soybean oil to feed the children. The different ingredients used to prepare foods both for the mothers and children are illustrated in Table1.

Table 1: Amount of ingredients used to prepare foods for the mothers and children

Food type	Ingredients	Amount per packet (gm)
Mother	Fried peanuts	50
	Fried flat rice	50
	Molasses	75
Total amount		**175 gms**
Children U-2	Fried rice powder	25
	Fried pulse powder	10
	Molasses	10
One tea spoon of soybean oil		5
Total amount		**50 gms**

These ingredients are locally available all over the year and the GC members usually buy those from the local grocery shops and also from the BRAC fixed shops. BRAC has selected or made arrangements with one grocery shop per area from where the GC members could purchase the ingredients with a reasonable and stable price. The shops are located in the marked place and the quality of the ingredients found to be better in those shops compared to the other shops.

In each area, the foods are being prepared at a responsible GC member's house assisted by other family members and sometimes by neighbors. Frequency of food preparation largely depends on the availability of the ingredients at home and number of beneficiaries (both mother and children) to be fed. Usually the foods are prepared 2-4 times a week during any convenient time in a day sometimes supervised by the Sks.

Hygiene practices in relation to food preparation specifically the level of hygiene of the preparation places, utensils and storage facilities was seemed to be satisfactory. However, hand washing practices during food preparation, e.g., mixing of ingredients, shaping the *moas*, etc. was found to be very unsatisfactory. It was observed and also reported that the persons engaged in food preparation usually wash hands only once before sizing the *moas* sharing the same bowl of water without using soap or ash.

At the end of each week, the responsible GC members get paid of the expenses by BRAC which is Tk. 6.00 for per packet *moa* prepared for the mothers and Tk. 2.50 for per packet weaning food prepared for children under 2 years of age.

Nutrients contents

Table.2 presents average nutrient content of per packet of food prepared for both the mothers and children. Results show that on average the programme provides each mother with 752 kcal energy, 16.4 gm protein and 12.4 mg iron, 79.0 mg calcium, and 5.2 mg zinc per day. The additional daily supply of energy, protein and iron is about 33%, 31% and 42% of the daily requirements for pregnant mothers and 29%, 23% and 44% for lactating mothers[1] respectively. According to the same table, each child is provided with 212 kcal energy, 3.6 gm protein, 9.0 mg iron, 44.1 mg calcium and 2.5 mg zinc per day. The supply of energy, protein and iron to each child is about 15%, 11% and 85% of the daily requirements[1].

Table 2: Average per packet nutrient content of supplemental foods for pregnant lactating mothers and children U-2 yrs of age

Amount per package	Energy (calorie)	Protein (gm)	Fat (gm)	Iron (mg)	Calcium (mg)	Zinc (mg)	Fibre (gm)	CHO (gm)	Moisture (gm)	Ash (gm)	Copper (mg)
Mothers:											
Moa : 175 gm	**752**	**16.4**	**22.0**	**12.4**	**79.0**	**5.2**	**1.1**	**122.1**	**9.7**	**3.7**	**0.7**
Children U-2:											
Powder-45gm	167	3.63	0.9	9.0	44.1	2.50	0.29	36.12	2.9	1.09	0.30
Oil - 5 gm (1 tea spoon)	45		5.0								
Total	**212**	**3.63**	**5.9**	**9.0**	**44.1**	**2.50**	**0.29**	**36.12**	**2.9**	**1.09**	**0.30**

Note : Average amount were taken from the 12 samples of foods (Annex. 4 and 5) from 3 study areas.

Table. 3 shows nutrient contents of the mother's food according to project areas. There are very little differences in terms of different nutrient contents of the food except for the amount of iron and calcium which were found lower in the food collected from Paratangi.

In Paratangi, iron content of the food was 4.6 mg per packet followed by 6.9 mg in Chechua and 9.7 mg in Gabtali. Calcium content of the food in Paratongi, Chechua and Gabtali was 37.5 mg, 56.7 mg and 41.1 mg respectively. Protein content of the food in Paratongi was also lower (14.9 gm) compared to the other 2 areas (around 17 gm).

[1] Nutrition survey of rural Bangladesh, 1981-82, INFS.

Table 3: Nutrient content of supplemental food for pregnant and lactating mothers according to project area

NUTRIENT	PROJECT AREA		
	CHECHUA	PARATANGI	GABTALI
Energy (Kcal)	766	745	745
Protein (gm)	16.5	14.9	17.9
Fat (gm)	24.6	20.1	21.2
Iron (mg)	6.9	4.6	9.7
Calciam (mg)	56.7	37.5	41.1
Zinc (mg)	3.1	2.9	3.0
Fiber(gm)	1.1	1.4	0.8
CHO (gm)	119.7	125.9	120.7
Moisture (mg)	9.5	8.9	10.7
Ash (gm)	3.4	3.7	3.8
Coper (mg)	0.5	0.4	0.4

Nutrient contents of the supplemental food prepared for children are shown in Table 4. It is raveled from the table that nutrient content of the foods collected from 3 different areas is close to each other except for iron and calcium. Iron and calcium contents in the food were 10.3 and 36.5 mg, 7.4 and 61.1 mg and 9.2 and 34.8 mg in Chechua, Paratangi and Gabtali respectively. Carbohydrate content ranged from 18.1 gm in Chechua to 35.9 gm in Gabtali (Table 4).

Table 3 : Average nutrients content of per packet supplemental food of children U-2 (excluding Molasses and Soybean oil).

NUTRIENTS	PROJECT AREA		
	CHECHUA	PARATANGI	GABTALI
Energy (Kcal)	166	169	168
Protein (gm)	3.6	3.6	3.7
Fat (gm)	0.7	1.4	1.0
Iron (mg)	10.3	7.4	9.2
Calciam (mg)	36.5	61.1	34.8
Zinc (mg)	2.5	2.3	2.7
Fiber (gm)	0.3	0.3	0.3
CHO (gm)	18.1	20.1	35.9
Moisture (gm)	10.3	7.4	9.2
Ash (gm)	0.9	1.3	1.0
Cooper (mg)	0.3	0.3	0.3

Cost of supplemental foods

Two types of costs were considered to determine the total cost of each packet of food: (1) cost of food ingredients as well as the cost involved in packaging, transportation from and to market, and fuel and; (2) the opportunity costs for preparation and distribution of the foods (for details see Annex .1). Table 5 shows the average cost per packet and the cash benefit which the GC members receive from each packet of *moa (adult food)* and the packets prepared for children U-2.

Table 5: Cost and benefit for per packet of *Moa* and children's food

Foods	Cost/packet Tk.	Benefit*/packet Tk.
Mother's food:		
Excluding opportunity cost for time	5.00	1.00
Including opportunity cost for time	7.50	(- 1.50)
Children' food:		
Excluding opportunity cost for time	2.13	0.37
Including opportunity cost for time	4.31	(- 1.81)

*BRAC pays Tk 6.00 and Tk 2.50 for adult and children food respectively.

Results reveal that excluding opportunity cost for time, each packet of adult and children food costs around Tk. 5.00 and Tk 2.13 respectively but if the opportunity costs are added, the cost rises around Tk 1.00-2.50 for both types of food which are around 35-50% of the total cost. Moreover, the GC members receive negative return (-150-1.80/packet) from both types of food packets if the opportunity cost is included in the calculation. For the details please see Annex. 2 and 3.

Consumption

Pregnant/Lactating mothers

In-depth interviews were conducted with mothers and their elderly family members to assess the daily consumption of the supplemental food by the target mothers. It was revealed that, on average, 3 *moas* per day were consumed by each mothers in all 3 areas which is about 75% of the total supplements provided by the programme. In other words, per day additional calorie consumption of the each target pregnant or lactating mother was 564 kcal (Table 1). This is about 22-24% of the recommended daily allowance (RDA) of a Bangladeshi pregnant or lactating mother (2297-2556 kcal day)

Children U-2

Six FCs were observed to determine per day additional calorie consumption by each of the children participated in the supplementary feeding programme. It was observed that around 5-10 children/center were currently fed by the programme and the attendance of children found to be cent percent. Findings show that the children who were severely sick (e.g., diarrhea, cold, fever etc.), or had eaten any food at home before coming to the center, they consumed around 15-20% of the total supplemental food supplied by the center which is approximately 30-40 kcal per day (Table 1). However, the rest of the children consumed the food completely. The children who could completely consume the food had additional calorie intake close to 212 kcal (Table 1) which was about 15% of their daily requirement for energy.

DISCUSSION AND CONCLUSION

Bangladesh is one of the worst victims of malnutrition. Many concerted efforts both by government and private organizations have been made to reduce the severity of the problem. The Muktagacha Pilot Nutrition Initiative of BRAC provides food supplementation to the nutritionally vulnerable groups as a part of a complete development package such as credit, education and health to improve general well-being particularly of the vulnerable groups.

It was estimated that, supplementary food, if taken completely, could provide energy equivalent to 752 Kcal to the mother and 212 kcal to the Children U-2. However, the mothers consumed around 75% of the food which is about 564 kcal per day. This is about 22-24%% of the daily requirement for energy of pregnant and lactating mother. Findings also show that daily consumption of the amount of supplemental food (Moa) by the mothers depend largely on the household size and presence of young children within the same household. In areas where only primipara mothers were the only recipients, daily consumption of the food was higher (more than 2 moas). Consumption of the food found to be lower (less than 3 moa per day) in women with big family size (family size >5) particularly with more then 3 young children. It was common that the food was shared mostly with young children and partially with husbands and other household members. The food was preferred to all because of the good taste which was highly accepted to

the community. However, some men in the community denied to eat such food because of the campaign that the food was meant to improve a pregnant woman's health and thus it is not fair for a man to eat that. Good taste of the food created some demand specially among the children in the community. The study households found to be very poor which restricted the mother to prepare the moa whenever the children demanded. As a result, the mother had to share the food whenever someone (a child in most cases) demanded a part of it. In one instance it was found that the wife shared the supplemental food with her husband because there was not enough food for him to eat during breakfast. In-depth interviews with the supplemented mothers also suggest that they usually skip breakfast if the moa was supplied in the morning that is before taking the regular morning meal. According to one pregnant mother:

> **"At night I just keep one plate of rice for my husband for breakfast and I wait for Moa. If we had enough food and money, I didn't had to wait for Moa. I could have taken breakfast with my husband".**

This suggest that some of the mothers, because of their poor economic status, consider *moa* complementary to regular morning meals. This could be because of the reality that most of the target households are so poor to manage adequate food for all household members for survival. However, there is no doubt that because of the programme the poor mothers are receiving some extra food everyday. In fact, in the rural contest women are the last one to take food in a family. Mostly they do not get enough for the meal and often not of good quality (not nutritious).

The children liked the supplementary food because of the taste. Unless the child was sick or took some food right before coming to the FC, they could finish the food completely at the FC which is equivalent to 212 kcal per day. However, the sick ones used to consume 15-20% of the food (25-35 kcal) and had some leftovers. The leftovers were taken back to home by the mothers to feed the same children. But it was noticed that tendency of mothers was to take the food at home

without finishing it at the center by excusing that the baby is sick or not hungry. The Sks in most instances allowed them to bring the food at home. The possible reasons could be:

- Uncomfortable environment of the FCs. Experiences show that FCs which were provided by the GC members are dark, small and not clean as other FCs which were provided by the community with open spaces. Two of those FCs were so small that the mothers could hardly sit side by side comfortably. They had to sit back and forth and they could hardly move in case the children cried. Because of this uncomfortability, tendency of Sks and GC members was somehow to distribute the food to the children. It was not paid much attention if the food was consumed by the child completely or not. Besides those who brought food at home, there was no way to ensure that the food was given to the target children.
- Another reason could be because the Sks were very much reluctant to allow the mothers to bring the food at home. In some FCs where there was enough space to sit the mothers wanted to bring the food at home by showing that the baby was sick or not hungry.

Hygiene practice specially during supplemental food preparation and distribution at the Fcs needs to be looked upon with great emphasis by the programme implementors at the field level. Good hygiene not only depends on availability of facilities such as soap or water but largely depends on behavior in relation to practice. The mothers found to wash hands and feeding pot sharing the same bowl of water without using any detergents in presence of Sks or GC members. Importance of changing water or using detergents was not at all felt by any of the concerned groups. Apart from this, in all the centers, the G.C members kept one glass of drinking water and a spoon for all the children to drink. The mothers used the same spoon or same glass to let the children to drink. Majority of the children in all the observed feeding centers had running nose which in addition to unhygienic environment might have adverse effects on health.

Although the purpose of this project was not to provide required calorie to the beneficiaries but to use the supplemental food as a vehicle of educating the community regarding health and nutrition (appropriate feeding practices), it was found that none of the Sks had advised the mothers and the GC members regarding child health and hygiene practices. Activities in the Fcs were limited to

food distribution and there was very little or no communication between the service providers (i.e. Sks and GC members) and the beneficiaries regarding nutrition or hygiene.

It is revealed from the cost calculation that the cost of per packet of adult and child foods excluding the opportunity cost for time was around Tk. 5.00 and Tk 2.13 respectively. When the opportunity cost for time was added, the costs raised to Tk 1.00-2.50 for both type of foods which are around 35-50% of the total cost. The GC member received negative return (-150-1.80/packet) from both type of food packets if the opportunity cost for time is included in the calculation. The GC members expressed their concern about the monetary benefit they were getting out the supplementary food preparation. All the GC members had complained about discontinuation of feeding adolescent girls (AG). They used to get more benefit by feeding AG and there was no complication in preparing food them. According to G.C members, they did not get enough benefit by feeding mothers despite of the fact that they work so hard.

RECOMMENDATIONS

Based on the results and discussions the following recommendations may be made to the programme to increase impact of the programme on nutritional status of the community.

1. Training on nutrition education focusing the importance of food and general hygiene to be organized primarily for the Sks and GC members at the area office level.
2. Motivational campaigns on improved hygiene may be organized at the community level to increase the awareness.
4. Emphasis to be given to enhance communication between the service providers and the beneficiaries at the feeding centers and at the mothers' house to impart nutrition messages. The Sks and GC members should be oriented that the goal of the programme is not only to provide the supplements but also to communicate nutrition messages to the community. The programme may design ICM materials to facilitate such activities.
5. Attention should be given to increase the present level of consumption of the mothers.
6. Investigation is needed to explore whether regular diet of the recipients is replaced by the food supplementation.

ANNEXES

Annex 1: Different data used to calculate the cost of per packet supplemental food

1. **Preparation place (observation)**
   - No. of persons involved in preparation
   - No. of packet was prepared
   - Cost of fuel to prepare those much.
   - Time took to prepare those no. of packet.

2. **Purchasing of the ingredients (interviewed)**
   - Cost of different item.
   - Transport cost
   - Time took to purchase at once.
   - Frequency of purchase in one week *

3. **Distribution (observation)**

   At Feeding Center :
   - no. of children were present.
   - Time took to feed these no. of children.
   - H.H. visits to pregnant and lactating mothers.
   - Average time took to distribute per mother (15-20 minutes)

4. **Others**
   - No. of Pregnant and Lactating mothers and children under 2 yrs of age under supplementation of age of that unit.
   - Total required packet for one week* of that unit.
   - Rural wage rate of these study areas:
     -Tk. 25.00 per day(8 hrs) for female labor.
     -per minute labor cost = Tk. 0.052

*week was considered because each GC member takes responsibility for one week to purchase, preparation and distribution of supplemental food and bill also paid to them weekly by BRAC.

Annex 2: Cost of per packet supplementary food of pregnant and lactating mothers.

I	ITEM		COST PER PACKET (Tk.)
1.	**Ingredients**		
	Flat Rice	50 gm @ 18.00	0.90
	Nuts	50 gm @ 33.00	1.65
	Molasses	75 gm @ 18.00	1.35
2.	**Packet**	Tk. 12.00/85 packet	0.14
3.	**Transport**		
		(4 times x Tk. 16.00 = 64 for 72 packet)	0.88
4.	**Fuel**		0.14
		(Tk. 2.00 for 14 packet)	
Total cost of a packet excluding opportunity cost for tome			**5.06**

5. **Time value**

Purchase : 4 times x 110 min.
= 440 min. for 72 packet
(Per packet 6 min)

Preparation : 90 min. for 14 packet
(Per packet 6.43 min;
Per person 6.43 x 4 = 26 min)

Distribution : 15 minutes per packet

Total time for one packet = 6+26+15= 47 min.

Total time value = 47 min. x Tk. 0.052	2.44
Total cost of a packet including time value	**7.50**

Annex 3 : Cost of each packet supplementary food for children u-2

	ITEM		COST PER PACKET (TK.)
1.	**Ingredients :**		
	Rice	25 gm @ 18.00	0.45
	Pulse	10 gm @ 40.00	0.40
	Molasses	10 gm @ 18.00	0.18
2.	**Packet**	Tk. 12.00/85 Packet	0.14
3.	**Transport**		0.88
		(4 times x 16.00 = Tk. 64.00 for 72 Packet = 64/72 = Per Packet)	
4.	**Fuel**	(Tk. 2.00 for 14 Packet.)	0.14
	Total cost of a packet excluding opportunity cost for time		**2.19**

5. **Time value**

Purchase : 4 times x 110 min = 440 min for 72 packet

(Per packet 6 minutes)

Preparation : 90 min. for 14 packet

(Per packet 6.43 min;

Per person = 6.43 min. x 4 person = 26 min)

Distribution : 30 min for 4 packet

(Per packet 8 min)

Total time needed for one packet : 6+26+8 = 40 minutes.

Total time value of a packet: 40 min x Tk.0.052) 2.08

Total cost of a packet including opportunity cost for time	***4.27***

Annex 4 : Nutrients contents per 100 gms of foods : results from laboratory test of each packet

Results are in gm/100g sample basis

Sample No.	Energy (Kacl)	Moisture (g/100g)	Ash (g/100g)	Fat (g/100g)	Protein (g/100g)	Fiber (g/100g)	CHO (g/100g)
Moa							
001	442	5.29	2.30	15.16	10.43	0.76	66.06
002	434	5.63	1.62	13.00	8.47	0.55	70.73
005	429	4.83	2.18	12.00	8.56	0.88	71.55
006	422	5.31	2.09	11.01	8.49	0.77	72.33
009	432	6.03	2.17	13.30	11.25	0.48	66.77
012	419	6.15	2.21	10.83	9.17	0.46	71.21
Powder							
020	373	6.45	1.85	1.78	7.96	0.77	81.19
022	365	7.44	2.35	1.24	8.03	0.53	80.41
025	368	5.93	2.83	1.20	7.99	0.68	81.37
026	383	5.81	2.82	3.93	7.90	0.57	78.97
028	372	7.16	2.51	2.49	7.93	0.53	79.38
032	373	6.21	2.17	1.87	8.59	0.82	80.34

(Contd.)

Results are in mg/100g sample basis

Sample No.	Iron	Zinc	Copper	Calcium
Moa				
001	5.05	2.89	0.42	50.36
002	8.79	3.25	0.60	62.96
005	5.33	2.64	0.36	34.00
006	3.83	3.14	0.42	40.96
009	8.36	3.24	0.45	42.36
012	11.11	2.98	0.30	39.80
Powder				
020	11.03	2.44	0.24	36.38
022	9.62	2.47	0.28	36.60
025	2.75	2.32	0.32	73.90
026	12.05	2.37	0.32	48.20
028	9.44	2.66	0.30	34.40
032	8.98	2.75	0.31	35.20