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Behaviour profile of consumers towards *moringa oleifera* use

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ABSTRACT

Moringa preparations and its consumption have become popular among Ghanaians. In the present study a survey was carried out in Techiman in the Brong Ahafo to determine the existing socio-economic status and *Moringa* safety knowledge of consumers. Data on socio –economic profile of 100 consumers were obtained through questionnaires. Results from the study showed that more of the respondents got the information on *Moringa* from family (46 %,) followed by other sources (20%), from the media (18%) and from friends (16%) in that order. Results also indicated that majority of the manufacturers fail to indicate the exact amount of metal concentrations incurred by consumers after consumption.

Introduction

Moringa like most plants is a source of essential metals. However, little attention has been given to their exact concentrations present in different preparations of the plants. Studies have shown that high intake of elements beyond recommended limits can lead to metal poisoning whereas low intake levels can lead to deficiency effects.

One major route of entry for essential and toxic metals into living organisms is via the food chain. Due to the health hazards that minerals may pose when taken in excess, the World Health Organisation and other international bodies have set standards relating to daily allowances or tolerable intake of elements. Therefore all metals entering the human body via foodstuffs need to be monitored and evaluated to be sure their amounts are within limits of standards set (Dermelj et al., 1996). The composition of metals in plants plays a crucial role in the medicinal values of plants and their therapeutic effects on health and diseases. (Kaneez et al.,2001).

As a result of increased awareness of the vital role of metals in human health, there has been a revival of interest in the use of plants as a source of conventional and complementary therapies. (Choudhary and Rehman, 2002). A lot of nutritionally important elements and their presence in plants has been the subject of many studies (Sena et al., 1998). This has increased the need to study the elemental composition of many edible plants which could be used as an important source of elements.

Ghana abounds in important medicinal plants. However, a few of them have been analysed for their mineral composition. One such important medicinal plant is Moringa oleifera which belongs to the family Moringaceae.

It is grown and cultivated widely in the Brong Ahafo, Ashanti, Northern and Eastern regions of Ghana to mention but a few places. It has become an all round important plant, traditionally important food commodity as the leaves, flowers, fruits and seeds of this tree are used as vegetables and for the treatment of various ailments in traditional pharmacology. The flowers are additionally considered to have anti-inflammatory properties.

Moringa preparations have also been cited in scientific literature as having antibiotic, antiulcer, anti inflammatory properties. These properties have the ability of decreasing the severity of the following disorders viz hypertension, diabetes, anemia, skin infection and have a protective effect of the eye (Fuglie, 2000). Moringa contains several metals and non metals which are the basic building block of matter. Some of the major elements in Moringa are calcium, chlorine, magnesium, potassium, sodium, phosphorous (present as phosphates), nitrogen (present as nitrates) and the minor elements are iodine, iron, zinc, selenium, fluorine, chromium, copper, manganese and molybdenum. Essential elements are elements required for good health and are required for normal body functioning that either cannot be synthesized by the body at all, or cannot be synthesized in amounts adequate for good health and thus must be obtained from a food source. The body utilizes over eighty minerals for maximum function. Mc Dowell, 2003 classified minerals as; macro minerals (Calcium, Phosphorous, Magnesium, Sodium, Potassium, Sulphur and trace minerals or micro minerals (Copper, Manganese, Cobalt, Chromium).

Currently in Ghana, Moringa usage is widespread. However there is no baseline study regarding its consumption among the populace. This study therefore aims to obtain current information on the consumption of Moringa oleifera among selected consumers in Techiman through administering of questionners. The data obtained could be of help to the Food and Drugs Board, Herbal Research Institutions, the Government, formulators of Moringa preparations and the whole population in the development of strategic plans towards regulating safe consumption of Moringa oleifera in the country.

Materials and Methods

Sampling plan

The survey to evaluate Moringa consumption along socio-economic profile of consumers within Techiman was carried out

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between February and March 2010. Using selective sampling plan, sites were selected in around the town so that the entire town was represented in the study. The areas selected include hospitals, schools, shops, markets etc with high population densities. 100 consumers from these areas were randomly selected for this study.

Questionnaire administration

The methodology applied to obtain information on Moringa consumption involved the use of detailed questionnaires. The questionnaires were anonymous and self administered. However, before the questionnaires were finally administered they were pre-tested on twenty respondents and through responses obtained; some of the questions were then modified. This was done to make the questionnaires more comprehensive and to avoid ambiguity. The questionnaires were administered by a convenient sample of 100 people from both sexes who volunteered to participate in the study.

Questionnaires were to solicit information from people who use Moringa and information obtained presented in table 1.

Statistical analysis

Results were analysed using SPSS version 16. The mean, frequency and percentages were calculated and analysed as shown in table 1.

The total number of respondents was 100; comprising of 72 males and 28 females. Of the total respondents those with tertiary education consume more Moringa followed by those with secondary education. This could be due to the fact that the educated people are more informed of Moringa's nutritional and medicinal properties. Those with no education are the least consumers. The results from Tables 1 and 2 also show that more of the respondents got the information on Moringa from family (46 %,) followed by other sources (20%), from the media (18%) and from friends (16%) in that order.

The result also show that the number of consumers of processed Moringa were relatively higher than those of unprocessed Moringa. Processed Moringa is less susceptible to early spoilage than unprocessed Moringa and are better suited for long distance transportation from source to shelf. The frequency of consumption was highest among people who consume Moringa more than three times in a day, followed by three times a day, once a day and others respectively.

The result indicates that 40% of the respondents consume more than three teaspoonful of Moringa a day, followed by those of three spoonfuls and then two teaspoonfuls (19%). Those that consume one a day are 16%. A greater percentage of the respondents started consuming Moringa not more than two years ago. Thus 60% for 1 year and 30% for 2years.The percentage of consumers for 3years was the least recording a percentage of 4% whilst 58% of the respondents prepare the Moringa they consume with 42% buy theirs from the market. The results show that the respondents have different reasons for consuming Moringa. Some of these reasons include nutritional, health or both. A large percentage of respondents cited health reason (56%), followed by nutritional (24%) and both nutritional and health reasons (20%) in that order. Health ailments cited to be treated with Moringa intake include malaria, diabetes and high blood pressure among others (gambiaaffairs.blogspot.com). Nutritional deficiencies cited also include anaemia and malnutrition. 76% of the respondents admitted having observed changes in their nutritional /health status after consuming Moringa for a while. Those who observed a change in nutritional/health status stated that since they started consuming Moringa, they hardly visit the hospital and also have become very active. This goes to support the fact that Moringa has both medicinal and nutritional properties. From the results, 78% observed a change in their nutritional/health status. However, 22% did not observe any change.

Majority of the respondents stated they were not aware of the exact amount and type of nutrients they obtain when they consume the Moringa. It was also observed that packages of Moringa do not have the right labels. This means that consumers may be consuming these nutrients above or below the recommended intake levels which could be detrimental to their health. Only 18% admitted knowing the exact amount of nutrients they were consuming.

Conclusion and recommendation

This study has shown that there is the need to develop the code of practice for manufacturers of Moringa preparations with the view to improve safety in consumption.

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Table 1: Consumer Profile and Habits on *Moringa* Intake by Age

	AGE (years)			
Variables	<35	35-44	45-55	>55
Gender				
Male	42	20	12	4
Female	14	4	2	8
Education				
None	1	2	4	2
Primary	4	4	2	4
secondary	8	12	4	4
Tertiary	43	-	6	-
Years of intake				
1	20	10	2	6
2	34	4	4	4
3	-	2	4	-
Greater than 3	6	4	-	-
Information on moringa				
Friend	30	8	4	5
Family	22	6	2	5
Media	6	4	1	-
other	2	2	3	-
Form consumed				
Processed	36	14	2	2
Raw	26	4	8	8
Frequency of consumption				
Once a day	12	2	3	1
Twice	10	3	2	3
Thrice	18	4	-	-
Greater than 3	28	6	4	4
Amount taken/day				
1 ts	12	2	3	1
2ts	10	3	2	3
3ts	18	4	-	-
Greater than 3	28	6	4	4
Source				
Self	36	4	8	10
market	24	14	2	-
Reasons for intake				
Nutrition	14	4	-	-
Health	46	14	-	10
Health and nutrition	2	-	4	16
Any changes in health	42	18	10	12
Yes	18	-	-	-
No				
Label(amount to take)				
Yes	8	6	4	
No	50	14	8	10

Table 2: Consumer Profile on *Moringa* Intake by Gender

Variable	Male (n; %)	Female (n, %)	Total N; %
Education			
None	4 ;5.6	6 ; 21.4	10 ;10.0
Primary	- -	3; 10.7	4 ;4.0
secondary	10 ;14.3	7; 25.0	18 ;18.0
Tertiary	58 ;82.9	12; 42.8	70 ;70.0
Years of intake			
1	46 ;63.9	14	60;60 .0
2	18 ;25.0	10	30;30.0
3	4 ;5.12	-	4 ;4.0
Greater than 3	4 ;5.12	4	6 ;6 .0
Information on moringa			
Friend	8 ;1.1	8 ;28.6	16;16.0
Family	40 ;55.6	6 ;21.4	46 ;46.0
Media	14;19.4	4;14.2	18 ;18.0
Other	10;13.9	10;35.7	20 ;20.0
Form consumed		10 ;33.3	50 ;50.0
Processed	40 57..1	20 ; 66.7	50 ;50.0
Raw	30 42.8		
Frequency of consumption			
Once a day			
Twice	10;13.9	6;21.4	16;16.0
Thrice	12;16.7	7 ;25	19;19.0
Greater then 3	14; 19.4	5;17.9	19;19.0
	36; 50	10;35.7	46;46.0
Amount taken/day			
1 ts	10;13.9	6;21.4	16;16.0
2ts	12;16.7	7;25.0	19;19.0
3ts	14;19.4	5;1.8	19;19.0
Greater than 3	36;50	10;35.7	46;46.0
Source	38; 63.3	20 ;58.8	58 ;58.0
Self	28 ;46.6	14 ; 41.2	42 ;42.0
Market			
Reasons for intake	46; 71.9	32; 88.9	78 ;78.0
Health	14 ; 21.9	4 ; 11.1	18; 18.0
Nutrition		-	
Health and nutrition	4 ; 6.3	-	4;4.0
Any changes in health	60 88.2	18 ; 56.3	78;78.0
Yes	8 11.8	14 ; 43.8	22;22.0
No			
Label (amount to take)			
Yes	14;20	4;13.3	18;18.0
No	56;80	26;86.7	82;82.0