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Chemical analysis of rare food items eaten by Bhariya tribes of Patalkot valley of Madhya Pradesh

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Abstract
The rare food items eaten by Bhariya tribes were analysed in ANACON Lab, Nagpur. On analyzing these rare food items it was found that the highest percentage of fat and protein was found in jagni 35.16 and 26.93 gm/100gm respectively. However the highest percentage of carbohydrate was found in mahua flowers77.65 gm/100gm. Calcium was found to be highest in antmule 660mg/100gm. Iron was found to be highest in Kutki 90 mg/100 gm. Dietary fiber was found to be highest in Mahua flowers 33.7 gm/100 gm and crude fiber was found to be highest in Ant mule 35.71gm/100gm. In all of the above samples vitamin A was only present in rated kand and kutki 0.046 mg and 0.16 mg respectively.

Keywords: rare food, bhariya tribes, patalkot valley

1. Introduction
Food consumption is influenced by many factors such as socio-economic status, culture, religion, education, ignorance, food beliefs and habits. Food habits and food beliefs are among the oldest and most entrenched aspects of any culture. (Girijamma *et al.* 2001) [1]. Nature's law is still predominant both in the social customs and food habits. In most tribal areas, the food availability and consumption pattern varies from one tribal system to another. (Marak, 2007) [2] Tribal populations still largely depend on agriculture and forest products for their livelihood and they follow a relatively homogenous lifestyle with their food habits, dietary practices and general pattern of living (Patwardhan, 2000). Most tribes still rely on their indigenous foods, which usually consist of wild unconventional forest products although some cultivate grains and other farm products for subsistence (Singh and Arora, 1978) [3].
Patalkot is a bow shaped formation on the Satpura plateau and area consists of ridges and valleys. The place is spread over an area from 220.24' to 220.29' North, 780.43' to 780.50' East. Patalkot is a lovely landscape located at a depth of 1200-1500 feet in a valley. Because of the great depth at which it is located this place is named as 'Patalkot' (Patal means very deep, in Sanskrit). The approach into the area is very difficult being a deep depression in hilly region.
In the present study some rare food items which are not taken by other population were recognized and were analysed in the laboratory to know their nutritive value.
The rare food items eaten by the Bhariyas were 'Agitha', 'Ant Mule', 'Rated Kand', 'Kutki', 'jagni', 'Mahua flower', 'Mango seed'.

2. Methods and materials
Tribes due to their poor economic status and non-availability of edible foods, sometime consumes few food items which are not generally used by other human races. Few rare food items eaten by the Bharia tribes of patalkot valley were not very well known to the people. Thus these rare food items were analysed for their nutritive values in ANACON ISO certified laboratory at Nagpur. Prior to the analysis following procedures were adopted:

- After knowing the dietary habits and types of food items consumed by the population in their routine diets, rare food items were identified. These rare food items were identified on the basis that these are not consumed by other population.
- Before the collection of these items from the valley food analysit was contacted regarding the collection, quantity, and transportion of the sample to the laboratory.
- On the scheduled day samples were collected from the valley and were packed in the air tight containers and directly transported to the laboratory at Nagpur.
- In the laboratory samples were packed in the polythene bags and were coded with the name and number.
- Standardized principles, materials, instruments and procedures were involved by skilled and expertised food analysist in the laboratory
- Food items were dried prior to grinding.
- 100 grams of dry samples were analysed analysed for the chemical composition
- Different methods were used for different composition.
- Test methods involved were IS 7219 for the analysis of protein, method by pearson for analyzing fat and crude fibre, IS 1656 for carbohydrates, AOAC for dietary fibers, ICP-AES for calcium and iron and HPLC for analyzing the amount of Vitamin A.

3. Results
The rare food items eaten by the Bhariyas were 'Agitha', 'Ant Mule', 'Rated Kand', 'Kutki', 'jagni', 'Mahua flower', 'Mango seed'.
All the above mentioned food items have been chemically analysed for their, protein, fat, carbohydrate, crude fibre, dietary fiber, calcium, iron, vitamin A. The contents of these items have been calculated in 100 grams of dry samples. The detailed chemical composition of these rare foods are as follows

Table 1: Chemical Composition of Rare Food Items

Test parameters	Unit	Rated kand	Mahua flowers	Anta mule	Mango seeds	Kutki	Aghitha	Jagni
Protein	g/100g	4.64	5.58	4.04	2.86	10.73	4.01	26.93
Fat	g/100g	0.35	0.08	2.17	2.95	4.31	0.05	35.16
Carbohydrates	g/100g	16.56	77.65	56.68	38.34	68.69	25.43	27.81
Dietary fiber	g/100g	9.5	33.7	9.37	6.8	25.3	10.9	7.86
Crude fiber	g/100g	2.56	17.74	35.71	1.65	9.59	3.63	21.27
Calcium	mg/100g	50	80	660	60	90	50	420
Iron	mg/100g	3.47	20	40	8.32	90	1.69	110
Vitamin A	□ g /100g	0.046	Absent	Absent	Absent	0.16	Absent	Absent

Table 1 shows the detailed composition of rare foods eaten by the tribes which were analysed in the laboratory.

Rated kand

Fig 1

Rated kand is found in different shapes and sizes. Its outer surface is hard and rough and is brown in colour. The inner part is fibrous and pale white in colour. It is eaten after boiling or roasting and removing skin exactly like potato. The protein content of this food is 4.6 gm /100 gm, fat 0.35gm, carbohydrates 16.56gm. The other contents are dietary fiber 9.50gm, crude fiber 2.56gm, calcium 50mg, iron 3.47mg and vitamin A .046 mg. the energy content of rated kand is 87.8 k cal.

Ant mule

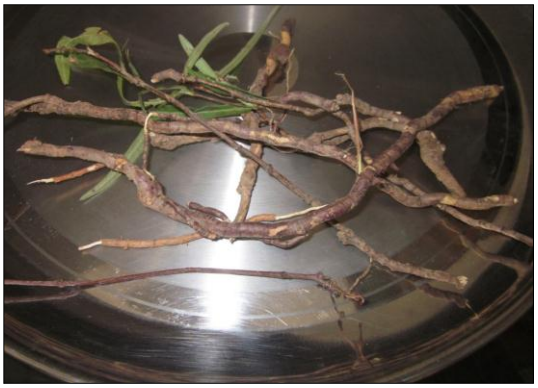

Fig 2

It is a type of root purplish brown in colour and is taken as medicine and in tea for flavor. The protein content of this food is 4.04 gm /100 gm, fat 2.17gm, carbohydrates 56.68. The other contents are dietary fiber 9.37gm, crude fiber 35.71gm, calcium 660mg, iron 40mg and vitamin A was absent. The energy content of ant mule is 262.41 k cal.

Mahua Flowers

Fig 3

Mahua flowers appear in the month of march and april. Fresh flowers are yellow in colour and sweet in taste. The protein content of this food is 5.58 gm /100 gm, fat .08gm, and carbohydrates 77.65. The other contents are dietary fiber 33.7gm, crude fiber 17.74gm, calcium 80mg, iron 20mg and vitamin A was absent. The energy content of Mahua flowers is 333.64 k cal.

Kutki

Fig 4

Kutki is a minor millet usually eaten in the form of gruel or porridge by boiling in water. The protein content of this millet is 10.73 gm /100 gm, fat 4.01gm, and carbohydrates 68.69. The other contents are dietary fiber 25.3gm, crude fiber 9.59 gm, calcium 90 mg, iron 90 mg and vitamin A was 0.16 mg. The energy content of kutki is 353.77 k cal.

Aghitha

Fig 5

Its outer surface is hard and rough and is brown in colour. The inner part is fibrous and pale white in colour. It is also eaten after boiling or roasting and removing skin exactly like potato. The protein content of this food is 4.01 gm /100 gm, fat 0.05gm, carbohydrates 25.43 gm. The other contents are dietary fiber 3.63 gm, crude fiber 50.0 gm, calcium 50 mg, iron 1.69 mg and vitamin A .046 mg. The energy content of Agitha is 118.21 k cal

Jagni

Fig 6

It is a type of seed black in colour rich in fat and calcium. The protein content of this food is 26.93 gm /100 gm, fat 35.16 gm, carbohydrates 27.81 gm. The other contents are dietary fiber 7.86 gm, crude fiber 21.27 gm, calcium 420 mg, iron 110 mg and vitamin A absent. The energy content of jagni is 535.4 k cal.

Mango Seeds

Dried mango seeds are processed to form the chapattis for eating. The protein content of mango seeds is 2.86 gm /100 gm, fat 2.95 gm, carbohydrates 38.34 gm. The other contents are dietary fiber 6.80 gm, crude fiber 1.65 gm, calcium 60 mg, iron 8.32 mg and vitamin A is absent. The energy content of mango seeds is 191.35 k cal.

4. Conclusion

The rare food consumed by the tribes which are rich in nutrients should be promoted by the government in the tribal areas to improve their economic and nutritional status.

5. References

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