CHANGES IN FOOD VALUES FROM HUNTING AND GATHERING TO AGRICULTURE; A RECONSTRUCTION FROM ETHNOGRAPHIC RECORDS

P.G. Chatterjee*

In this paper the dietary transition in prehistory from hunting and gathering to agriculture is examined from the comparative viewpoint of current diets amongst tribal populations in northeastern India. Observations have been made on a number of agricultural groups of West Bengal, Bihar and Orissa (especially Santals, Mundas and Oraons) and similarly on hunting and gathering groups of the same region (especially Kharias, Birhors and

	West Bengal	Orissa	Bihar
Cultivated			
Dioscorea alata	+	+	+
D. esculenta	+	+	+
Wild			
D. bulbifera	+	+	+
D. pentaphylla	+	+	+
D. hispida	+	+	+
D. hamiltonii	+	+	+
D. belophylla	+	+	+
D. glabra	+	+	+
D. oppositifolia	-	+	-
D. puber	+	+	+
D. tomentosa	-	+	+
D. kalkapershadii	-	+	+
D. prazeri	+	-	-
D. lepchastem	+	-	-
D. wallichii	-	-	+

TABLE 1: EDIBLE *DIOSCOREA* SPECIES IN WEST BENGAL, ORISSA AND BIHAR

Lodhas). In the case of the agricultural groups the staples are mainly rice and lentils. Hunters and gatherers have a more diverse diet, but two major foods, namely different varieties of *Dioscorea* yams and edible mushrooms, are collected by many groups. In India there are about 50 species of *Dioscorea*, of which 15 are found in the area under

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* Botany, University of Calcutta, 35 Ballygunge Circular Road, Calcutta 700019, India

Agaricus campestris L. ex. Fr.
A. silvaticus Schaeff. ex. Secr.
Agrocybe praecox (Pers. ex. Fr.) Fayod.
Boletus spp.
Calocybe indica P. & C.
Canherellus cibarius Fr.
Coprinus comatus (Mull. ex. Fr.) S.F. Grey.
C. micaceus (Bull. ex. Fr.) Fr.
Craterellus cornucopioides (L) Fr. Pers.
Daedalae quercina L. ex. Fr.
Fistulina hipatica (Huds.) Fr.
Flammulina velutipes (Curt. ex. Fr.) Karst.
Hericium coralloides (Scop. ex. Fr.) S.F. Grey
Hirneola auricula-judae
Lacrymaria velutina (Pers. ex. Fr.) Pat.
Lasiosphaera gigantea (Label. ex. Fr.) Post.
Leucocoprinus cepaestipes (Sow. ex. Fr.)
Lycoperdon perlatum Pers.
Macrolepiota mastoidea (Fr.) Singer
M. procera (Scop. ex. Fr.) Sing.
Pleurotus flabellatus (Berk. & Br.) Sace.
P. ostreatus (Jacquin ex. Fr.) Kummer.
P. sajor-caju (Fr.) Singer
P. squarrosulus (Mont.) Sing.
Podabrella microcarpa (Berk. & Br.) Singer
Russula emetica (Schaeff. ex. Fr.) S.F. Grey
R. lepida Fr.
Termitomyces albuminosa (Berk.) Heim.
T. eurhizus (Berk.) Heim.
Volvariella terastius (Berk. & Br.) Singer

TABLE 2: SPECIES OF EDIBLE MUSHROOMS IN NORTHEASTERN INDIA

consideration (Table 1). Of these 15 species only *Dioscorea alata* and *D. esculenta* are cultivated, while the rest are wild varieties.

To estimate the nutritional values of the *Dioscorea* species in terms of carbohydrate, protein, fat, vitamin and mineral contents the first nine species listed in Table 1 were taken for assay on a dry weight basis (Horowitz 1975). The results show that there is a range of variation by weight across the species studied in carbohydrates (68.5 to 85.5%), proteins (8.3% to 15.93%), fat (0.56 to 1.72%) and phosphate (0.44 to 0.58%).

The other gathered food item is the edible mushroom, of which 30 species are found in the area of consideration (Table 2). The mushrooms have a wide range of nutrients; carbohydrates range from 30 to 90%, proteins have a high range between 25 and 40% (average 34%), and fat contents range between 1 and 20%. Mushrooms are also potential sources for different vitamins.

These two foods - yams and mushrooms - are sufficiently widespread to be considered as major food resources of Palaeolithic times in the region. In terms of the data given in Table 3 it can be seen that the edible mushrooms and *Dioscorea* have a range of carbohydrate values similar to those of rice and lentils. However, with regard to proteins the mushrooms and yams have values from 12.12 to 34.0%, averaging 23.6%. The values for rice and lentils have a lower average of only 16.4%. In broad terms, therefore, protein contents are higher in the foods of the hunters and gatherers. The values for fat also average higher in the foods of the hunter-gatherers, with an average of 3.7%.

The food values presented here indicate that the hunter-gatherers are provided with a better diet in terms of nutritional value than the agriculturalists. So why are the agricultural foods given a higher economic priority? One answer may be that agriculture is

a more stable form of economy than hunting and gathering. In the case of the latter there are a number of constraints which include risk factors, greater mobility and more frequent exposure to unfavourable conditions. In spite of having less nutritious foods the agricultural communities were semi-settled or settled, and able to receive a food surplus in return for lesser amounts of energy input. Along with these new economic pursuits, technology was developed and so also the holistic culture achieved a higher status.

	Edible Mushroom	Edible *Dioscorea*	Rice	Lentil
Carbohydrate	60.0	77.0	78.1	57.7
Protein	34.0	12.12	7.7	25.1
Fat	5.0	1.14	1.8	0.7

TABLE 3: MEAN PERCENTAGE CONTENTS OF FOUR MAJOR FOOD ITEMS

REFERENCE

Horowitz, W. (ed.) 1975. *Official Methods of Analysis*. (12th edition). Washington DC: Association of Official Analytical Chemistry.