Ethnomycology: Edible and Medicinal Mushrooms of the Indigenous Gbagyi People of Nigeria

Asemota Uwem Kelly*, Salisu Abubakar, Okereke Omoarueime Ebele, Etim Veronica Archibong and Onyenekwe Paul Chidozie

Biotechnology and Genetic Engineering Advanced Laboratory, Sheda science and Technology Complex (SHESTCO), P.M.B 186, Garki. Abuja. FCT. Nigeria.

ABSTRACT

Structured questionnaires were prepared in Gbagyi language and administered to about 100 respondents randomly selected from twelve Gbagyi settlements in the Federal Capital Territory, with the aid of interpreters who are indigenes. This study reveals that the Gbagyi people of Nigeria are mostly mycophagists. 93% of the respondents have used at least seven species of mushrooms as food. 92% consume edible mushrooms for taste and consider some species a great delicacy, 90% use mushrooms as a substitute for meat or fish, 20% for soup thickening, 40% still prefer to use mushrooms as medicine or as a component of medicinal preparations believing they are cheaper and with less side effects than orthodox medicine. 2% consume mushrooms for cultural reasons. The findings of this investigation indicate that about 28 species of mushrooms are known and used by the Gbagyi people for food, medicine, commercial and cultural reasons. However, the younger the respondent the less the knowledge and use of mushrooms. 

Ganoderma lucidum, Ganoderma applanatum, Trametes versicolor, Fomes fomentarius, Laetiporus sulphurus and various species of Polypores are among the mushrooms used as medicine or components of herbal preparations in the treatment of various ailments including pile, eye problem, ulcers, cancer, tumors, fever, stomach ache, pregnancy related ailments, management of HIV/AIDS and also as immune system boosters.

Introduction

As an ethnic nationality, the Gbagyi people originated from Kaduna state in the Northern part of Nigeria. They are one of the most widespread and numerous peoples with settlements in Plateau, Kaduna, Niger, Kogi States and the Federal Capital Territory (Roger and Musa, 1989). However, the Gbagyi people in this study are those in the Federal Capital Territory. They are the original settlers of Gwagwalada in Abuja, they are the most populated and indigenous ethnic groups in the Federal Capital Territory and their major occupation is farming (Chigudu, 2008; Mefor, 2008). The Gbagyi people believe that the head is sacred so they put their load including their harvest after a mushroom-hunt on their shoulders instead of the head. The majority are illiterate and peasant and harvest after a mushroom-hunt on their shoulders instead of the head. The majority are illiterate and peasant. Among the Gbagyi, mushroom collection is mainly for household consumption, only a relatively small quantity is taken to the market for sale and this is usually done by the women. They are also sold as medicine or as components of medicinal preparations in dried solid or powder form. For example in Gwagwalada and Kwali markets, dried mushrooms believed to be polypores are sold as medicine for the treatment of malaria and stomach problems. Fresh edible mushrooms are sold in the Kwali and Gwagwalada markets during the rainy season at very cheap rates. Gbagyi people consider mushrooms a great delicacy, sometimes more than one specie of mushroom is used at the same time in making soup, stew or pepper soup, this is in agreement with the observation of (Jonathan, 2002) that in Nigerian villages exposed to natural vegetation, a variety of mushrooms are used in the preparation of a dish. In the preparation of some mushroom – herbal medicines more than one specie of mushrooms could also be used. Mushrooms are usually preserved by air-drying, sun-drying and smoking for use during the dry season when mushrooms become scarce.

*Corresponding author.
Email address: peaceaka2011@yahoo.com
The ethnomycology of mushrooms by other tribes have been reported among various authors in Nigeria. Ethnomycology of edible and medicinal mushrooms is reported among the Igbos (Akpaja et al., 2003), Yorubas (Oso, 1975; Alabi 1994), Igalmu and Hausas (Okhuoya et al., 2010). A catalogue and identification of some wild edible macrofungi occurring in Nigeria has also been carried out (Nwoedu et al., 2013). In other countries of the world ethnomycology of edible and medicinal mushrooms is well documented. They include among others : Zambian (Pegler and Pierce, 1980), Ghana (Obodai and Apetorgbor, 2010), Benin (Dekeess et al., 2002), Guatemala (De Leon, 2002) and India (Purukayastha and Chandra, 1985). There is a paucity of documented information on the indigenous use of mushrooms for food, medicine and other purposes by the Gbagyi people of Nigeria. This work is therefore an attempt to highlight and document the indigenous knowledge and usage of mushrooms among this people. It is also to encourage the cultivation and commercialization of mushrooms to improve food security and go a long way in improving the general wellbeing of the peasant and illiterate among them, especially the women. This work also seeks to encourage further investigation into the rich array of mushrooms in Gbagyi farmlands as a potential cheap source of antibacterial, antifungal and antiviral drugs.

Materials and Methods
Mushrooms were randomly collected from different Gbagyi farmlands over three rainy seasons (April - October, 2010; April - October, 2011 and April - October, 2012). Photographs of the mushrooms growing in their natural habitat were taken before they were carefully uprooted holding the stipe gently but firmly close to the rhizomorph thus carrying some soil along with it to avoid damaging the tissues and obstructing identification. The mushroom samples were shown to the indigenes for identification by their local names. They were immediately taken to the Department of Biotechnology and Genetic Engineering, Sheda Science and Technology Complex for identification, storage and further studies. The mushrooms were identified using standard conventional methods, coloured picture books and internet. Representative samples of some of mushrooms were dried in the oven at 40°C and taken to the Mushroom Science Unit, Plant Pathology and Biotechnology Department, University of Benin, Benin for confirmation.

Study Area
Abuja lies between latitudes 8°25’ N and 9°20’ and Longitude 6°39’. It is bordered by the Kaduna State, East by Nassarawa State, to the South west by Kogi State and to the West by Niger State. The Territory is located just north of River Niger and Benue River and geographically in the center of the country. It has a land mass of approximately 7,315km² of which the actual city occupies 275.3km². It is situated within the savannah with moderate climatic conditions. The peasant people of Gbagyi are traditionally farmers. Two farmland settlements of Gbagyi people from each of the Six Area Councils of the Federal Capital Territory, Abuja were randomly selected as study area. They include Sheda, Kilankwa 1 and 2 villages in Kwali Area Council, Mpape and Ushefa villages in Bwari Area Council, Pegi and Tika villages in Kuje Area Council, Gwako and Tungan-maje villages in Gwagwalada Area Council, Chegbeche and Rimba villages in Abuja Area Council, Garki and Dangaza villages in Abuja Municipal Area Council.

Sampling Frame
The target population was the Gbagyi also spelled as Gbari or Gwarri people residing in various settlements in the six Area Councils in the Federal Capital Territory. About a hundred respondents were used for the study.

Results and Discussion
Information for this study was obtained from the use of structured questionnaires, interviews and personal communication with the indigenes, traditional medicine practitioners and hawkers. This investigation shows that there are about twenty eight (28) mushrooms known and used by Gbagyi people for food, medicine and culture.

The edible and medicinal mushrooms of the Gbagyi people of Nigeria are similar to those known and used by Igalas, Bini and Yoruba speaking people respectively (Ayoledet al., 2011; Akpaja et al., 2005; Adhikar, 1999).

Personal communication with the indigenes indicates that due to the high cost of meat and fish, more people are turning to mushrooms as an alternative source of proteins. It was also observed that many of the indigenes still resort to traditional medicine especially in cases relating to fertility, antenatal and post natal care. They attribute this to the fact that their traditional herbal medicine is more natural, safer, more accessible and more economical, considering the cost of transportation to the nearest hospital and also the cost of orthodox drugs (Dania, 2010).

Gbagyi people name mushrooms based on their uses, the substrate on which they grow, their growth pattern, and in most cases their physical features. However, many of the indigenes have forgotten the names and uses of the mushrooms especially in the younger age group.

Figure 1 depicts the location of the Federal Capital Territory on the map of Nigeria, showing that it is an area with a good climate and rich vegetation favourable for the growth of mushrooms. Plates 1-6 shows pictures of edible mushrooms known and utilized by Gbagyi people while Plate 1-21 shows pictures of medicinal mushrooms known and utilized by them. Some of the mushrooms are potential sources of nutraceuticals as they can be used as food and medicine. The most frequently occurring mushroom among Gbagyi people is “Sumbo munu”.

Figure - 1: Map of Nigeria showing the location of Abuja in the centre of Nigeria. Coordinates: 9°42 03 N 7°292 03 E (http://www.fct.gov.ng).
PLATES 1-21: EDIBLE MUSHROOMS KNOWN AND UTILIZED BY GBAGYI PEOPLE (pictures taken by Asemota, U.K)

1. Pleurotus florida
2. Pleurotus ostreatus
3. Agaricus bisporus
4. Auricularia auricular
5. Boletus sp
6. Daeldina concentric
7. Boletus edulis
8. Polyporus squamosus
9. Coprinus sp
10. Macrolepiota procera

11. Lentinus squarrosulus
12. Volvareailla volvocea
13. Termitomyces leuisti
14. Scientically unidentified
15. Panus fulvus
16. Lepisda flacida
17. Chlorophyllum molybdates
18. Lactarius deliciosus
19. Daedalea elegans
20. Laetiporus sulphurus
21. Russula sp
<table>
<thead>
<tr>
<th>S.NO</th>
<th>SCIENTIFIC NAME</th>
<th>LOCAL NAME</th>
<th>MEANING OF LOCAL NAMES</th>
<th>TIME OF APPEARANCE</th>
<th>HABITAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lentinus squarossulus</td>
<td>Munu</td>
<td>Mushrooms</td>
<td>May - October</td>
<td>Found on decaying wood</td>
</tr>
<tr>
<td>2</td>
<td>Macrolepiota procera</td>
<td>Sumbo munu</td>
<td>Widespread mushroom</td>
<td>May - October</td>
<td>Usually found on wet soil under trees.</td>
</tr>
<tr>
<td>3</td>
<td>Volvariella volvacea</td>
<td>Chugu munu</td>
<td>Mushroom in clusters</td>
<td>April – October</td>
<td>Found occurring in clusters on open fields</td>
</tr>
<tr>
<td>4</td>
<td>Pleurotus ostreatus</td>
<td>Yingba – yingba munu</td>
<td>Mushrooms having Meat – like texture</td>
<td>May- November</td>
<td>Found growing on decaying or dead tree</td>
</tr>
<tr>
<td>5</td>
<td>Pleurotus Florida</td>
<td>Yingba – yingba munu</td>
<td>Mushrooms having Meat – like texture</td>
<td>May- November</td>
<td>Found on rotting hardwood</td>
</tr>
<tr>
<td>6</td>
<td>Auricular auricularia judae</td>
<td>Kpunbwa munu</td>
<td>Mushrooms having ear-like structure</td>
<td>May – October</td>
<td>Found on decaying wood.</td>
</tr>
<tr>
<td>7</td>
<td>Agaricus bisporus</td>
<td>Pyise -ezhi munu</td>
<td>Mushrooms Resembling fowl egg</td>
<td>June – October</td>
<td>Found on fields in the farmland</td>
</tr>
<tr>
<td>8</td>
<td>Daedina concentric</td>
<td>Cheke munu</td>
<td>Sweet mushroom</td>
<td>April – October</td>
<td>Found on fields in the farmland</td>
</tr>
<tr>
<td>9</td>
<td>Coprinus sp</td>
<td>Kula munu</td>
<td>Not known</td>
<td>April - October</td>
<td>Found on fields.</td>
</tr>
<tr>
<td>10</td>
<td>Termitomyces letestui</td>
<td>Zachukakpa munu</td>
<td>Mushrooms resembling a Dead man’sleg</td>
<td>June - October</td>
<td>Found in termite holes</td>
</tr>
<tr>
<td>11</td>
<td>Russula vesca</td>
<td>Knyari munu</td>
<td>Red mushrooms</td>
<td>June - October</td>
<td>Found in clusters on decaying and fallen tree.</td>
</tr>
<tr>
<td>12</td>
<td>Daedalea elegans</td>
<td>Not known</td>
<td>Not known</td>
<td>April - October</td>
<td>Fallen and decaying tree</td>
</tr>
<tr>
<td>13</td>
<td>Laetiporus sulphurus</td>
<td>Chuari munu</td>
<td>Not known</td>
<td>April - October</td>
<td>Found on dead wood</td>
</tr>
<tr>
<td>14</td>
<td>Boletus edulis</td>
<td>Nakwo munu</td>
<td>Mushrooms occurring on cow dung</td>
<td>May - October</td>
<td>Open grasslands and fields</td>
</tr>
<tr>
<td>15</td>
<td>Polyporus squamosus</td>
<td>Not known</td>
<td>Not known</td>
<td>May - October</td>
<td>Open grassland and fields</td>
</tr>
<tr>
<td>16</td>
<td>Chlorophyllum molybdates</td>
<td>Not known</td>
<td>Not known</td>
<td>May - August</td>
<td>Found on lawns and open fields</td>
</tr>
<tr>
<td>17</td>
<td>Pavus fulvus</td>
<td>Not known</td>
<td>Not known</td>
<td>June - August</td>
<td>Decaying trees</td>
</tr>
<tr>
<td>18</td>
<td>Lactarius deliciousus</td>
<td>Kpebe munu</td>
<td>Brings out a breast- milk like substance when fresh</td>
<td>June - August</td>
<td>Decaying trees</td>
</tr>
<tr>
<td>19</td>
<td>Lepisda flacida</td>
<td>Not known</td>
<td>Not known</td>
<td>June - October</td>
<td>Found on decaying trees</td>
</tr>
</tbody>
</table>
TABLE - 2 : MEDICINAL MUSHROOMS KNOWN AND USED BY THE GBAGYI PEOPLE.

<table>
<thead>
<tr>
<th>S/NO</th>
<th>SCIENTIFIC NAME</th>
<th>GBAGYI NAME</th>
<th>HABITAT</th>
<th>PREPARATION AND PARTS USED</th>
<th>MEDICINAL USES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Ganoderma lucidum</em></td>
<td>Gogwoi munu</td>
<td>Found on felled decaying trees.</td>
<td>Matured fruit bodies are steeped in hot boiling water to make tea.</td>
<td>Diarrhea, dysentery, hypertension, anaemia and fertility problems in women.</td>
</tr>
<tr>
<td>2</td>
<td><em>Ganoderma applanatum</em> (artist conk)</td>
<td>Dnayi munu</td>
<td>Found growing on dead or dying hardwoods</td>
<td>Boil dried slices in water to make a strong tea mixed with honey.</td>
<td>Strengthens the immune system, treatment of diabetes, piles, cancer and tumors.</td>
</tr>
<tr>
<td>3</td>
<td><em>Polypore spp1</em></td>
<td>Nyipekna - zhi munu</td>
<td>Dead tree trunks</td>
<td>The powder is mixed with shea butter and is applied externally to treat piles. It can be heated and inhaled to treat fever.</td>
<td>Treatment of piles and fever.</td>
</tr>
<tr>
<td>4</td>
<td><em>Polyporus spp 2</em></td>
<td>Pari munu</td>
<td>Found on dead and decaying wood</td>
<td>Usually cooked with other herbs and drunk as tea.</td>
<td>Diarrhea, dysentery and fertility problems in women</td>
</tr>
<tr>
<td>5</td>
<td><em>Fomes fomentarius</em></td>
<td>Napwi munu</td>
<td>Mushroom found on burnt firewood</td>
<td>As a component of other herbal preparations</td>
<td>Fever</td>
</tr>
<tr>
<td>6</td>
<td><em>Trametes versicolor</em></td>
<td>Not known</td>
<td>Not known</td>
<td>Cook with other herbs and drink as tea</td>
<td>Fever, Health strengthening</td>
</tr>
</tbody>
</table>
Another mushroom used by the Gbagyi is "Kpunbwa munu", identified as Auricularia auricula - Judae. This mushroom derives its name from its resemblance to human ear. It is very delicious and versatile. It is found occurring on decaying wood from May to October. "Pyise – ze munu" is Agaricus bisporus and is used as a substitute for meat and fish in making soup. It has good flavor and is very tasty. It derives its name from its resemblance to fowl eggs. "Chuari munu" identified as Laetiporus sulphurus is useful in soup making as a thickener and as a substitute for meat and fish but if not parboiled before use it could be poisonous. It can also be used for all manner of stomach problems and is usually found on dead wood and hence another good source of nutraceuticals. "Zachukakpa munu" is identified as Termitymes leetesti. It derives its name from its resemblance to a dead man’s leg, it is usually found embedded in the soil and according to some mushroom hunters who are indigenes, digging out the mushroom makes them feel as if they have dug out a dead man’s leg. Pepper soup made with this mushroom along with other herbs cures malaria, fever and the dried powder is also effective in healing boils. It is large but rare. Boletus edulis ("Nakwo munu") is usually found growing on cow dung from April to October. It is a condiment in various dishes. "Gogwoi munu", identified scientifically as Ganoderma lucidum, occurs abundantly from April to November on decaying wood. Even though the mushroom is not generally considered inedible worldwide, some indigenes claim it is edible, it’s tough texture not withstanding. This is because they are aware that it is highly medicinal especially among the older people. Among the Gbagyi, it is popularly used for treating fertility problems in women, diarrhea, dysentery, hypertension, anaemia, stomach ache, eye problems, cancer, tumors, management of HIV/AIDS and also to boost immunity. It is known that hot tea made from boiling the fungus or the dried powder mixed with pap is health strengthening. This is not surprising as rural people long ago discovered that a boiled tea from this mushroom is health strengthening with anti-microbial and stimulatory properties. The dried form of it is usually sold in the market with it’s identity kept a close secret by traditional medicine practitioners. "Dnari munu", identified as Ganoderma applanatum is inedible but highly medicinal. It occurs on dead or decaying wood. Strong tea made from it is known to boost the immune system, it is therefore useful in the management of HIV patients. Children usually pick it and draw or write on them because it has a characteristic white surface. "Nyipenazhi munu", identified as Polypore spp is found on dead tree trunks. The powder mixed with shea butter is applied externally for the treatment of piles and stomach ailments. "Kpebe munu", scientifically identified as Lactarius deliciosus occurs on dead wood. When it is fresh it brings out a breastmilk - like liquid. It can be eaten without cooking. The powder mixed with kwomi (shea butter) is used in the treatment of ulcer and eye problems. "Napwi munu" is identified as Fomes fomentarius. It is found occurring on burnt firewood and is a medicinal mushroom. It was also found that "Etsu munu", not yet identified scientifically is now rare in the region but it is interesting to note that whenever the mushroom is found by a man it enhances his chances of been given a chieftaincy title. Other mushrooms which were known and used but are now very rare and was not found in the course of this study includes "Ciju munu" which was usually found at the base of rotting trees during rainy season and is a good condiment in making okra soup (Dania, 2010). Other mushrooms which seem to be going extinct are : "jeje munu", "lei munu" and "dwori jiji munu" (Dania, 2010). From personal communication with indigenes especially traditional medicine practitioners it was found that medicinal mushrooms known and used by the Gbagyi do not have any side effects.

Recommendation
From the information obtained in this investigation, it is recommended that more research should be done on the ethnomycology of edible and medicinal mushrooms in the end as information on these mushrooms are fast getting extinct, since it is mostly people in the older age bracket that have this information. Cultivation of these mushrooms especially the ones with nutraceutical potentials should be done using Solid State Fermentation and also submerged fermentation. There should also be proper documentation of these as there is paucity of documented information on most medicinal mushrooms in Nigeria.

Conclusion
In conclusion, mycophagy should be encouraged to promote food security and reduce the protein and mineral deficiencies prevalent in the diet of the people. This will also go a long way to improve the economic wellbeing of the peasant people of Gbagyi. It is therefore pertinent to conclude that Gbagyi farmlands hold a rich array of mushrooms known and used by the Gbagyi do not have any side effects. Communication with indigenes especially traditional medicine practitioners it was found that medicinal mushrooms known and used by the Gbagyi do not have any side effects.

References


Adhikari, M.K., 1999. Wild Relatives of some arable mushrooms found in Nepal. In National Conference on...


Oso, A (1975) Mushrooms and the Yoruba People of Nigeria mycologia 67 (2) : 311-319.


Wikipedia, the Free encyclopedia (http://www.fct.gov.ng/)