ETHNOMYCOLOGICAL STUDY IN CAMEROON: PAST, CURRENT AND THE FUTURE

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INTRODUCTION

- Fungi are one of the most species rich and diverse groups of organisms on earth, with forests ecosystems being the main habitats for macrofungi (mushrooms) (Molina *et al.*, 2008).
- The main macrofungi includes ascomycetes and basidiomycetes with large, easily observed spore-bearing structures (Chen, 2018).
- Ethnomycology is the study of the uses of fungi by human. It studies the relationship between traditional societies and fungi (Cardoso *et al.*, 2010).

USES OF MACROFUNGI (MUSHROOMS)

- Macrofungal are key players in ecosystem processes (Senn-Irlet *et al.*, 2007).
- Some macrofungi form mycorrhizal association, some are decomposers, some help in mycoremediation etc
- Majority of people in rural areas depend on macrofungi as food, medicine, mythology.

Pleurotus flabellatus
Edible and medicinal mushroom

***Cookeina tricholoma*, edibility unknown**

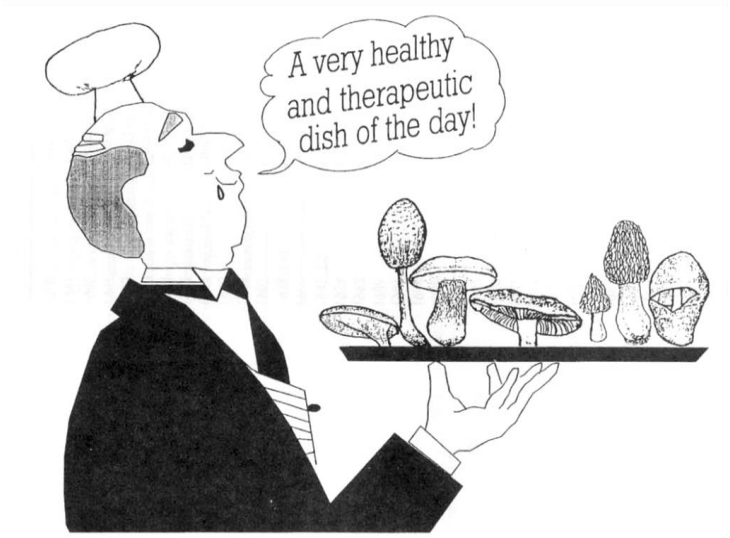
Mushroom for food

Artifacts with mushrooms

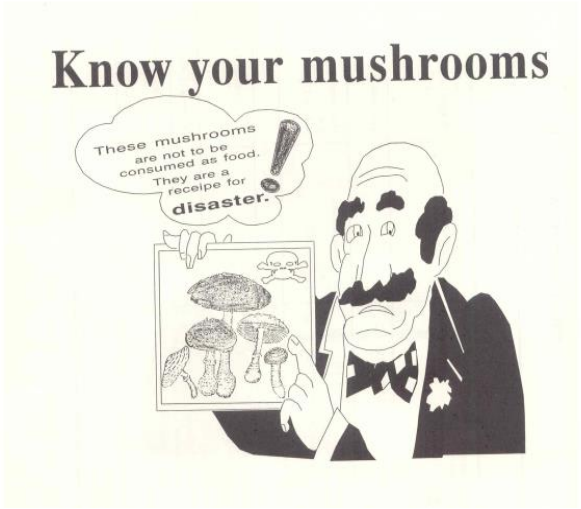
Mushroom for decoration

Chanterelles

Some Mushrooms used as Food and Medicine



Laetiporus sulphureus. **An edible and medicinal mushroom**



Ganoderma sp. **A medicinal mushroom**

Diverse uses of Macrofungi

Mushroom tea

Mushroom supplement

Mushroom drink

Mushroom tea

Cosmetic, Body Care & Food supplement Products, Snacks

Mushroom pomade

Mushroom soap

Mushroom Tooth paste

Mushroom capsules

Mushroom tablets

Mushroom supplements

Mushroom snacks

STATEMENT OF THE PROBLEM

- Many ecosystems in Cameroon are reputed for its biological diversity with several species of plants and animals endemic to it (Cable and Cheek, 1998; Conservation International, 2007).
- However, unlike the plants and animals,there is limited ethnomycological knowledge documentation in Cameroon (Kinge *et al*., 2011; Kinge *et al*., 2014).

AIM OF STUDY

- To document ethnomycology knowledge in different communities in Cameroon.

Auricularia auricula
Edible and medicinal mushroom

Ganoderma sp
Medicinal and decorative mushroom

PAST ETHNOMYCOLOGICAL KNOWLEDGE IN CAMEROON

- Indigenous knowledge of edible fungi and their utilization by local populations were investigated in southern Cameroon from 1996 to 1999 (Dijk *et al.,* 2003)
- Some 100 participants from the major ethnic groups, comprising Bantu farmers and Bagyeli (Pygmy) hunter-gatherers, were interviewed.
- The apparent discrepancy between extensive mushroom knowledge and rather infrequent mushroom consumption probably relates to the social valuation of mushrooms.

Questionnaires

Table 1. Mushroom species identified during ethnomycological studies in Cameroon.

Species	Indigenous names	Village/Language	Traditional uses
Agaricus campestris Link : Fr. [a]	Kikul cocombiyako, Aghog	Lamnso, Pidgin, English Kom, Kom	Food, traditional delicacy for most tribes
Agaricus bitorquis (Quél.)Sacc. [a]	Cocombiyako	Pidgin, English	Food
Volvariella volvacea (Bull. : Fr.)Singer	Cocombiyako	Pidgin, English	Food
V. gloiocephala (DC.)Wasser	Aghog (ughog)	Kom/Kom	Food
V. caesiotincta P. D. Orton	-	-	-
Clathrus spp.	-	-	-
Amanita spp.	-	-	-
Ganoderma lucidum (Leysser)Karsten	Kep	Baligham	Traditional medicine to treat skin infections, boils, abscesses, and tumors. It is also used as a component in other medicinal preparations.
Dictyophora spp.	Not known	-	-
Omphalotus olearius (DeCandolle : Fr.)Singer	Not known	-	-
Chlorophyllum molybdites (G. Mey.)Massee	Not known	-	-
Macrolepiota spp.	Not known	-	-
Flammulina velutipes (Curtis : Fr.)Singer	Aghog (ughog) Cocombiyako	Kom/Kom, Pidgin, English, Kom Land	Food, delicacy
Auricularia auricula (Hooker)Underwood	Aghog (ughog), Cocombiyako	Kom/Kom, Pidgin	Food in most tribes
Pleurotus tuberregium (Fr.)Singer	Aghog (ughog), Cocombiyako	Kom, Pidgin	Food, delicacy for important members of the community
Termitomyces titanicus Pegler & Piearce [b]	Pohwett, Lemukwali	Baligham, Marova, Hausa	Food, traditional medicine
T. robustus (Beeli)R. Heim [c]	Kep, Pohwett	Baligham	Food
T. clypeatus R. Heim	No specific name	Baligham	Food
T. mammiformis R. Heim	No specific name	Baligham	Food
Pleurotus ostreatus (Jacq. : Fr.)Kumm. [d]	Aghog Uboh	Kom/Batibo	Food
P. pulmonarius (Fr.)Quélet [d]	Aghog Uboh	Kom/Batibo	Food
Pleurotus sajor-caju (Fr.)Singer [d]	Aghog Uboh	Kom/Batibo	Food

[a] Species commonly harvested around palm trees (*Elais guinensis*) across the country, which are considered a delicacy for most cultures in Cameroon. Traditional food based on these species is "Achu".

[b] Abundant species in northwest and western provinces where it is considered as a delicacy for children, or as a tonic for patients recovering from illness and diabetic patients.

[c] Species growing predominantly in the southwestern provinces where it is considered as a delicacy.

[d] Species cultivated commercially on palm and maize wastes by non-governmental organizations, which use spawn bought commercially.

(Yongabi *et al.*, 2004)

Ethnomycology information through questionnaires (Dounanla-Meli, 2007)

Found mushrooms to be used as food and medicine

CURRENT ETHNOMYCOLOGICAL KNOWLEDGE

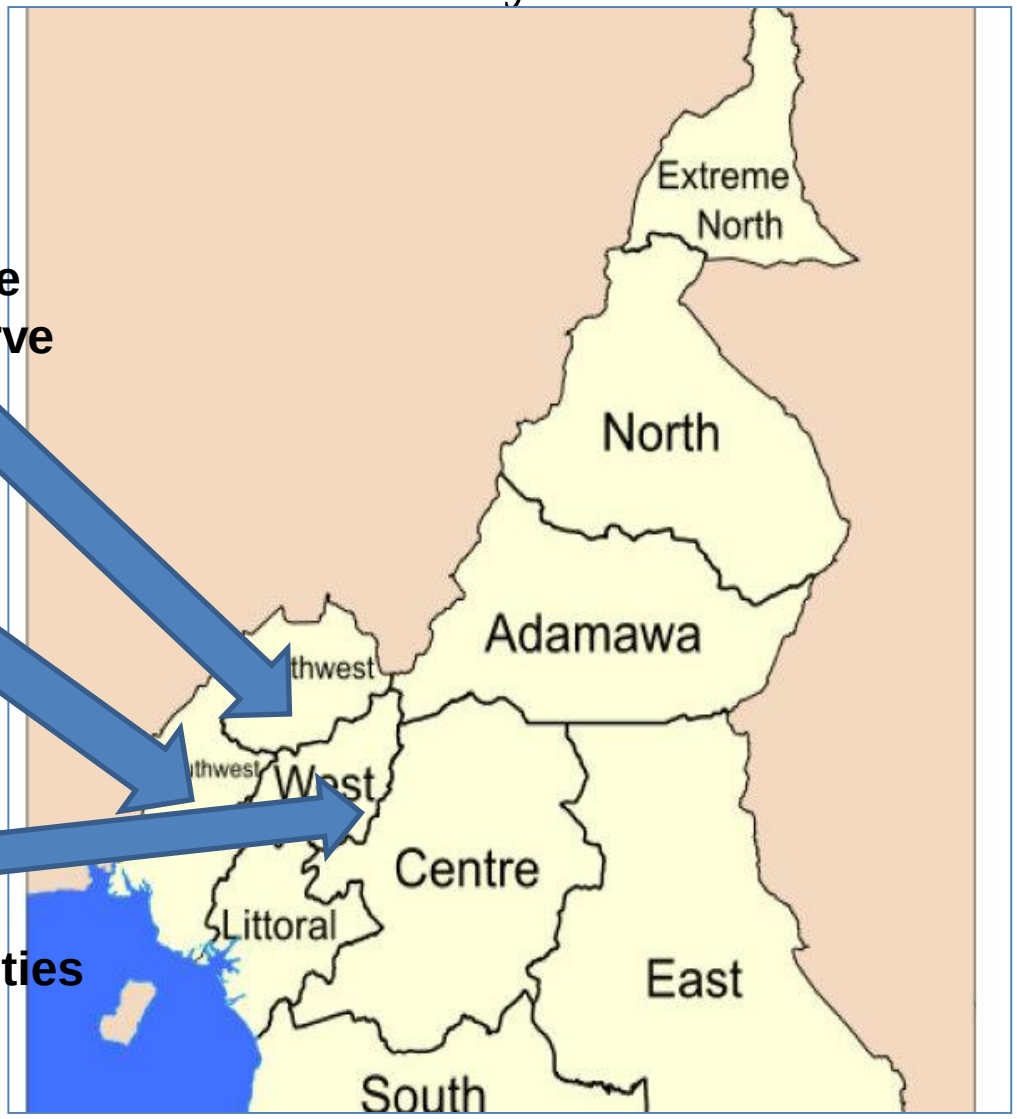
MY STUDY

Study Area

Kilum-Ijim,
Bafut forest reserve
Awing Forest reserve

Mount Cameroon Region

Bamoun communities



2011-2019

Figure 1: Map of Cameroon showing study site

METHODOLOGY

- Semi-structured questionnaires, focus group discussion, community group discussion and pictorial method(show-and-tell method) was used to collect information.

Focus Group with Ikata women

Community Group with Bova women

Pictorial presentation in Bokwango

RESULTS

- Ethnomycological findings revealed that mushrooms were used as food, medicine, and mythology.
- In the Mount Cameroon region species used for ethnomedicine belonged to several genera, including Termitomyces, Auricularia, Daldinia, Pleurotus, Russula, Trametes, Chlorophyllum, and Ganoderma (Kinge *et al.*, 2011).
- Mushrooms were also used as love charms, for dispelling evil spirits, and as part of cultural festivals.

Table 1: Some Edible and medicinal mushrooms in the Mount Cameroon Region

Scientific names	Traditional Bakweri name	Uses/Edibility	Medicinal and mythological uses
Termitomyces sp.	Lysolonde or Mwime	Food /Medicine/Mythology	Used together with alligator pepper to dispel evil spirits and to treat rheumatic pain.
Pleurotus tuberregium	Etolo	Food	Used to treat paralysis
Dictophora indusiata	Yomayangwa	___	Causes weak low
Russula emetica	Wotole	Food	Treatment of pile and abdominal side pain in children
Lepiota cristata	Mophinde	Food	Used to treat convulsions in children
Auricularia auricula	Ewunde	Food	Use to boost up the immune system

Table 1 continues

***Pleurotus* spp.**	**Luni**	**Food**	**Used to treat foot poisoning and to prevent children from being initiated by mermaids (“Leingu”)**
Daldinia concentrica	NK	___	Used to treat scars and for decoration
Coprinus spp.	Linye	___	Used to treat infertility in women
Agaricus spp.	Egbe-egbe	Food	___
Ganoderma sp.	Mbatatu	___	Used to treat internal growth, heart problem, cancer and for decoration
Chlorophyllum molybdites	___	Food	Causes impairment and hallucinations
Flavolus spp.	Ngote	Food	___

Kilum-Ijim Communities

- In the Kilum Ijim communities, eight species of mushrooms were reported as edible, and nine species was used as medicine in traditional health care.
- It is worth noting that *Polyporus dictyopus* was reported for the first time as an edible mushroom species.

Table 2: Medicinal Mushroom used by the communities of Kilium-Ijim

Species	Ailment treated	Method of preparation	Method of admin
Auricularia polytricha	Nausea in pregnant women	Cooked with soup	Oral
Daldinia concentrica	Hypertension	Sliced and boiled with other herbs	Oral
Ganoderma applanatum	Builds up immune system	Boiled in water	Oral
Lentinus squarrosulus	System cleansing	Cooked with soup	Oral
Polyporus dictyopus	Stomach aches and head aches	Boiled with other herbs	Oral
Termitomyces microcarpus	Bone strengthening in children and Fever	Cooked with soup, boiled in water and drunk	Oral
Trametes versicolor	Strengthens immune system	Boiled in water and drunk	Oral
Vascellum pretense	Fever	Mixed with other herbs and boiled	Oral
Xylaria sp.	Hypertension, fever	Added to herbal preparations	Oral

Fig. 3 Edible and medicinal mushrooms known and utilized by inhabitants in Kilum-Ijim Mountain Forest, Northwest Region, Cameroon. **a** *Auricularia polytricha*, **b** *Daldinia concentrica*, **c** *Ganoderma applanatum*, **d** *Laetiporus sulphureus*, **e** *Polyporus dictyopus*, **f** *Polyporus teniuiculus*, **g** *Termitomyces microcarpus*, **h** *Termitomyces* sp. 1, **i** *Termitomyces* sp. 2, **j** *Lentinus squarrosulus*, **k** *Termitomyces straitus*, **l** *Trametes versicolor*, **m** *Vascellum pretense*, **n** *Xylaria sp.*

(Teke *et al.*, 2018)

Bafut Communities

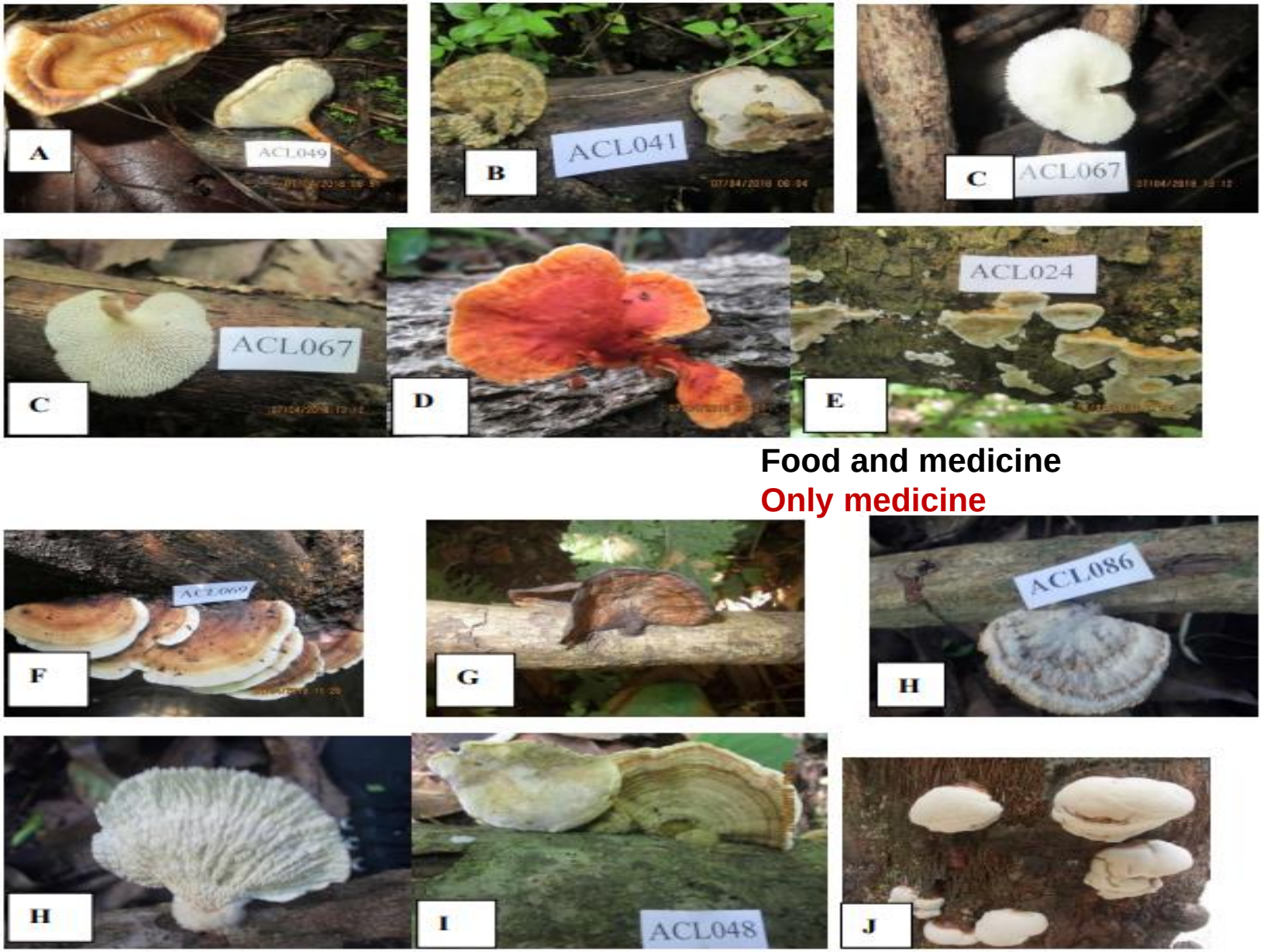


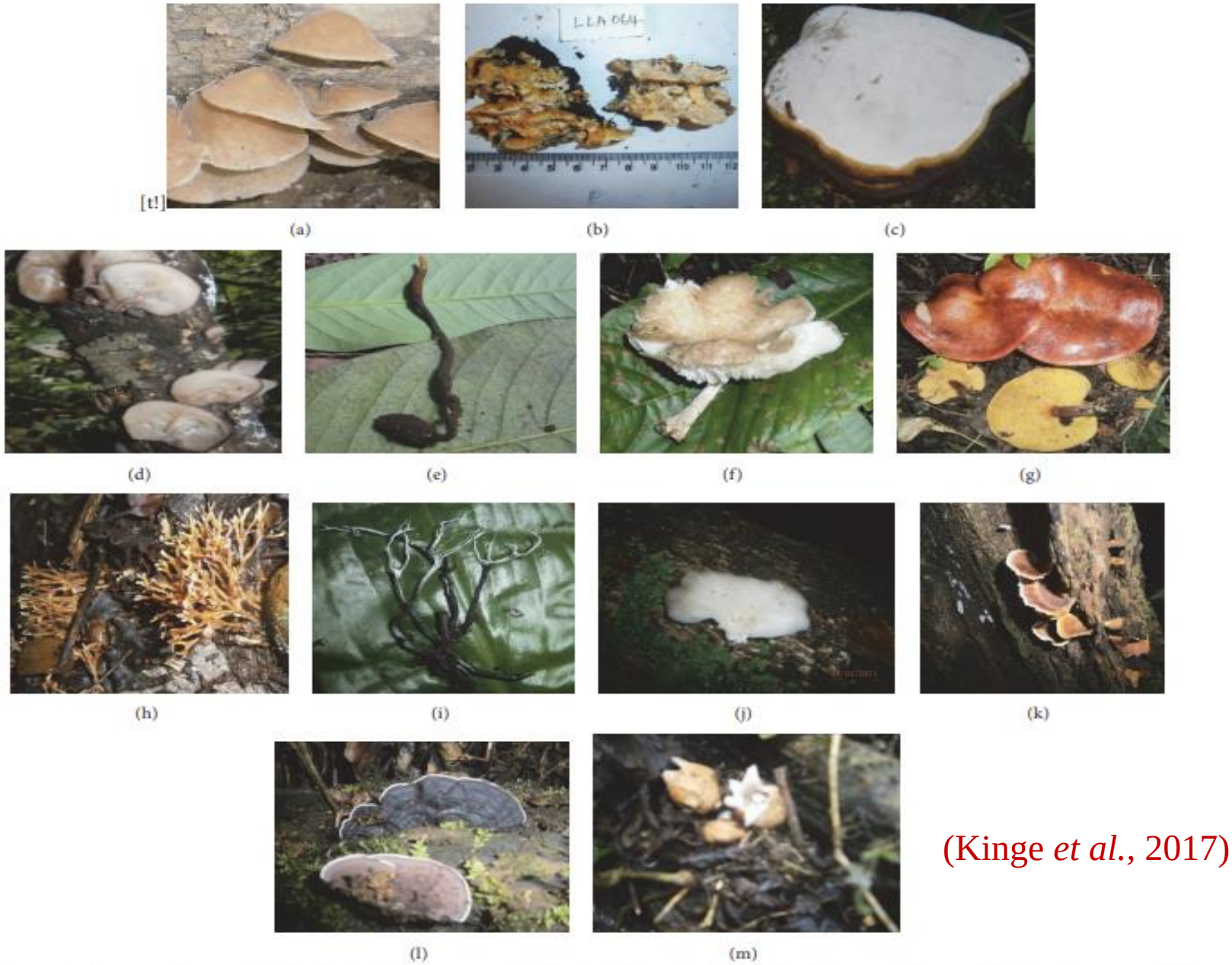
Figure 1. Some Polypores identified from the Bafut forest, Cameroon **A)** *Microporus xanthopus* **B)** *Microporus vernicipes* **C)** *Favolus acervatus* **D)** *Trametes sanguinea* **E)**

(Kinge *et al.*, 2019)

Bamoun communities

- The Bamoun people use at least 40 species of mushrooms for either food or medicine.
- These species belong to 8 genera: Auricularia, Cantharellus, Ganoderma, Pleurotus, Lactarius, Lactifluus, Russula, and Termitomyces.
- Species of the genera Lactarius, Lactifluus, Russula, and Termitomyces were most often used for food.
- Whereas Ganoderma spp. and *Pleurotus tuber-regium* are mainly exploited for medicinal purposes (Njouonkou *et al*., 2016).

Awing Communities



(Kinge *et al.*, 2017)

FIGURE 4: Some mushrooms in the Awing forest reserve: (a) *Auricularia auricular*, (b) *Laetiporus sulphureus*, (c) *Ganoderma* sp., (d) *Auricularia delicata*, (e) *Cordyceps robertsii*, (f) *Oudemansiella canarii*, (g) *Gyrodon merulioides*, (h) *Ramaria* sp., (i) *Xylaria ianthinovelutina*, (j) *Pleurotus ostreatus*, (k) *Stereum ostrea*, (l) *Trametes* sp., and (m) *Geastrum triplex*.

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FUTURE PERSPECTIVES

- Extensive macrofungi biodiversity surveys should be undertaken, and all species should be identified morphologically and molecularly before proceeding with ethnomycological studies.
- Continually updating the database with ethnomycological information.
- Determine the efficacy and safety of edible and medicinal mushrooms.

- Determine the mineral and nutrient content for edible mushrooms.
- Identify the bioactive compounds in medicinal mushrooms for drug development
- Establishment and implementation of fungi conservation laws.

CONCLUSION

- This research underscores the need for the continuous documentation of traditional knowledge of edible and medicinal mushrooms for their diverse usage.
- There are similarities and variations in ethnomycological knowledge in Cameroon.
- There should be implementation of laws and policies in Cameroon on fungi conservation.

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