

# Quality and harvesting specifications of some medicinal plant parts set up by some herbalists in the Eastern Region of Ghana

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## **Abstract**

An ethnobotanical survey was carried out in some districts namely, Akuapem North and South, Kwahu South and the Afram Plains of the Eastern Region of Ghana. The research was to investigate the quality standards and harvesting procedures of some medicinal plant parts used in herbal preparations by herbalists in the region. The results indicate that quality standards such as specified plant parts, size specification, quality specification, specified packaging, good storage to prevent dust, growth of mould and other foreign matter were strictly implemented as required by Herbalists or Traditional Medical Practitioners in the region.

## **Introduction**

Man has been dependent on plants from time immemorial. His primary needs, which include food, clothing and shelter are supplied by nature, and subsequently improved upon through the application of science and technology. In fact, global exploration and European colonization of Africa were all aimed primarily at botanical exploration. The intimate relationship between man and plants now forms the core of the inter-disciplinary science known as ethnobotany. The plants recognized to be valuable as food, medicine, shelter, etc., form the link between communities and their surrounding vegetation.

It is estimated that today, plant materials are present in or have provided the models for 50% Western drugs (Robbers, 1996). The primary benefits of using plant-derived medicines are that they are relatively safer than synthetic alternatives, offering profound therapeutic benefits and more affordable treatment. Over 90% of the drugs in hospitals today have been introduced the last 50-60years; one can understand the important role that traditional medicine has played in the past (Boye, 1985). The World Health

Organisation (WHO) estimates that up to 80% of the world's people rely on plants for their primary health care, since, western pharmaceuticals are often expensive, inaccessible or unsuitable.

In China, for example, traditional medicine is largely based on some 5,000 plants and is used to treat 40% of urban patients and 90% of patients in rural areas. In 1991, more than 700,000 tones of plant material were used for medicine, 80% collected from the wild (Botanic Gardens Conservation International, 2002).

In industrialized countries, the use of plants has declined but plants have contributed more than 7,000 different compounds in use today as heart drugs, laxatives, anti-cancer agents, hormones, contraceptives, diuretics, antibiotics, decongestants, analgesics, anesthetics, ulcer treatments and anti-parasitic compounds (Botanic Gardens Conservation International, 2002).

The successful health-care system in most developing countries is due to the support provided by traditional medicine to that of orthodox medicine. The present health status in Ghana would not have been attained without the involvement of traditional medicine in our health delivery system. Available figures show that between 60 – 70% of Ghanaians rely on traditional medical systems for their health needs (Sarpong, 2000).

The Centre for Scientific Research into Plant Medicine situated at Mampong-Akuapem and a host of Traditional Medical Practitioners in the Esatern Region of Ghana involved in the production of herbal decoctions, ointments and powders mainly rely on plant suppliers who get their consignments from the indigenous people in their catchment areas. The alarming rate at which some of the plant species are being harvested had really endangered them.

The aim of this study is to assess the medicinal plant parts harvested and marketed by the indigenous people; plant parts harvested (including size specification), folk methods of medicinal plant collection, unit package/prize, quality requirements (cleaning, drying and storage) and recipe of medicinal plant parts supplied to Herbalists or Traditional Medical Practitioners in the Eastern Region of Ghana.

## **Materials and Methods**

## **Study site**

The study was carried out in two districts, namely; Akuapem North and Kwahu South in the Eastern Region of Ghana. The two districts lie between latitude  $5^{\circ}30'N$  and  $7^{\circ}30'N$  and longitude  $0^{\circ}30'W$  and  $1^{\circ}30'W$ . Kwahu South District covers an area of 5.306 acres while Akuapem North District also covers 6.79 acres of the land surface of Ghana. The two districts are very hilly with the latter district (Akuapem North District) ecological classified as *Antiaris – Chlorophora* association.

## **Climate**

The study area again lies within three different climatic zones; these are the dry equatorial type, the tropical continental type and the wet semi-equatorial type with two main rainfall seasons. The wet semi-equatorial zone, which characterizes the Kwahu South District has a mean monthly rainfall of 154.3mm. The first rainfall maximum occurs from May to June with the heaviest in June. The second rainy season is from September to October. The tropical continental and dry equatorial type characterize the Akuapem North District have mean monthly rainfall ranging between 111.1mm -137.1mm.

The average annual temperatures of Kwahu South and Akuapem South Districts are around  $25.4^{\circ}C$  and  $27.8^{\circ}C$  respectively, and the highest peaks are during the main dry season, i.e. December to March and the lowest peaks during the short dry season, i.e. August.

## **Methods**

The indigenous people in the survey or catchment areas were interviewed for indigenous knowledge of medical plants collection, quality requirements (cleaning, drying and storage). Questionnaires were used so as to get more representative data about the medicinal plant parts harvested by the indigenous communities involved.

## **Results**

The results presented below provide documentation data on the scientific names, local names, parts harvested, period harvested, collection method, size specification of parts, quality specification, unit packaging of the plant parts and recipe of the medicinal plant parts harvested:

***Cryptolepis sanguinolenta* (Lindl.) Schtr.**

Family: Annonaceae

Local name: Nibima, Kadze, Gangamau



Plate 1a : Aerial part of the plant species



Plate 1b : The bi-nature of the fruit of the plant species



Plate 1c: Brown seed with hairy appendage



Yellow coloration of cut surface of a root

Plate 1d: Harvested roots of *Cryptolepis sanguinolenta* showing yellow colorations

Part harvested: Root

Period harvested: Throughout the year

Collection method: Digging

Size specification: Not larger than 2.5 by 5.0cm

Quality specification: Fresh roots washed, sun-dried free from moulds, other foreign matter and moisture content not exceeding 5.6%.

Unit packaging: 25kg

Recipe: The harvested roots plus other plant materials are used to prepare anti-malaria decoction.

***Clausena anisata* (Willd) Hook. f. ex Benth**

Family: Rutaceae  
Local name: Sesadua, Samanobere, Eduasia.  
Part harvested: Root bark  
Period harvested: Throughout the year  
Collection method: Digging



Fruits of *Clausena anisat*

Plate 2: Showing aerial part of *Clausena anisata* with fruits

Size specification: Not larger than 2.5 by 5.0cm

Quality specification: Fresh roots washed, sun-dried free from moulds, other foreign matter and moisture content not exceeding 5.6%.

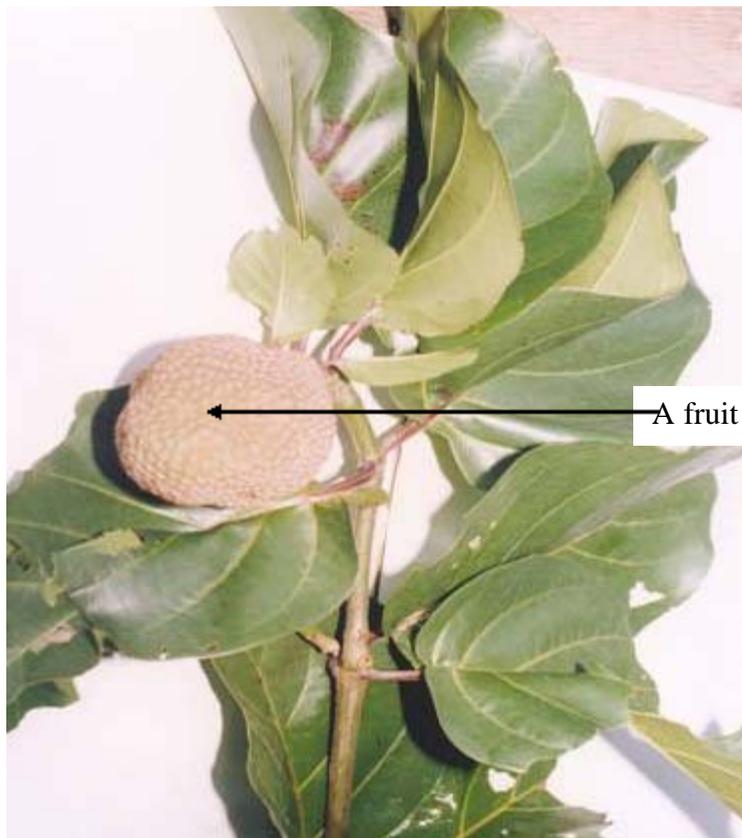
Unit packaging: 30kg

Recipe: The harvested roots plus other plant materials are used to prepare ointment to treat rheumatoid arthritis.

***Nauclea latifolia* Sm.**

Family: Rubiaceae

Local name: Kisia, Ekusiawa, Oyefa, Telede, Nyimo.



A fruit of *Nauclea latifolia*

Plate 3: An aerial part of *Nauclea latifolia* showing a fruit.

Part harvested: Root

Period harvested: Throughout the year

Collection method: Digging

Size specification: Not larger than 2.5 by 5.0cm

Quality specification: Fresh roots washed, sun-dried free from moulds, other foreign matter and moisture content not exceeding 5.6%.

Unit packaging: 30kg

Recipe: The harvested roots plus other plant materials are used to prepare ointment to treat rheumatoid arthritis.

### ***Khaya senegalensis* (Desr.) A. Juss**

Family: Meliaceae

Local name: Kuntunkuri, Okum, Logo, Kuga, Madachi  
Part harvested: Stem bark  
Period harvested: Throughout the year  
Collection method: Cutting



Stem bark of *K. senegalensis*

Plate 4: Harvested stem bark of *Khaya senegalensis*

Size specification: Not larger than 2.5 by 5.0cm

Quality specification: Fresh bark scrapped free of cork and lichen, sun-dried, free from moulds, other foreign matter and moisture content not exceeding 7.2%.

Unit packaging: 40kg

Recipe: The harvested dried stem bark plus other plant materials are used to prepare tonics for anaemia and appetizers.

### ***Balanites aegyptica* (Linn.) Del.**

Family: Balanitaceae

Local name: Kobowoa, Ohwirem, Kokordjo, Aduwa

Part harvested: Stem bark

Period harvested: Throughout the year

A thorn of *B. aegyptica*

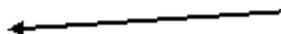




Plate 5: An aerial part of *Balanites aegyptica* showing fruits and thorns.

Collection method: Cutting

Size specification: Not larger than 2.5 by 5.0cm

Quality specification: Fresh bark scrapped free of cork and lichen, sun-dried, free from moulds, other foreign matter and moisture content not exceeding 7.5%.

Unit packaging: 25kg

Recipe: The harvested dried stem bark plus other plant materials are used to prepare ointment for the treatment of skin Infection.

### ***Bridelia ferruginea* Benth**

Family: Euphorbiaceae

Tribe: Phyllanteae

Local name: Opam fufuo, Flatsho, Ekpazenra, Kimi.

Part harvested: Leaves

Period harvested: Throughout the year

Brown stem bark of *B. ferruginea*



Plate 6: An aerial part of *Bridelia ferruginea* with brown stem bark

Collection method: Plucking

Size specification: Mature leaves

Quality specification: Air or sun-dried, free from moulds, other foreign matter, snappy breaking and moisture content not exceeding 8.6% by weight.

Unit packaging: 10kg

Recipe: The plucked dried leaves plus other plant materials are used to prepare a decoction for the treatment of Diabetes.

### ***Xylopi aethiopica* (Dunal) A. Rich**

Family: Annonaceae

Local name: Hwentaaa, Hwentia, Soo, Ezinli, Tsuo, Kimba

Part harvested: Fruit

Period harvested: October to January

Collection method: Plucking

Size specification: Ripe mature fruits

Quality specification: Fruits must be fresh, air or sun-dried, free from deterioration such as mould growth or rot and other foreign matter.

Unit packaging: 20kg

Recipe: The dried fruits plus other plant materials are used to prepare an ointment for rheumatoid arthritis, joint pains and a decoction for anaemia and anorexia.

***Morinda lucida***

Family: Rubiaceae

Local name: Konkroma

Part harvested: Leaves

Period harvested: Throughout the year

Collection method: Plucking

Size specification: Mature leaves

Quality specification: Air or sun-dried, free from moulds, other foreign matter, snappy breaking and moisture content not exceeding 8.6% by weight.

Unit packaging: 10kg

Recipe: The plucked dried leaves plus other plant materials are used to prepare a decoction in treating Typhoid fever.

***Lippia multifolia* Moldenke**

Family: Verbenaceae

Local name: Saanunum, Na suru, Afu-loti.

Part harvested: Leaves or whole plant

Period harvested: Throughout the year

Collection method: Plucking



Opposite arrangement of leaves of *L. multifolia*

Plate 7: Showing aerial part of *Lippia multifolia*

Size specification: Mature leaves

Quality specification: Oven drying, free from moulds, other foreign matter, snappy breaking and moisture content not exceeding 8.6% by weight.

Unit packaging: 10kg

Recipe: The plucked dried leaves are used to prepare tea, and are good for mild hypertension, laxative as well as febrifuge.

### ***Capparis erythrocarpus* Isert**

Family: Capparidaceae

Local name: Apana, Patahofuo, ɔkyerabran

Part harvested: Root bark

Period harvested: Throughout the year

Collection method: Digging



Root bark of *C. erythrocarpus*

Plate 8: Root bark of *Capparis erythrocarpus*

Size specification: Root washed, peeled and cut into pieces not exceeding 2.5 by 5.0cm.

Quality specification: Air or sun-dried, free from moulds, other foreign matter, snappy breaking and moisture content not exceeding 10.2% by weight.

Unit packaging : 30kg

Recipe: The dried root bark plus other plant materials are used to prepare a decoction for treating arthritis.

### ***Zanthoxylum xanthoxyloides* Lam.**

Family: Rutaceae

Local name: Yea, Bεbun, Kantu, Anyenε, Haatζo, Faskori  
Part harvested: Root bark  
Period harvested: Throughout the year  
Collection method: Digging  
Size specification: Root washed, peeled and cut into pieces not exceeding 2.5 by 5.0cm.  
Quality specification: Air or sun-dried, free from moulds, other foreign matter, snappy breaking and moisture content not exceeding 10.2% by weight.  
Unit packaging:  
per kilo: 30kg

Recipe: The dried root bark plus other plant materials are used to prepare an ointment for the skin and joints .

***Trichilia monadelpha* (Thonn.) J. Wilde**

Family: Meliaceae  
Local name: Otan-nuru, Tenuba  
Part harvested: Stem bark  
Period harvested: Throughout the year  
Collection method: Cutting  
Size specification: Not larger than 2.5 by 5.0cm  
Quality specification: Fresh bark scrapped free of cork and lichen, sun-dried, free from moulds, other foreign matter, snappy breaking and moisture content not exceeding 8.9%.  
Unit packaging: 40kg

Recipe: The harvested dried stem bark plus other plant materials are used to prepare a decoction for the treatment of nausea and stomach pains.

***Monodora myristica* Dunal**

Family: Annonaceae  
Local name: Awerewa, Abotokuradua, Ayerew-amba, Avonoba, Yikwi, Maalai  
Part harvested: Seed  
Period harvested: October to December  
Collection method: Picking

Size specification: Mature fruits with seeds.

Quality specification: Air or sun-dried, free from moulds, other foreign matter, and moisture content not exceeding 5.6% by weight.

Unit packaging: 5kg

Recipe: The dried seed plus other plant materials are used to prepare a decoction for treating Pile or Hemorrhoid.

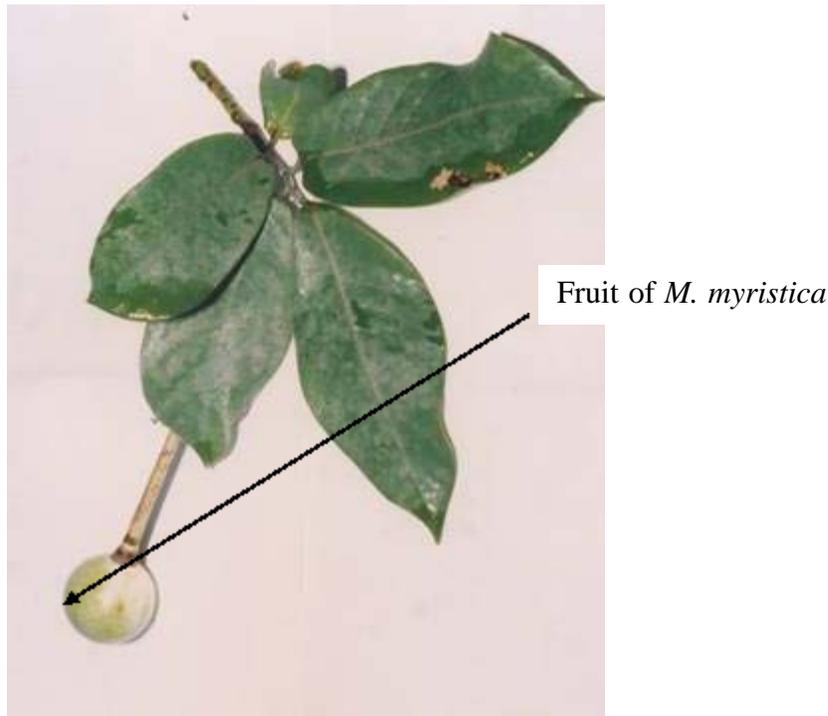


Plate 9: An aerial part of *Monodora myristica* with fruit on a stalk

***Piper guineensis* Schum. & Thonn.**

Family: Piperaceae

Local name: Sesaa, Sasima, Saseasenea, Gbɔwisi, Kālě

Part harvested: Seed

Period harvested: October to December

Collection method: Picking

Size specification: Mature fruits with seeds

Quality specification: Air or sun-dried, free from moulds, other foreign matter, and moisture content not exceeding 5.6% by weight.

Unit packaging: 1kg

Recipe: The dried seed plus other plant materials are used to

prepare an ointment for treating Joint pains.

***Gardenia ternifolia* Schum. & Thonn.**

Family: Rubiaceae

Local name: Peteprebi, Namprane, Kpetekplebii, Flife, Dasuri

Part harvested: Seed

Period harvested: April to August and September to early November

Collection method: Picking

Size specification: Mature fruits with seeds

Quality specification: Air or sun-dried, free from moulds, other foreign matter, and moisture content not exceeding 5.6% by weight.

Unit packaging: 30kg

Recipe: The dried seed plus other plant materials are used to

Prepare fefe powder for the treatment of palpitation of the heart.

***Ageratum conyzoides***

Family: Compositae

Local name: Guakuro, Gu-ekura, Adwowa-kuro

Part harvested: Aerial part

Period harvested: Throughout the year

Collection method: Cutting

Size specification: Required quantity

Quality specification: Air or sun-dried, free from moulds, dust, other foreign matter, and moisture content not exceeding 8.6% by weight.

Unit packaging: 10kg

Recipe: The dried aerial parts plus other plant materials are used to

prepare a decoction for the treatment of infertility in women.

**Discussion**

Medicinal plant parts have become good business for the people of Eastern Region, and Herbalist or Traditional Medical Practitioners do purchase their requirements from collectors or gatherers. Since, medicinal plants are mainly harvested from the wild and form about 50% of Western drugs as specified by Botanic Gardens Conservation International (2002) and Robbers (1996). Therefore, the above

imputes, in terms of the local names of the correct plant materials on sacks used for collection, adherence to the right size specification as well as the quality specification as indicated down the results, that have been given to the plant collectors or gatherers had brought about uniformity in terms of size, qualities and avoidance of complications of herbal products (decoction, ointment and powders).

### **Conclusion**

These measures adopted by Herbalists or Traditional Medical Practitioners in the Region had greatly improved the quality and safety of their herbal products. Herbalists or Traditional Medical Practitioners in other regions should be encouraged to follow the examples laid down by our colleagues in the Eastern Region of Ghana, since about 90% of orthodox medicine in use is plant based.

### **Acknowledgement**

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### **References**

- BOTANIC GARDENS CONSERVATION INTERNATIONAL. 2000. Plants as Medicine. Padua Botanic Garden, Foxgloves.
- BOYE, G.L. (1985): Traditional Medicine: The Ghanain Approach, In: C.J. Chetsanga and C.Y. Wereko-Brobby (eds.) Tropical Plants and Aromatic Plants. Proceeding of the Workshop/Seminar, University of Zimbabwe, Harare, 3-7 June 1985, pp. 37- 43.
- ROBBERS, J.M., SPEEDIE and TYLER, V. 1996. Pharmacognosy and pharmacobiotechnology. Williams and Wilkins, Baltimore. P. 1 – 14.
- SARPONG, K. 22<sup>nd</sup> March, 2000. Traditional Medicine for the 21<sup>st</sup> Century in Ghana – The Role of the Scientist/Resaercher. Commonwealth Lecture Theatre, University of Ghana as part of Traditional Medicine Week Celebrations for the year 2000.