

ASSESSMENT OF KNOWLEDGE AND CONSUMPTION PATTERNS OF GARLIC AND THE USE OF PHYTOTHERAPY/AROMATHERAPY IN TREATMENT OF DISEASES IN TOGO

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ABSTRACT

Purpose: The objective is to study the garlic consumption by the population with the possible impact of herbal medicine and aromatherapy on the health of consumers. **Methods:** A cross sectional study was conducted from June to July 2018 among people aged 20 to 50 years and over. Data were collected using a pre-tested questionnaire and transfer via network. Participants were surveyed about their knowledge and consumption habits of garlic, other medicine herbal and their knowledge of phytotherapy/aromatherapy. **Results:** It was made on a panel of 430 people with 57% of Women. Regarding the frequency of intake and the method of consumption, 98.7% consume garlic, mostly in the form of raw garlic 29% and cooked garlic 55%, at varying frequencies ranging from one to four times a month, up to daily consumption. The amount is usually one pod per shot. 80% of respondents believe that garlic has health benefits. In the case of

phytotherapy/aromatherapy, 51% of respondents use herbal medicine and say it is benefit. In addition, more than 60% of respondents think it would be beneficial to develop herbal medicine. **Conclusion:** garlic and other medical herbal are well known and consumed by people in Togo. Data on actual food intake is useful to public health. It is important to inform the public at large of the recognized benefits of phytotherapy/aromatherapy that will provide solutions to their health problems.

KEYWORD: Garlic, herbal medicine, benefits, consumption, Togo.

INTRODUCTION

In all developing countries such as Togo, medicinal plants are the most used means in rural areas to solve public health problems. According to some authors^{[1][2]} more than 80 % of the African population use plants for their health care needs.

In Togo, work on medicinal plants has made possible to draw up a non-exhaustive list of plant species used in traditional medicine by the populations.^[3, 4] The study of biological and chemical properties has shown that Togolese flora is a real therapeutic and nutritional potential to treat or avoid many diseases.^[5] This is the case of some authors^{[6][7]} who showed the potential of several medicinal plants in the treatment and control of infections. These infections are one of the leading causes of death and economic loss. These plants have an interest in human health for their antibacterial activities,^[4,8,9] antifungal^[10] and antiplasmodial,^[11, 12] antidiabetic agents.^[13]

Garlic is native to Central Asia. It is thought to be derived from the Asian species *Allium longicuspus*.^[14] In ancient times, it was used as a remedy to cure the infirm and rejuvenate the old.^[15]

In traditional medicine, garlic extract was used as an antidote for viper bites or scorpion stings.^[16] It also has protective effects against cardiovascular diseases, antibacterial and anticarcinogenic effects.^[1,8,17] Other properties, recognized as contraceptive virtues, bactericidal, diuretic, laxative, deworming, respiratory infections, skin diseases, wounds and symptoms of aging.^[3,15,18]

Today, it is used as a pulmonary, intestinal, and hypotensive antiseptic.^[16, 19, 20] Moreover, is clearly used in the kitchen of the whole world, for its scented properties but also taste.^[21-23] Garlic offers a range of uses. This plant can decorate multiple dishes as steamed vegetables, cod, and boiled eggs. It can also be eaten raw, cooked, chopped, crushed or whole, to flavor a dish, topping, stung in a meat, or even rubbed against bread. It is traditionally used as a condiment. In addition, garlic can be used in floral arrangements; this one perfumes the room.^[23] In order to obtain knowledge and consumption pattern of garlic and the use of medicinal herbal by the current Togolese population, it was necessary to carry out a study that will be make possible to determine the consumption, the different forms, as well as the

frequency of ingestion and the use of phytotherapy/aromatherapy. In addition, this study aims to highlight the potential benefits of garlic on the sample of consumers who responded to the questionnaire.

MATERIAL AND METHODS

Study setting and design

The study include all participant in the age of 18 and over about all sex and reside in Togo during the study test.

Sampling study

Having no prior data available for the calculation of the sample size, we assumed the consumption of garlic and the use of herbal medicine in Togo is 50%. Therefore, with parameters set at 5% for the precision and 5% for the significance level, at least 384 participants should be included the study. Participants were selected using convenience sampling: all people aged 18 years and over were approached to participate in the research tudy.

Data Collection

The data was collected using a well-structured questionnaire It contains 16 questions, the answers are in the form of simple, multiple choices or text to be written. This questionnaire was shared via social networks, as well as the pharmacy. The questionnaire included items such as: socio-demographic characteristics (gender, age), knowledge and consumption of garlic, knowledge and use of herbal medicine. The main questions included do you cook? Do you eat garlic? How frequency and how do you use it? What do you think about garlic benefits? Do you use herbal medicine? Which medicinal plant do you use? What do you think about herbal medicine? Do you think it is interesting to develop herbal medicine in Togo?.

Data processing and analysis

Data were entered into an Excel database and imported into IBM SPSS Statistics version 21 for analysis. Data entered into Excel were stored directly when the participants answer the questions and send online. Proportions were presented as descriptive statistics for all qualitative variables with their 95% confidence interval.

RESULTS

The study include 430 respondents. This study is conclusive, will allow the inclusion of herbal medicine and aromatherapy in a prevention process.

Socio-demographic characteristics of respondents

Respondent's socio-demographic data are presented in Table 1 below. With respect of gender among the respondent, the proportion of Men is 41.6% against 58.4% of Women. 56.7% of the population who answered this questionnaire is in the age group of 25-50 years old, followed by those under of 25 years old (40%). Unfortunately, the proportion of people over 50years old who participated is extremely low, and this does not allow us to obtain any exploitable result, although diseases generally affect this age group.

Table 1: Representative of gender and age groups of respondents.

| Gender | Less than 25 years old | 25 – 50 years old | More than 50 years old | Total |
|--------|------------------------|-------------------|------------------------|-------------|
| | N (%) | N (%) | N (%) | N (%) |
| Female | 84 (48,8) | 161 (66,0) | 6 (42,9) | 251 (58,4) |
| Male | 78 (45,3) | 93 (38,1) | 8 (57,1) | 179 (41,6) |
| Total | 172 (40,0) | 244 (56,7) | 14 (03,3) | 430 (100,0) |

N: number of respondent

Knowledge and consumption of garlic

In table 2, figure 1 and figure 2, it was presented the knowledge of garlic consumption. Regarding the frequency of intake and the method of consumption in table 2, 89.9% of those questioned cook food and 96.5% consume garlic. In addition, 28.7% use garlic every day; 42.9% one to four times a week and 21.2% one to four times a month. Garlic is part of their diet; it is very often use as a condiment in various dishes. However in Figure 2, respondents mainly consumed 55.3% cooked garlic, 28.1% raw garlic, and 12.9% garlic powder. In Figure 1, the amount ingested is either less or greater than a pod whose proportions are respectively 28.3% and 24.4%. The proportion of respondents who do not know is 27.6% whereas those ingesting one pod per dose, that is to say about 5 grams, was 19.5%.

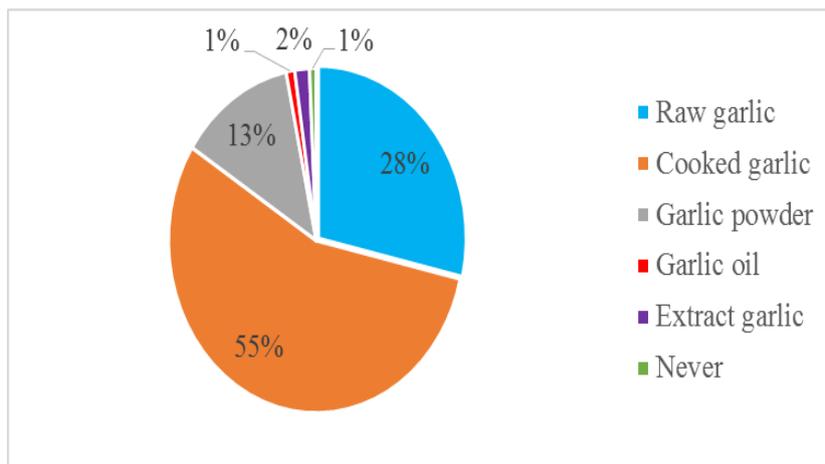


Figure 1 : Representative of different form of garlic used by respondent.

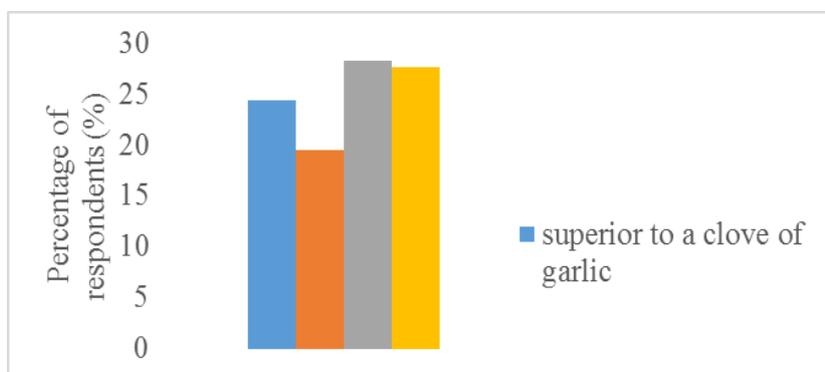


Figure 2 : amount of garlic consumed by respondent.

Table 2: Knowledge and garlic use.

| Gender | Do you Cook ? | | Do you eat garlic? | | Frequency of garlic used, n (%) | | | | | |
|--------|---------------|------------|--------------------|------------|---------------------------------|----------|-----------|-----------|-----------|------------|
| | N (%) | Yes, n (%) | N (%) | Yes, n (%) | N (%) | A, n(%) | B, n(%) | C, n(%) | D, n(%) | E, n(%) |
| Female | 245 (57,6) | 205 (83,7) | 245 (57,0) | 232 (94,7) | 232(56) | 12 (5,2) | 27 (11,6) | 71 (16,5) | 87 (30,6) | 48 (20,7) |
| Male | 180 (42,4) | 177 (98,3) | 185 (43,0) | 183 (98,9) | 183(44.1) | 02 (1,1) | 4 (2,2) | 17 (9,3) | 91 (49,7) | 71 (38,8) |
| Total | 425 (100) | 382 (89,9) | 430 (100) | 415 (96,5) | 415 (100) | 14 (3,4) | 31 (7,5) | 88 (21,2) | 178(42,9) | 119 (28,7) |

N: number of respondent; A: Never; B: 1 to 4 times a years; C: 1 to 4 times a month; D: 1 to 4 times a week; E: Every day.

Knowledge about the benefits of garlic

Figure 3, represent the knowledge of garlic benefit for respondents health. In table 3, it shows that 77.7% of respondents believe that garlic has health benefits, the most common being (figure 3) : "Garlic is good for you", "It's good for blood circulation" also has "anticoagulant, anti-infectious, antiseptic, antioxidant, anticancer properties", "benefits for better digestion",

"garlic stimulates the immune system"... However 20.2% do not know the supposed benefits of Garlic.

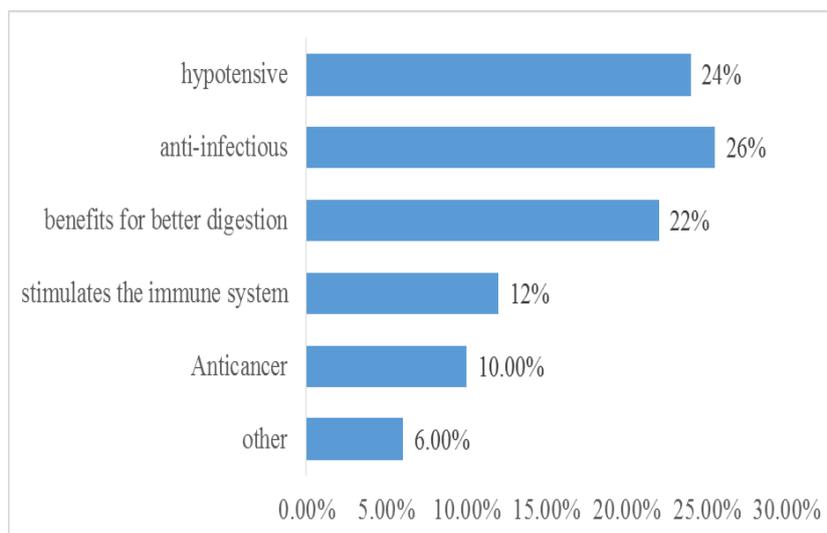


Figure 3: The benefits of garlic described by the respondents.

Knowledge of the herbal medicine use

Table 3 and Figure 4, represent the knowledge and benefits of medicinal plant. In table 3, 42.3% of respondents use herbal medicine against 44% do not use herbal medicine. In addition, 64.2% of respondents think it would be beneficial to develop herbal medicine; but 34.4% do not know or not answer the question. However, 1.4% respondents say no for develop herbal medicine in Togo. In Figure 4, 51% say that the use of herbal medicine is benefit. However, 44% of participants do not know or remain unanswered about it. In table 4, respondent use some herbal to fight in general.

Table 1: Knowledge of medicinal plants and their benefits.

| | N (%) | Yes, n (%) | No, n (%) | I don't know, n (%) |
|------------------------------------|-----------|------------|-----------|---------------------|
| Health benefits of garlic | 430 (100) | 334 (77,7) | 9 (2.1) | 87 (20.2) |
| Herbal medicine use | 430 (100) | 182 (42.3) | 189 (44) | 59 (13.7) |
| Development herbal medicine | 430 (100) | 276 (64.2) | 6 (1.4) | 148 (34.4) |

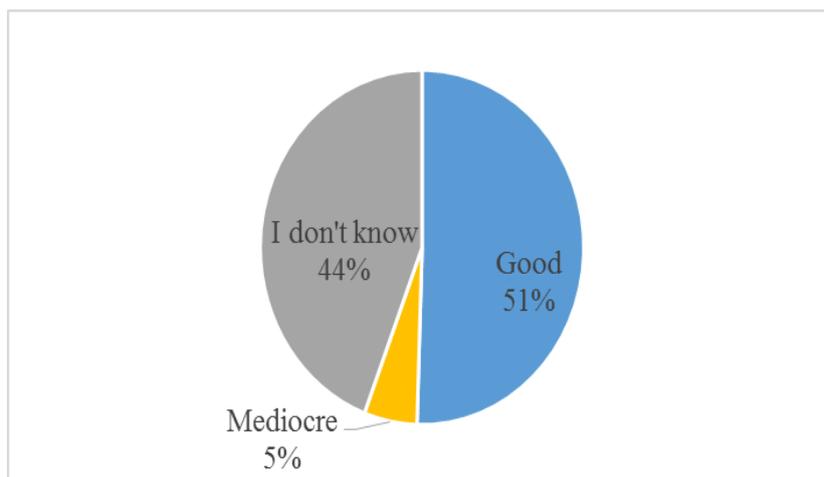


Figure 4: Percentage of respondent about the efficiency of medical herbal use.

Table 2: The most cited medical plant by the respondent.

| species and family | Part of the Herbal used | Some therapeutic indication |
|--|---------------------------------|--|
| Anogeissus leiocarpus (Combretaceae) | Leaf, stem, root | Antiparasite, antimalaria, wound, eczéma, psoriasis, anthrax, furoncles and ulcer |
| Lannea barteri (Oliv.)(Anacardiaceae) | leaf, root | Vermifuge |
| Piliostigma thonningii (Caesalpiniaceae) | leaf, root | Dermatoses, dysenteries |
| Pseudocedrela Kotschy (Meliaceae) | Root, bark | Parasitic, gastrointestinal antidyenteric |
| Pericopsis laxiflora (Fabaceae) | Root, stem | dysenterie |
| Vitellaria paradoxa (Sapotaceae) | Bark of trunk, Nuts, leaf, root | Infantile malaria, toothache and dental caries, anti-venomous, upset stomach, diarrhea, fever, conjunctivitis, gastric problems, healing |
| Psidium guajava (Myrtaceae) | Leaf, stem bark | Diarrhea, analgesic, anti-bacterial and anti-inflammatory, sore throat and dental pain |
| Carica papaya (papaya) (Caricaceae) | Leaf, fruit and root | Laxative, vermifuge, purgative, analgesic, relaxing, protects against the induction of colon cancer anti-inflammatory, antihelminthic |
| Euphorbia hirta (Euphorbiacées) | plantes | antiamoeba, anti-diarrheal and antiasthmatic. |
| Momordia charantia | leaf | Diabetes, would reduce the risk of stomach tumor, antiparasitic, antiviral and antimicrobial, against cholesterol, powerful aphrodisiac |
| Azadirachta indica (neem) (Meliaceae) | Bark, seeds, leaves | antimalaria |
| Picrilima nitida (Apocynaceae) | Bark, roots and seeds | Antimalarial, antileischmanial, Aptitrypanosomal, pains, intestinal worms |

| | | |
|---|---|---|
| Alstonia boonei (Apocynaceae) | bark and leaves | Diarrhea and malaria, skin diseases, epilepsy and asthma, to stop chronic dysentery, it reduces hypertension, it is reported benefits in pneumonia and lung cancer, it is effective for to reduce fevers. |
| Parquetina nigrescens (Asclepiadaceae.) | leaf | measles, intestinal worms, diarrhea, dysentery, |
| Cassia Alata Linn (Fabaceae). | Leaf, fruit | Ringworm and itchy skin, fever, liver stimulant, mild laxative and cardiac tonic |
| Cassia sieberiana (Caesalpiniaceae) | leaves, barks of stems and roots | Depurative, febrifuge, diuretic, anti-anemic and aphrodisiacs. |
| Cassia siamea (Caesalpiniaceae) | Leaf | Antimalarial, diabetes, inflammation of the lymph, urinary stones, Beri-Beri, hypertension, insomnia, dysentery and colon problems. Antibacterial. |
| Khaya senegalensis (meliaceae) | roots, bark and leaves | hypothermic, antibacterial, antipyretic, tonic, anthelmintic and anti-contracting |
| Cymbopogon citratus (Poaceae). | Essential oil | Antiseptic, antibacterial and anti-infectious. |
| Hymenocardia acida (Phyllanthaceae) | Leaf | Antimalaria |
| Cymbopogon nardus (Poaceae) | Essential oil | Anti-inflammatory, anti-infectious, antifungal, antibacterial and insect repellent. |
| Acanthospermum hispidum (Asteraceae) | Root | Hepatitis, Malaria, Hemoroids, Headache, Vomiting, Seizures and Snakebite |
| Euphorbia cactus (Euphorbiaceae) | Leaves, leaves | Ringworm and Scabies, Diarrhea, Antivenomous, Antiparasitic, Bronchitis and Dysentery. |
| Moringa oleifera (Moringaceae) | leaves, pods, fruits, flowers, roots and bark of the tree | Anticancer, antimicrobial. |

DISCUSSIONS

According to our objective, which is to evaluate the knowledge and consumption pattern of garlic, and the use of phytotherapy and aromatherapy in Togo.

In table 1, the majority of respondents (98.7%) consume Garlic. In addition, 43.51% use garlic every day and the major age group in this study was 25-50 years old. This survey was the first study conducted in Togo with a significant sample (over 400 subjects). It provides reliable data on the knowledge and consumption pattern of garlic and other medicinal plants.

In table 2, Figure 1 and 2, it shown that in Togo, nine in ten person eat garlic, the cooked garlic and raw are the most form of use, and the amount of garlic is less than one cloves of garlic or superior than one cloves of garlic. Nevertheless, for better use of the benefits of

garlic, people do not know it because as shown in Figure 3 and table 4, the benefits of garlic are varied. Garlic is very famous in herbal medicine. 79.6% of respondents believe that garlic has health benefits. However, for garlic consumption to be beneficial, it would be necessary to increase the amount of garlic ingested per day, and increase consumption to arrive preferably four times a week, or every day in order to enjoy the benefits of garlic.^[22] In general, the quantity of garlic recommended for a good use is a clove (5 grams) per person, for one to 4 times per week or daily.^[24] Our result shows that the population did not control the amount of garlic to ingest and the result can't be conclusive for its health benefits. This result were confirmed by other author who say that the user of garlic praise its taste and its beneficial virtues.^[22] Crushed in the raw state, garlic is highly antibiotic,^[16] and is known to lower blood pressure and cholesterol and inhibit the formation of blood clots.^[23] The leaves and bulb are considered to have hypotensive, carminative, antiseptic, deworming, diaphoretic and expectorant properties.^[1,25,26]

In table 3 and Figure 4, the percentage of people surveyed in Togo using herbal medicine (42.3%) and 51% say that herbal medicine are good efficiency. This percentage is in emphasize because in Africa, the majority of them are elderly (29%) and that young people (13.3%) are turning more to conventional medicine. The same report were done in Europe among the population of Pakistani origin in England, in which more than 56% of the individuals surveyed prefer to turn to traditional medicine based of plants. The majority of them are elderly or recent immigrants and that young people are turning more to conventional medicine.^[21,27]

64.2% of respondents believe that it would be beneficial to develop herbal medicine and aromatherapy; the latter would be a good alternative to limit the consumption of drugs. In addition, it is good to specify that conventional medicine use drugs resulting from the isolation of active ingredients contained in some plants. In the developing countries, 70 to 95% of the inhabitants make use of traditional medicine in first intention during disorders without immediate vital danger.^[2,27] Herbal medicine is report-using drugs from "complementary", "alternative" or "unconventional" medicines.^[28-30]

In table 4, in generally the respondent say that they use medical herbal to fight anxiety, insomnia, stress, muscle aches, body aches, colds, rhinitis, respiratory diseases, digestion problems, hypertension, diabetes, circulatory disorders, dental pain, headaches, acne, cystitis, malaria, whitlow, painful rule, infertility... That is confirmed by some study make in Togo are

about medical plant in the treatment of hypertension,^[4] diabetes,^[5,13] malaria,^[12] nutritional quality.^[5]

Finally, it is good to remember that some plants are toxic and others may have cumulative side effects. Herbal medicine is a soft medicine but is not harmless so far. Knowledge of plants, their indications, dosage and interactions are important.

CONCLUSION

To conclude, this questionnaire shows that garlic has an important place as a condiment in daily Togolese cuisine. Nearly nine out of ten people would consume garlic, mostly in the form of raw garlic or cooked garlic, at varying frequencies ranging from one to four times a month, up to daily consumption. The amount is usually less than one clove of garlic. Moreover, in view of the results, of phytotherapy/aromatherapy, these medicines are in full expansion in many indications, and very used in the prevention of various pathologies. It is therefore important to develop herbal medicine and aromatherapy, and to promote them.

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