

How traditional healers of tchaoudjo district in togo take care of animal injuries?

Abstract

The study aims at gathering information on plants used by traditional healers of the prefecture of Tchaoudjo located in the central region of Togo. Moreover, the perception of victims was also evaluated. Ethnobotanical semi-structured individual interviews were carried among 20 traditional healers treating animals' aggression (AA) and 16 victims of AA. Results showed that snakebites and bite from dogs are the most recurrent animals' aggression. Altogether, 32 plant species belonging to 31 genera and 22 families used in folk medicine in the treatment of AA were reported. Fabaceae (4 species) is the most represented family. *Securidaca longepedunculata* Fresen., *Xylopia aethiopica* (Dunal) A.Rich., *Annona senegalensis* Pers. ssp. *senegalensis*, and *Trichilia emetica* Vahl are the most reported species with respective frequencies of 90%, 70%, 50%, and 30%. The root is the most exploited plant part in remedies. The oral and the cutaneous are the only way of administration. The decoction and the powder are the most reported mode of preparation. All victims interviewed confirmed the effectiveness of these plants in the traditional treatment of animal aggression (100%). Even though remedies seem efficiency, the exploitation of roots remains a crucial threat for plant species survival.

Keywords: ethnobotany, medicinal plants, animal aggression, tchaoudjo, togo

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Introduction

There is a lot of aggression that people can undergo from animals. They can be scratched, bitten, stung, scratched or devoured by an animal. However, the most alarming animal injuries are bites and stings. In Africa, houses and vegetation are sometime closely spaced. Thus, people are substantially exposed to animal aggression. Epidemiological studies done in hospitals and clinics of several African countries confirmed that animal aggression, especially bites and stings are frequent in tropical and subtropical regions.

The world yearly number of snakebites exceeds 5 million while scorpion stings were estimated about 1.2 million.¹⁻³ The yearly incidence of snakebites was estimated about 915 bites for 100 000 inhabitants in Bandafasi in Senegal, 375 in Guinée, 486 in Benin.⁴⁻⁶ Regardless scorpion stings, at least 50 000 cases were reported per year in Algeria.⁷ and 44 cases were counted in paediatric service for six (6) months at Agadez in Niger.⁸

In Togo, APANews.⁹ reported from 2006 to 2009, eight thousand people bitten by dogs. Additional study from 2009 to 2010 on hospital admission due to animals' bites showed that dogs (89%) are the primary aggressive animals in Lomé.¹⁰ Most of five (5) thousands cases of snakebite are yearly registered officially in hospital in Togo.¹¹ These numbers are underestimated, since there is a lack of reliable and recent statistic data. Most of surveys were achieved in hospital, since after a bite or stings most of people were cured traditionally due the non-proximity of hospitals and the living standards. Some of victims live in rural communities and visit in priority traditional healers.⁵ So, the majority are treated by folk medicine.¹² Therefore, it is necessary to assess the importance of folk medicine healing in animal aggression.

In what manner animal aggression are treated in traditional medicine? Which plant species are used for these purposes? The present study is a contribution to the valorization of traditional medicine in Togo. It aims to: (i) inventory medicinal plants used in the treatment of animal aggression by traditional healers (TH) in the central region of Togo, and (ii) determine modes and frequencies of use of these plants as well as victims perception about the treatment gained from TH. The choice of the study area was directed by the fact that the main ethnic group of this zone of Togo, the Tem especially was known for their involvement in traditional medicine.¹³

Materials and methods

Study area

The study was conducted in Tchaoudjo prefecture located in the Central Region of Togo (Figure 1). It population is about 190114 inhabitants with 50% living in rural residents.¹⁴ It is bordered by Kara, Tchamba, Sotouboua, and Bassar prefectures respectively at north, east, southwest, and northwest. The dominant vegetation is Guinean savannah woodland. Open forests of *Anogeissus leiocarpus* (DC) Guill. & Perr., *Pterocarpus erinaceus* Poir, and *Isoberlinia* spp.. A mosaic savannah-fields-fallow and parklands are also observed.^{15,16} According MERF,¹⁷ all Togolese ecosystems were degraded by anthropogenic threats in recent decades. Classified forests and reserves were looted, vandalized and occupied by the human population. Animal species in these forests and reserves now live within fragmented and disturbed habitats, resulting in a significant change in their distribution. Agriculture remains the main activity of residents. As in most African countries, the population of the study area attach great importance to the healing powers of plants.¹³ The main ethnic group of this region is Tem.

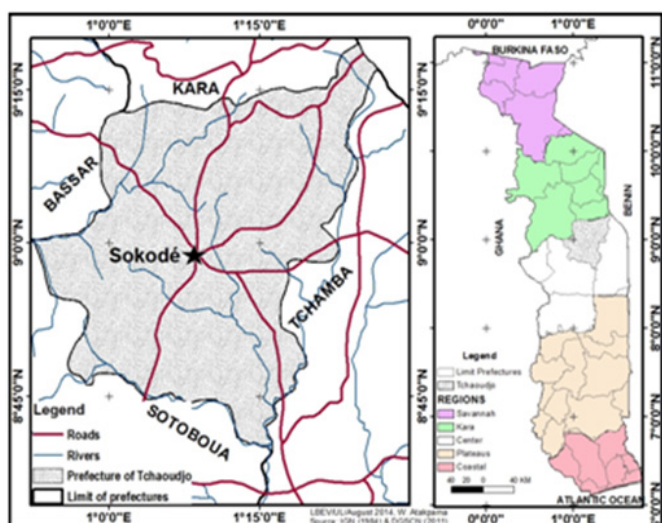


Figure 1 Localization of the prefecture of Tchaoudjo with main roads and rivers.

Data collection and analysis

Data were collected in December 2013. The methodology followed was based on ethnobotanical semi-structured individual interviews.^{18,19} of 20 traditional healers and 16 victims bite and/or sting by animals. The majority of informants are men with an average age of 43 years. Only two victims and one traditional healer are women. About 55.5% are illiterate and 30.5 had attended the primary school. Beforehand interviews, informants’ agreement was obtained by explaining the study aims to the head of traditional healers’ association of Central Region called CERMETRA and then all traditional healers’ staff. Traditional healers were called through the local radio communicate. Within these traditional healers, only those who had cured at least once an animal aggression and accepted to participate to the interviews were sampled. This sampling methodology justified the limited sample size. Moreover, traditional healers were asked to bring victims who accepted to participate.

The information sought is focused on: different types of animal aggression healed, plants used in the therapy, plant parts used, modes of preparation and administration. Especially victims were asked to value the recovery: if it is complete, half-done or not, rapid, and the secondary effects. Interviews were coupled to field observations and collection of plant species reported and victims’ status. Plants nomenclature followed the one set by Hutchinson et al.²⁰ and Brunelet et al.²¹ Data analysis consisted to a descriptive statistic. All data recorded during were typed and processed using Excel spreadsheet. Results were presented as histograms and table.

Results

Types of animal aggression

Five animal aggression was recorded: snakebites, bite from dogs (*Canis lupus familiaris* Linnaeus, 1758), bite from squirrels (*Myosciurus pumilio* Le Conte, 1857), bite from cats (*Felis silvestris catus* Linnaeus, 1758), and sting of scorpions (*Hottentotta tamulus* Fabricius, 1798; *Androctonus* spp). All victims interviewed have been bitten by a snake. Snakebites (51%), followed by bites from dogs (31%) are the most recurrent animal aggression cured by traditional healers. The information gathered didn’t permit to identify clearly culprit snakes.

Plants used in animal aggression treatments

A total of 32 plant species distributed into 31 genera and 22 botanic families were reported (Table 1). The most represented families are Fabaceae (4 species), followed by Alliaceae, Annonaceae, Bignoniaceae, Euphorbiaceae, Myrtaceae, Sapindaceae, and Solanaceae represented by two species each. The other families were represented by only one species. The most reported species are: *Securidaca longepedunculata* Fresen. (90%), *Xylopia aethiopica* (Dunal) A. Rich. (70%), *Annona senegalensis* Pers. ssp. *Senegalensis* (50%), and *Trichilia emetica* Vahl (30%) (Figure 2). Species are sometimes associated: for example, *S. longepedunculata* is used together with *X. aethiopica* and *A. senegalensis*. About 45% of species are used in the treatment of snakebites and 30% in the treatment of bites from dogs (Figure 3). The majority of traditional healers use roots (94.44%) in the treatment of animal aggression. They also reported fruits and leaves. Seeds and entire plants were less used (Figure 4).

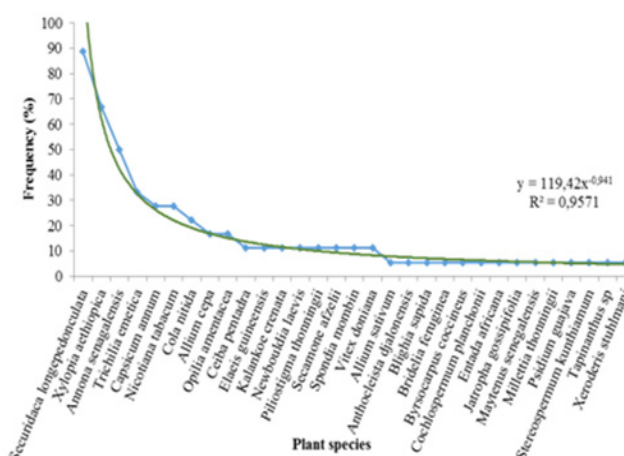


Figure 2 Frequencies rank of plant species recorded

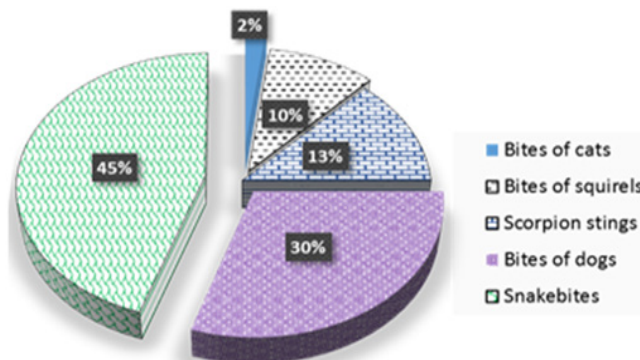


Figure 3 Repartition of species according to animal aggression.

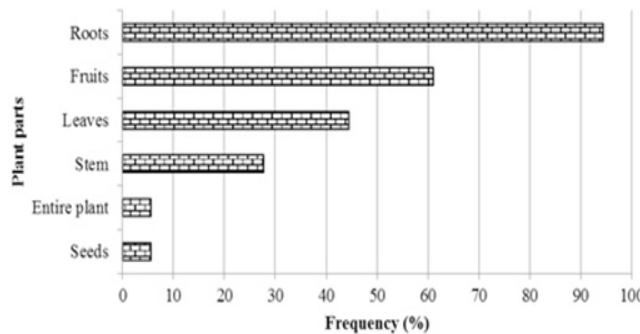


Figure 4 Frequencies of plant parts reported.

Table 1 List of plants reported with types of animal aggression

Species	Families	Types of Aggression
<i>Afraegle paniculata</i> (Schumach. & Thonn.) Engl.	Rutaceae	Dog*
<i>Agenope stuhlmanii</i> (Taub) Adema	Alliaceae	Snake*, dog*
<i>Allium cepa</i> L.	Alliaceae	Scorpion**
<i>Allium sativum</i> L.	Annonaceae	Squirrel*, snake*
<i>Annona senegalensis</i> Pers.	Loganiaceae	Dog*
<i>Anthocleista djalonensis</i> A. Chev.	Sapindaceae	Snake*
<i>Blighia sapida</i> König	Euphorbiaceae	Snake*
<i>Bridelia ferruginea</i> Benth.	Connaraceae	Dog*
<i>Byrsocarpus coccineus</i> Thonn. ex Schumach.	Solanaceae	Squirrel**, snake*, dog*
<i>Capsicum annum</i> L.	Bombacaceae	Snake*, dog*
<i>Ceiba pentadra</i> (L.) Gaertn.	Cochlospermaceae	Snake*
<i>Cochlospermum planchonii</i> Hook. f.	Sterculiaceae	Dog*
<i>Cola nitida</i> (Vent.) Sebott & Endl.	Arecaceae	Snake*
<i>Elaeis guineensis</i> Jacq.	Fabaceae	Snake*
<i>Entada africana</i> Gill. & Perr.	Euphorbiaceae	Dog*
<i>Gymnosporia senegalensis</i> (Lam.) Loes	Crassulaceae	Snake*, scorpion**
<i>Jatropha gossypifolia</i> L.	Myrtaceae	Dog*
<i>Kalanchoe crenata</i> (Andrews) Haw.	Fabaceae	Snake*
<i>Millettia thonningii</i> (Schumach. & Thonn.) Baker	Bignoniaceae	Snake*, scorpion**
<i>Newboudia laevis</i> (P. Beauv.) Seemann ex Bureau	Solanaceae	Squirrel*, snake*, dog*, scorpion**
<i>Nicotiana tabacum</i> L.	Opiliaceae	Snake*
<i>Opilia amentaceae</i> Roxb.	Sapindaceae	Dog* et chat
<i>Paullinia pinnata</i> L.	Fabaceae	Snake*, scorpion**
<i>Ptilostigma thonningii</i> (Schumach.) Milne-Redh	Myrtaceae	Scorpion**
<i>Psidium guajaval</i> L.	Asclepiadaceae	Dog*
<i>Secamone afzeliik</i> Schum.	Polygalaceae	Snake*, squirrel*
<i>Securidaca longepedunculata</i> Fresen.	Anacardiceae	Snake*
<i>Spondias mombin</i> L.	Bignoniaceae	Snake*
<i>Stereospermum kunthianum</i> Cham.	Loranthaceae	Dog*
<i>Tapinanthus</i> sp	Meliaceae	Snake*, dog*
<i>Trichilia emetica</i> Vahl.	Fabaceae	Snake*
<i>Xylophia aethiopica</i> (Dunal) A. Rich.	Annonaceae	Snake*, squirrel*

* = Bites; ** = Stings

Modes of preparation and administration

Before preparation according to a given mode, traditional healers grind and crush plant parts. The most frequent modes of preparation are the decoction and the powder (Figure 5), followed by the maceration and the calcination. The cooking steam is mentioned by only one informant. The decoction is a soup with like only dressing of salt. Only two types of administration were used: buccal and cutaneous. The powder is the form of conservation.

Treatment perception

The overall healers agreed that the recovery is easier and faster if victims are granted immediately after the aggression. Most halers (75%) received patients who did not have satisfaction with modern medicine. Their healing is complicated and long. The maximum recovery time is two weeks when the aggression is immediately cured. The follow-up of patients by healers is stopped after three days of treatment. Victims return at their own home where they pursue the treatment until the full recuperation. As for the opinion of victims, they are all satisfied with their recovery. No secondary effect related to therapy was reported.

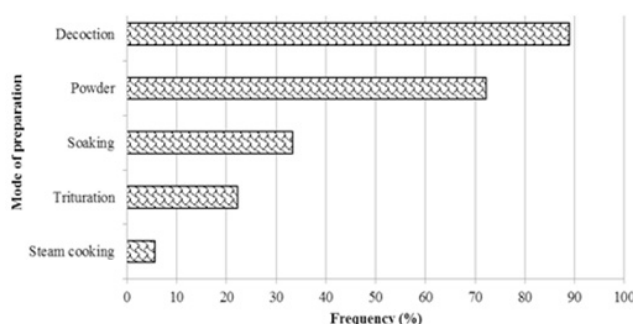


Figure 5 Frequencies of modes of preparations.

Discussion

The present study showed that snakebites, followed by bites of dogs are the prominent animal injuries in Tchaoudjo. According to Wateba et al.¹⁰ in urban town of Lomé (Togo), the prominent animal aggression is bites of dogs. In contrast, snakebites and scorpion bites are not registered during their studies. This difference is due to the fact that bushes are scared in Lomé City by comparison

to Tchoudjo prefecture where houses were embedded in bushes. Bushes are habitat of scorpions and snakes. The frequent use of *S. longepedunculata* versus snakebites is undoubtedly owed to its genuine mechanism action confirmed by the study of Chippaux.¹ Indeed, the extract of *S. longepedunculata* contains a systemic antidote acting by competition with the toxin contained in venom. The same authors describe *A. senegalensis* like an antivenin and a powerful therapeutic plant species used throughout Africa. The use of *A. senegalensis* and *O. amentacea* reported during this study was also mentioned by Durecu.²² The association of *S. longepedunculata*, *A. senegalensis* and *X. aethiopica* in the treatment of the snake bites was previously reported by Adjanohoun et al.²³ in Tgo.

According to the present results, root is nearest the used plant part in the treatment of animal aggression. The frequent use of roots in traditional medicine was also reported by previous studies done in the coastal region of Togo.^{24,25} Other studies also reported the higher usage of bark.^{26,27} In contrast, study concerning dietary plants species showed that leaf and fruits are the most used plant parts.^{18,28} The harvesting of roots jeopardized plant species survival and regeneration.^{27,29} Consequently, several plants become scarcer and scarcer and stake to disappear in future.

The satisfaction of victims demonstrates the effectiveness of traditional medicine against animal aggression. However, traditional healers' knowledge on hygiene and material semiotics are very limited. The specificity of the mode of action of various medicinal plants requires some precision in the diagnostic (culprit animals, time between the injury and the treatment, symptoms presented by victims). Since the intensity of venom depends on the culprit animal species, its identification through a permanent observation and determination must be performed. In addition, the toxicity of the plant and the method of preparation must be better controlled. Indeed, the nature of the active principle determines its method of preparation.

Decoction, the most used method of preparation by TH consulted during fieldwork, is the process in which remedies (the plant part) is immersed in a liquid solvent (water) placed in turmoil. This is a brutal process that should be reserved for the extraction of active ingredients non thermo-labile.⁷ The risk of impaired active ingredients may explain the adoption of less damaging methods of preparation by some traditional healers (maceration, crushing and steam cooking).

The ineffective treatment of victims admitted so later after the bite or sting could be linked to toxins high-speed progression in the body.^{12,30} According to the same authors, complications can occur by necrosis and haemorrhagic syndromes and lead to respiratory failure from two (2) to ten (10) hours in the case cobra syndrome or progress to visceral complications in the case of viperine syndrome.

Conclusion

This study showed that snakebites and dog bite are the most frequently animal aggression encountered in the central region of Togo. Several plant species (32) were used to composed receipts used in folk medicine in the treatment of these aggressions. Especially *S. longepedunculata*, *X. aethiopica*, *A. senegalensis* and *T. emetica* were quoted as the most used species. A root, essential part in the existence of plants, is the most harvested plant parts. From the opinion poll, the therapy is efficient and does not induce secondary effects. However, this assertion must be verified by scientists, especially the biological action, the phytochemical analysis, the toxicity and the chrono-toxicity. It would be interesting to enlighten traditional healers about the nuisance of roots harvesting on species survival and availability. Collaboration between modern and traditional medicine

seems unavoidable to allow the validation and the improvement of traditional remedies. A perfect complementarity between both will improve the living conditions of populations.

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Conflict of Interest

The authors declare that there are no conflicts of interest.

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