



Mistletoes Uses in Rural area in the counties of Gagnoa, Oumé and Soubré (Central West of Côte d'Ivoire)

Soro K.^{1*}, Therese¹ K. N. M.¹, Mangara A.², Soro D.³ et N'guessan K.³

¹ Centre de Recherche en Ecologie, Université Nangui Abrogoua - Abidjan
08 BP 109 Abidjan 08, Côte d'Ivoire.

² Laboratory de Botanique, Université Nangui Abrogoua d'Abidjan.
02 BP 801 Abidjan 02, Côte d'Ivoire.

³ Laboratory de Botanique, U.F.R. Biosciences, Université Félix Houphouët-Boigny -Abidjan.
22 BP 582 Abidjan 22, Côte d'Ivoire.

* : Corresponding author email : skafana1@yahoo.fr

ABSTRACT

This study tested the ethnobotanical knowledge of mistletoes in rural area in the counties of Gagnoa, Oumé and Soubré, Central West of Côte d'Ivoire. Following an ethnobotanical investigation through the semi-direct interview method or semi-structured, it appears that various uses are made of mistletoes in different fields especially in medicinal recipes and médicomagiques practices. In this study, 29 pain relief, 7 médicomagiques practical and 3 other uses in the fields of hunting, art and commerce, made with mistletoes were recorded. Medicinal uses differ from one ethnic group to another and depend on the sex of the person to relieve, the species of mistletoes and the host. Each treatment or use can be satisfied by one or more recipes. As medicinal or médicomagiques plants, mistletoes are either used alone or in admixture with other plant or animal organs.

Keywords : Mistletoes, uses, rural area, Central West, Côte d'Ivoire.

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INTRODUCTION

For his health well-being, man has used its immediate environment : animals, plants and minerals for healing ailments and injuries [1]. According Kessy [2], medicinal plants represent practically the only therapeutic arsenal available to traditional healers in Africa. The choice of these plants is mainly based on traditional knowledge held by people over generations. As pointed Nacoulma (1996), the power of plants is assessed empirically, that is to say without any scientific evidence. Among the plants used in healthcare, there are mistletoes, parasitic vascular plants of trees. The fact that these plants have lost the ability to grow on an inert support, has shown in them by human, therapeutic and médicomagiques. Most often their use is related to the plant species wearer.

This work is a part of a contribution to the promotion of traditional knowledge on traditional medicine and practices including médicomagiques based on mistletoes species. This requires that the various uses made of the mistletoes are known as is the subject of this study in the Central West region of Côte d'Ivoire.

MATERIAL AND METHODS

Study site

The study was conducted in the rural area, the agricultural environment mainly in the regions of Gagnoa, Oumé and Soubré in the Central West of Côte d'Ivoire (Figure 1), an operating area of crop including pension culture of cocoa, coffee and rubber trees.

MATERIAL

The study material is mainly composed of parasitic vascular plants belonging to the family of Loranthaceae (Figure 2). Shrubs and trees they infect are also reported.

METHODS

The working method adopted in this study is based on an ethnobotanical investigation through the technique of semi-direct or semi-structured interview. This technique, based on a questionnaire was used by Adou [14] and N'Guessan [15] for the study of medicinal plants. The talks were held in Malinke or Sénoufo for people including those languages and others, in French directly or through an intermediary. The questionnaire was mainly addressed to farmers who operate perennial crops and familiar with mistletoes, health tradipraticiens and all persons interviewed in the villages visited in the three Departments.

Talks and discussions were held with focus groups around a palm bribe. During the past, people were invited, after dark, between 20 hours and 23 hours. These talks were mainly carried on the local expertise of mistletoes. Guests included people in couples or not, old or young in the person indicated by respondents. The people shown are including the youth representative, the head of the district or the person on trial holder of knowledge of medicinal plants.

The interviewees reported information on the local name, parasitized hosts and the uses made with branches of mistletoes. Any time, it should be noted that the existence of several species of mistletoes is hardly accepted in rural area, the difference from one species to the other being attached to the host type. Uses of mistletoes are grouped according to different fields of use, the uses and names of ethnic groups in the study area. The vernacular name of the ethnic group, is also mentioned.

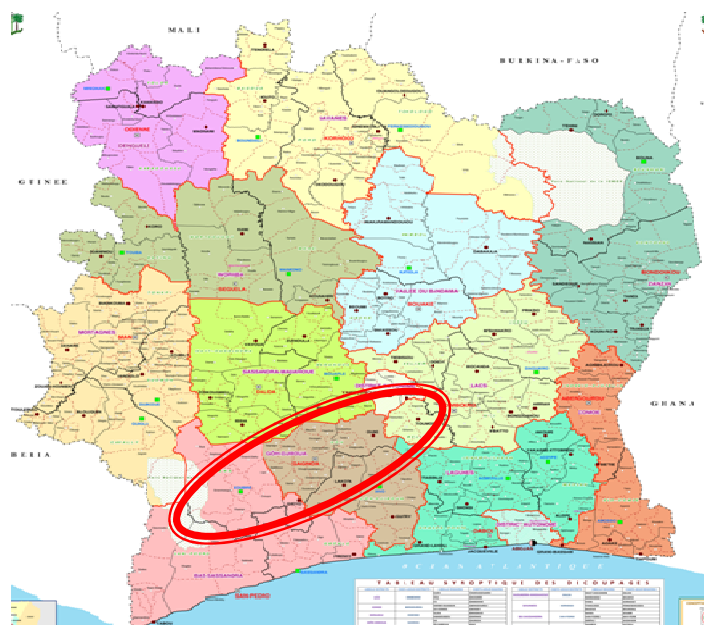


Figure 1 : Study site in Côte d'Ivoire



Photo : SORO Kafana, UAU-Oumé

Figure 2 : Flowering branches of *Tapinanthus bangwensis*

RESULTS

Mistletoes uses as medicinal plants

Twenty nine (29) pain were recorded as being relieved by mistletoes.

1- Febrile access

For Baoulés, (mistletoes = Adjra or Wakassou aidjré). Stem barks of *Alstonia boonei*, kneaded, give a paste which in mixture with the decoction of leafy twigs of the plant, is recommended purges once a day, until healing, as a febrifuge.

For Bétés, mistletoes : Zougroudjèlèba or Soukoucalama. Mistletoes boughs cut on any host are cooked in a canary and the decoction is used in bath morning and evening for a week.

The Lobi call mistletoes « Kpokpouho ». Mistletoes boughs collected on any host in a mixture with lemon flowers are boiled and the decoction is used in massage, drink and bath for a week.

For Mossis, the mistletoes are called « Wellèba ». Mistletoes boughs collected on any host attached in 3 packets when the patient is a man or a woman for 4 packs. They are cooked and decoction is used in bath and drink.

The Wobès call mistletoes Soho. Mistletoes boughs collected on any host, cooked and decoction is used in steam bath and wash after cooling.

2- Thinning of a child

For Gagous, Mistletoes : Gbongbon. Mistletoes boughs collected on any host, cooked and decoction is used in drink and bath.

3- Amenorrhea

For Mossis, Mistletoes are called Wellèba. Mistletoes boughs cut on *Theobroma cacao* or *Cola nitida*, are kneaded and the resulting paste is dried. The dried material is crushed and used as an enema to cure.

4- Anti-poison

For Wobès (Mistletoes = Soho). Mistletoes stems harvested and dried any host, charred and powdered. The resulting powder is used in consumption of rice porridge or millet or simply lapping.

5- Hot piss (Gonorrhoea)

For the Mossi (= Wellèba). Mistletoes boughs harvested *Annona senegalensis* Pers. (Annonaceae) are first boiled and the decoction is kept overnight and used in drinking early the next morning. Then, a part of decoction is used to fill a bottle (one liter capacity) to keep for 7 days and totally consume the content in drinking early in the morning of the 7th day. Finally, the patient undresses and spreads in a quiet place for a day; he will urinate profusely to eliminate the evil.

6- Blood clotting after a fall

For Baoulés, Mistletoes are called Adjra or Wakassou aidjré. Loranthaceae leafy branches of harvested in quantity and spread to a place where a large fire was made and cleaned properly. The rough person is placed above the twigs placed overheated place. It may be noted by the patient time if we feel that the heat is too high. This allows blood to resume normal traffic.

7- Curetage hurt

For Gagous, Mistletoes are called Gbongbon. Mistletoes branches cut on any host, are cooked and the decoction is used as beverage once daily.

8- Diabetes

Baoulés call Mistletoes Adjra or Wakassou aidjré. Mistletoes branches harvested on mango tree, cooked and decoction is used in beverage with a drinking glass morning and night for days.

9- Abdominal pain of a woman in pregnancy

The Malinkés call the mistletoes « Ladon ». Mistletoes boughs harvested *Cola nitida* are used to form 3 packets that are cooked and decoction is used in bath 3 or 7 times.

10- Toothache

For Baoulés Mistletoes : Adjra or Wakassou aidjré. Mistletoes boughs collected on any host, cooked and decoction is left to cool, add a little potash and used mouthwash.

11- Child with hump occurred as a result of a sore back Pott

According to Bétés, Mistletoes : Zougroudjèlèba or Soukoucalama. Mistletoes leaves harvested on any host, cooked and decoction is used as an enema and drink until recovery.

For Gouros, Mistletoes are generally called Zohou. From the beginning of evil, mistletoes twigs harvested from any host are cooked in a canary and the decoction is used in bath for children up healing.

12- Children sickly kind

For Baoulés, Mistletoes = Adjra or Wakassou aidjré. Mistletoes boughs cut on any host, are cooked in a canary and the decoction is used in bath.

13- Enteralgia

For Baoulés, Mistletoes = Adjra or Wakassou aidjré. Mistletoes leaves harvested on any host, are kneaded in admixture with pepper and the paste obtained is used as an enema.

For Mossis, Mistletoes = Wellèba. Mistletoes boughs harvested *Parkia biglobosa* (Jacq.) G. Don of the family Mimosaceae to be 3 packages for a man or woman for 4 packs, are cooked and decoction is used in bath for 3 or 4 days depending on whether it is respectively of a patient or a patient.

For Sénoufo (Mistletoes = Soundjélime). Mistletoes branches harvested on *Parkia biglobosa*, cooked and decoction is used in bath and drink until recovery. This treatment is also indicated for the ills of the body. See the treatment of chickenpox in Bété.

14- General tiredness

For Malinkés, Mistletoes = Ladon. Mistletoes boughs harvested from any host and associated with dry banana leaves are cooked and decoction is used in steam and washed after cooling to relief.

Mossis call Mistletoes « Wellèba ». The leafy branches of Mistletoes on *Tamarindus indica* and twigs of the host itself in a canary, cooked and decoction is used in steam bath, and washed in regular drink (morning and evening) for a week.

For Sénoufos, Mistletoes : Soundjélime. Mistletoes leaves cut on a shaft non-toxic to humans, are kneaded and the paste obtained is dried. The dried material is powdered and used in bath water mixture until total relief.

15. Hemorrhoids

For the Mossi (Mistletoes = Wellèba). Mistletoes boughs collected on any host, cooked and decoction is used as a drink for 7 days.

16. Urinary incontinence (enuresis) in children

Sénoufos call Mistletoes « Soundjélime ». Mistletoes boughs cut on any host to fill a canary, cooked and decoction is used in bath.

17- Unknown Disease child

For Bete, Mistletoes are called « Zougroudjèlèba » or « Soukoucalama ». Mistletoes leaves harvested on any host, and are kneaded dough is used in enemas for children 3 to 4 years at most, until recovery.

18- Diseases called incurable

For Malinke, Mistletoes : Ladon. Mistletoes twigs harvested on any host, are cooked in a canary and the decoction is used in bath and drink once a day until recovery.

For Sénoufos, Mistletoes = Soundjélime. Dry leaves of a dead clump of mistletoes harvested *Cola cordifolia* and associated with a dead toad accidentally (road kill) are charred and kneaded together and the resulting powder is sprinkled on a incurable wound for relief.

19- Heart aches

Lobis call Mistletoes « Kpokpouho ». Boughs Loranthaceae collected on any host, cooked and decoction is used in steam bath, drink and washed after cooling.

20- Headaches

The Mossi call Mistletoes « Wellèba ». Branches of *Azadirachta indica* Loranthaceae harvested, cooked and decoction is used in steam and washed.

21- Sore post childbirth belly

Baoulés call Mistletoes « Adjra or Wakassou aidjré ». Mistletoes leaves are harvested and put to bed in the kidneys under the mat the patient for 3 to 4 days.

22- Bite scorpion

For Mossi, the mistletoes are called « Wellèba ». Mistletoes leaves taken from a shea, dried, and powdered carbonisées. The resulting powder is mixed with the tobacco and shea butter to rub the party.

23. Breathing Problems

Among the Baule, Mistletoes = Adjra or Wakassou aidjré. Mistletoes leaves harvested on any host, are heated to massage the ribs.

24. Rheumatism

For Abrons mistletoes are called « Skélgo » or « Askélgo ». To rub a swollen knee

- a mistletoes branch levied on any host, is knead with a little water and the resulting paste is spread on the knee;

- mistletoes branches cut on any host, are used in massage.

For Mossi, mistletoes : Wellèba. Mistletoes branches harvested on any host, are first cooked and the decoction is used in a heat bath, beverage and washed after cooling. Then, a few leaves of Loranthaceae harvested, dried, carbonized and made into powder. Finally, the resulting powder is mixed with shea butter to rub the painful area.

For Sénoufos (mistletoes = Soundjélime). Mistletoes boughs harvested on any tree, cooked the decoction is used in bath morning and evening for 4 days.

25. Sexual Stimulant

For Bétés, mistletoes are called « Zougroudjèlèba » or « Soukoucalama ». Mistletoes leaves harvested on any host, are consumed in admixture with palm nuts seeds.

26- Torticollis

For Baoulés, mistletoes : Adjra or Wakassou aidjré. Mistletoes leaves levied on any host, are heated directly in fire to massage where evil arises. After the massage, there rubbing shea butter or palm oil.

27. Cough

For Mossis, mistletoes are called « Wellèba ». Mistletoes boughs cut on *Adansonia digitata* L. (Bombacaceae), dried and charred in a piece of broken canary, baked with rock salt and powder was used by lapping.

See the treatment of heart ailments for Mossis.

28- Chickenpox

For Bete (Loranthaceae = Zougroudjèlèba or Soukoucalama). Loranthaceae leaves harvested on any host, are kneaded with chili and the resulting paste is used as an enema in children 2 times / day until recovery. This recipe also relieves entéralgie in children.

For the Mossi, the Loranthaceae are called Wellèba. To :

- rub the chest : mistletoes leaves harvested on a néré, are dried, charred and made into powder. This powder is used mixed with shea butter to massage the breast;
- treat coughs and sore heart : mistletoes boughs harvested *Moringa oleifera* Lam. (Moringaceae) are dried and made into powder. This powder is used in consumer whenever evil arises.

29- Zona or " belt disease "

For Gouros, mistletoes : Zohou. Mistletoes boughs collected on any host, are first cooked in a canary and the decoction is used in bath. Then, young leaves near parasitic bud, are kneaded and the dough is finally spread on the infected part.

Mistletoes uses as médicomagic plants

Seven (7) médicomagic practices have been reported.

1- Attracting the esteem of others

Malinkés call mistletoes « Ladon ». Mistletoes branches harvested early Monday morning on *Ceiba pentandra*, are kneaded in a mortar, the resulting paste is dried in a single day. The dried material obtained is powdered and used in bath morning and evening.

For Mossi, mistletoes = Wellèba. Mistletoes boughs cut on *Capsicum frutescens* or *Tamarindus indica*, are added to 7 black with wasps nest and bark removed at sunrise and sunset from a tree struck by lightning and the whole is dried and charred. Potash and shea butter are added to the ash recovered to prepare a ring in broken canary. The ring is worn on the middle finger of one hand. Incise slightly traits between 3 and 4 fingers 3 strokes on the back of the hand to place the ash.

For Sénoufo mistletoes : Soundjélime. Mistletoes boughs taken from the infested tree of *Pterocarpus erinaceus* Poir. (Fabaceae), are placed in a vacuum bag. The levy should be avoiding some fall to the ground until the descent of the tree. The branches are cooked in a canary and the decoction is used in bath.

2- Good hunting

For Sénoufo mistletoes = Soundjélime. Mistletoes boughs cut on *Capsicum frutescens*, are used to form three (3) packets, which are kneaded in a small new calabash. The gunpoint is immersed in the liquid obtained by holding its handle leaning on a wall. As soon as one is ready to go hunting at night, take the gun and run directly in the bush without speaking to anyone.

3. Animal Husbandry

For Malinkés, mistletoes = Ladon. Mistletoes branches harvested on *Adansonia digitata*, dried and kneaded. The powder obtained is mixed each time the rock salt to be fed to cattle or sheep. This would ensure their sustainability and good growth.

For Mossis, mistletoes : Wellèba. Mistletoes tufts are served as fodder for sheep, especially during the dry season or fresh grass is scarce.

4- Lucky charm

Baoulés call mistletoes « Adjra » or « Wakassou aidjré ». To attract happiness :

- mistletoes branches taken from 7 shea, are cooked and decoction is used in bath. This treatment is also indicated against curses ;
- mistletoes tufts with their noisy tree branch locally called Ploplo, *Jatropha curcas* L. (Euphorbiaceae) are cooked and decoction is used in bath.

5- Protection against curses

For Baoulés, mistletoes are called « Adjr »a or « Wakassou aidjré ». Mistletoes take part of the contents of canaries installed by some families which they worship secretly for their protection.

For Lobis, mistletoes : Kpokpouho. Mistletoes boughs cut on an epiphytic plant, are cooked and decoction is used in bath. The simple fact of having a stray twig such a concession would be very beneficial for occupant protection from home (especially children).

For Malinkés, mistletoes = Ladon. :

- mistletoes branches harvested on *Citrus sinensis*, dried and kneaded. The powder obtained is regularly used in bath ;
- mistletoes leaves harvested on a lemon tree, dried and powdered. The resulting powder is used Thursday in bath and drink ;
- mistletoes leaves harvested on a lemon tree, are dried and the dried leaves are used by placing them on the coals so that the smoke from spilling into the house. Mistletoes twigs freshly removed, can also be cooked and decoction is used in bath whenever we have time. This treatment is especially suitable for children ;
- mistletoes leaves harvested on *Tamarindus indica*, are dried and ground into a powder which is regularly used in bath ;
- three (3) packets of mistletoes branches cut on any host, are cooked in a canary and the decoction is used in bath once or twice ;
- mistletoes branches harvested on a lemon tree or *Spondias mombin*, are cooked and decoction is used in bath and drink.

For Mossis, mistletoes = Wellèba :

- mistletoes branches taken from *Parkia biglobosa*, are left to macerate and the macerated liquid is used in bath for 3 days;
- Three (3) packages of mistletoes twigs taken from *Mangifera indica*, are left to macerate for 7 days in a canary and the macerated liquid is used in bath and drink 7 times. NB: This treatment destroys the action of previous treatments.

According to the Sénoufos, mistletoes are called Soundjélime :

- mistletoes boughs harvested on *Cola cordifolia* (. Cav) R. Br (Sterculiaceae), are used to form three (3) or four (4) packets, by sex. They are cooked and decoction is used in bath once a year. NB: Avoid making this treatment more than once a year because of the risk to become crazy ;
- mistletoes branches harvested on a tree non-toxic to humans, are cooked and decoction is used in beverage ;
- mistletoes branches harvested on a lemon tree, are cooked and decoction is used in bath.

6- Business Success

For Mossis, mistletoes : Wellèba. Mistletoes branches collected from *Diospyros mespiliformis* Hocht. Ex A. DC. (Ebenaceae) and the bark taken at sunrise and sunset from any epiphytic plant, are kneaded with salt and the resulting paste is dried. The dry matter obtained is made into powder is used in consumption and spread on the head each time before leaving the market.

7- Success of agricultural production

For Hausa, mistletoes = Kaskira. Mistletoes leaves are kneaded and the dough obtained is mixed with the seeds of the cereals before sowing, when it is surprised by the period of the crops or the dough obtained is dried and powdered with which the seeds are mixed in anticipation of the Period of crops.

For Malinkés, mistletoes = Ladon :

- mistletoes leaves harvested on *Ficus exasperata* or *Spondias mombin* are dried and reduced to a powder which is used in admixture with the seeds before sowing;
- mistletoes leaves cut on *Mangifera indica*, dried for one day and reduced to powder. The powder obtained is used in admixture with plant protection products during spraying treatments to protect the plantation against bad spells.

For Senoufos, mistletoes = Soundjelime. Mistletoes branches are collected from *Diospyros mespiliformis* :

- place them in a canary by adding water to spread on the young yam shoots every week until the yam stalks cover the mounds;
- dry them and reduce them to a powder which is mixed with the seed before sowing.

Other uses of mistletoes

Three (3) other ways of using mistletoes were noted.

1- Bird hunting

For Mossi, mistletoes = Wellèba. The viscina of the bays of mistletoes is extracted and spread on a piece of wood which is placed on two pebbles near the small reservoirs of water. All the birds which come to perch there to drink, are retained by the sticky substance (the viscine).

2- Art object

For Baoulés, Loranthaceae : Adjra or Wakassou aidjré. The tuft of mistletoes and the parasitized branch is cut between 20 and 30 cm upstream of the zone of fixation of the parasite on the parasitic branch and left to dry. The pair (host twig and mistletoes tuft) is either well-sanded and varnished or the host's twig is painted with a color different from that of the parasite. Thus, the whole can serve as an object of decoration.

3- Marketing of Loranthaceae as medicinal plants

During a visit to the markets of medicinal plants in Abidjan (Figure 3), packets based on mistletoes branches were observed. Each packet consists of both the branches of the parasitic and those of the host on which the parasitic has been harvested (Figure 3). The cost price of each package is at least 500 F CFA and increases according to the type of the host.



Photo: SORO Kafana, Koumassi-Abidjan

Figure 3 : Packets of Loranthaceae branches at the medicinal plant market of Koumassi in Abidjan (Côte d'Ivoire)

DISCUSSION

The 5 species of mistletoes inventoried in the study area were described by Soro (2009), Soro (2011) and Soro (2012).

This study made it possible to know mistletoes uses in rural areas. According to many authors, the mistletoes are full of pharmaco-magic virtues in Africa. They are used in the African pharmacopoeia for various purposes and are used for protection against bad spells in general. The use of parasitic plants in most cases is mainly related to the host type. During the work, local populations reported various uses of mistletoes. These parasitic plants are used in the field of health, trade, hunting, crafts, protection from bad spells, sexuality, agriculture and livestock. According to Traoré [4], and Soro [5], mistletoes effectively intervene in the medico-magical field [6]. Adjanohoun and Aké-Assi [7] argue that to cure some body pains, Malinkés carbonize the whole parasitic plant, pound the coal obtained with vegetable oil (oil of the seeds of *Carapa procera* DC of the Meliaceae family) The mixture serves to rub the painful parts. These authors also claim that the decoction of the mistletoes leaves is used by Malinkés to protect themselves from curses. The Abbey and Krobou peoples, in the Region of Agboville (Southern Forest of Côte d'Ivoire), use the decoctate liquid of *Tapinanthus bangwensis* leaves in the treatment of high blood pressure [10]. Didas, in the Region of Divo, in the South of the Côte d'Ivoire, use it in the treatment of diabetes [11]. In the Région of Grand Bassam, mistletoes are used to control infantile diarrhea, malaria, tooth decay, insensitivity of any part of the body to touch, spells, cholera and high blood pressure [9]. Therefore, mistletoes are found as medicinal plants, packed with their host into medicinal plant markets, hence the importance of the host in the use of mistletoes reported by Arbonnier [6] ; Traore *et al.* [8].

However, difficulties in both quality and quantity remain in the intake of medication potions obtained for health. Complications may be related to the inaccuracy of the doses used [12]. Indeed, in the preparation and administration of drug recipes, doses are still expressed by a few drops of the product in the form of auricular, buccal, nasal, ocular or vaginal instillations, a goblet, a ladle, a glass of liquor or beer, a cup, a calabash, a teaspoon, a soup spoon, a pinch of two (2) to four (4) fingers, a handful, a liter, a bucket [10]. This imprecision constitutes a real problem of traditional medicine [13].

In contrast to the beneficial effect of the mistletoes on man for his health and for many other services, knowledge about mistletoes in the peasant environment has extended to their harmfulness on trees and shrubs, mainly agricultural ones, by parasitizing them. They are incriminated as parasitic vascular plants

which reduce the yield of agricultural trees crops. They reduce growth or slowly kill host plants. This observation was made by many authors, notably Traoré *et al.* [4], Amon [9] and Soro [5].

CONCLUSION

This study made it possible to list the knowledge of rural populations on mistletoes uses. According to the ethnobotanical survey, despite the many nuisances caused by these parasitic vascular plants to tree crops, the mistletoes have therapeutic, medicomagic, hunting, art and marketing virtues recognized in the rural environment. In the context of medicinal and medicomagic uses, the ability of these plants to be used as medicinal plants and especially according to the host makes it very common to find tufts of mistletoes on agricultural plants protected in orchards or packages made from branches of mistletoes and sold by the sellers of medicinal plants installed in dedicated places at markets. However, in developing countries, and particularly in Côte d'Ivoire, unfortunately, almost nothing is known about the chemical composition of the drugs produced. Similarly, the complications associated with the inaccuracy of the doses used are as many ways to be elucidated by complementary studies in order to improve some practices of care for populations benefit. In perspective, phytochemical studies and toxicological parameters for the valorization of empirically administered extracts are necessary.

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