Medicinal Plants Used as Aphrodisiacs in Niger Republic

**ABSTRACT**

For centuries, man has sought to enhance his sexual vitality or to combat impotence through traditional knowledges based on aphrodisiac substances. Several ethnobotanical surveys that were conducted in Niger republic have mentioned a number of plants as aphrodisiacs. This work aims to review and present in one single paper a list of medicinal plants that are often used as aphrodisiacs for the management of sexual dysfunction. The information were extracted from reports, published and unpublished dissertations, as well as scientific papers using online databases. A total of 38 aphrodisiac plant species belonging to 22 families were recorded. The families Fabaceae (10 species) and Rubiaceae (5 species) were found with the highest recorded number of plant species, with the roots being the most used plant parts. 25 (65.78%) out of the 38 species were cited for the first time as aphrodisiac plant and constitute one of the contributions of the present review. Overall, this review contributes to a better understanding of the traditional use of aphrodisiac plants in Niger republic. However, none of the cited plants have been scientifically proven to possess aphrodisiac properties. Therefore, the need for laboratory based studies should be carried out on these plants in order to verify there pharmacological properties and safety.

***Keywords:*** *aphrodisiac; ethnobotanical study; medicinal plants; sexual dysfunction*

**1. INTRODUCTION**

Sexual dysfunction especially erectile dysfunction is defined as a persistent or recurrent inability for a man to obtain or maintain an erection sufficient to enable sexual activity (Lue et al., 2004; McCabe et al., 2016). It is a common disease condition, a said shameful illness that was difficult to talk about with others, and is at the root of problems within certain couples. Due to socio-cultural habits, complaining about sexual problems remains taboo, especially among men and for many couples, a satisfying and fulfilling sex life over the long term seems to be the key to happiness. Erectile dysfunction can significantly impair quality of life and to date considered as a serious public health concern as reflected in epidemiological data that were reported across the world (Melman and Gingell, 1999; Droupy, 2005; Diallo et al., 2012; Diakité et al., 2016). Studies that have been done on the prevalence of erectile dysfunction in Africa have reported varying results. In Africa, erectile dysfunction estimates of 26%, 29.7%, 58.6% and 58.9% were reported in Senegal (Diao et al., 2007), Tanzania (Nyalile et al., 2020), Zambia (Chitambala and Bowa, 2020) and Nigeria (Oyelade et al., 2016) respectively. Idrissa et al. (2022) in a recent prospective study which involved 100 patients that were admitted at the National Hospital of Niamey (Niger republic) reported the prevalence of erectile dysfunction of 34% including 17% mild, 7% moderate and 8% severe-unclassifiable.

Today, there have been several types of conventional treatment for erectile dysfunction, also referred as aphrodisiacs in certain circumstances (Virag, 1982; Lue et al., 2004; Reyes-García et al., 2016). An aphrodisiac by definition is “a drug or preparation inducing sexual desire”, as defined in the Oxford English Dictionary (OED) (Aronson, 2024). The best-known oral treatments are phosphodiesterase type 5 inhibitors such as avanafil (SPREDA), sildenafil (VIAGRA and its generics), tadalafil (CIALIS and its generics) and vardenafil (LEVITRA and its generics). They work quickly, but only in the presence of sexual excitement (Vidal, 2021). There are also treatments for erectile dysfunction in the form of creams applied to the tip of the penis or injected into the penis with the main action to ensure local dilatation of the blood vessels in the penis, thereby helping to achieve an erection. However, in addition to high costs of these synthetic or semi synthetic aphrodisiacs drugs, treatments with those were knew to present serious side effects to the consumers. For these reasons, many people suffering from erectile dysfunction across the world do continue to explore natural aphrodisiacs as alternative therapy because of their efficacy, accessibility, affordability, and minimal side effects (Ajao et al., 2019).

Aphrodisiac is defined as an agent (food/drug) that arouses sexual activity (Owaba et al., 2021; Nouioura et al., 2024; González-Jaramillo et al., 2023). The use of aphrodisiac plants is an ancient and very common practice in Africa (), particularly in Niger republic. Several ethnobotanical studies have been carried out on medicinal plant species.

This literature review of ethnobotanical surveys aims to report in one single document the endogenous knowledge of medicinal plants that are used as aphrodisiac agents in Niger republic in order to promote their valorization on the basis of scientific evidences.

**2. METHODOLOGY**

Ethnobotanical surveys were reviewed for medicinal plants with claimed traditional usages as aphrodisiac in Niger republic. Searching approaches include: (i) search for valuable unpublished research reports (Bachelor/Masters/PhD) through internet and through planned visits to local academic libraries for hard copies direct readings; (ii) search for published original research papers using online international scientific databases platforms like Persée (<https://persee.fr>), Muséum (https://www.mnhn.fr/fr), Revue d’ethnoécologie (<https://journals.openedition.org/ethnoecologie/index.html>), Google scholar (https://scholar.google.com/), AJOL (<https://www.ajol.info/index.php/ajol>), Academic journals (<https://academicjournals.org/>), HINARI and AGORA in Research4Life (<https://portal.research4life.org/>) using keywords such as aphrodisiac, erectile dysfunction, libido, ethnobotany and traditional medicinal plant, were used as sources of information. Any ethnobotanical survey which was conducted in Niger republic and with no reports on local use of aphrodisiac plants is not considered in this review.

**3. RESULTS**

**3.1. Ethnobotanical review of plants used as aphrodisiacs**

A total of five (5) ethnobotanical surveys were selected for the purpose of this literature review.

The list of plant species and their respective botanical family that are reported as being used as aphrodisiacs in Niger republic are presented in **Table 1**. Scientific names of each plant species were written/verified according to International code of botanical nomenclature using websites of the following databases : WFO plant list (<https://www.worldfloraonline.org/>), JSTOR (<http://plants.jstor.org>), BHL (<https://www.biodiversitylibrary.org/>) and SFE (<http://www.ethnopharmacologia.org/>).

About 38 medicinal plant species belonging to 22 families were reported to be used as aphrodisiacs in Niger republic. Plant species belonging to the family Fabaceae (10 species) and Rubiaceae (5 species) were found as most commonly used (**Fig. 1**).



**Fig. 1. Number of species from every botanical family Used as aphrodisiac in Niger republic**

**3.2. Parts of the Plant used**

Up to seven (7) different plant parts (leave, bark, root, stem, seed, flour and the whole plant) were found to be used. The highly utilized part were roots (33%), bark (23%) and leaves (21%) (**Fig. 2**).

**Fig. 2. Quotation rates for different parts of aphrodisiac plants**

**Table 1. Aphrodisiac medicinal plants used in Niger republic, their parts used and local names**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Plant species**(*Website visited for global plant name checklists*) | **Family** | **Plant part** | **Local Name** | **Reference** |
| 1 | Blepharis linariifolia Pers. *(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)*  | Acanthaceae | Whole plant | May kaba (H), Karambay (Z)  | (Ikhiri et al., 1984) |
| 2 | [Holarrhena floribunda T.Durand & Schinz](https://www.worldfloraonline.org/taxon/wfo-0000982764%22%20%5Co%20%22Holarrhena%20floribunda)*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Apocynaceae | Leaves | Sangasangahi (P), Sansangahi (G) | (Ikhiri et al., 1984) |
| 3 | Glossonema boveanum (Decne.) Decne.*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Asclepiadaceae | Fruits | Tari'n gida (H), Ganda ba hawru (Z) | (Ikhiri et al., 1984) |
| 4 | Leptadania hastata (Pers.) Decne.*(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Apocynaceae | Leaves | Hanam (Z), Yaǧiya (H)  | (Hamadou, 2008) |
| 5 | Ceiba pentandra (L.) Gaertn.*(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Bombacaceae | Roots; Bark | Bantan (Z), Rymy (H) | (Hamadou, 2008) |
| 6 | Commiphora pedunculata (Kotschy & Peyr) Engl.*(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Burseraceae | Bark | Korontollo (Z) | (Hamadou, 2008) |
| 7 | Boscia angustifolia A.Rich.*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Capparidaceae | Roots | Agahini (H), Hasu (Z) | (Hamadou, 2008) |
| 8 | Boscia senegalensis (Pers.) Lam. ex Poir.*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Capparidaceae | Roots | Anza (Z), Orha (Z) | (Ikhiri et al., 1984 ; Hamadou, 2008) |
| 9 | Maerua angolensis DC. *(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Capparidaceae | Roots | Kuubu fatto (Z) | (Hamadou, 2008) |
| 10 | Cassia italica (Mill.) Lam. ex F.W.Andrews*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Fabaceae | Roots | Agargar (Z), Hillesko (H) | (Hamadou, 2008) |
| 11 | Cassia occidentalis L.*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Cesalpiniaceae | Roots | Sanga sanga (Z) | (Hamadou, 2008) |
| 12 | Cassia sieberiana DC. *(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Fabaceae | Roots | Malga (H), Sisan (Z) | (Hamadou, 2008) |
| 13 | [Combretum glutinosum Perr. ex DC.](https://www.worldfloraonline.org/taxon/wfo-0000616334%22%20%5Co%20%22Combretum%20glutinosum)*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Combretaceae | Stem bark | Katakara (H), Kokorbey (Z) | (Hamadou, 2008) |
| 14 | Combretum nigricans Lepr. ex Guill. & Perr.*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Combretaceae | Roots | Tsiriri (H), Déli (Z) | (Hamadou, 2008) |
| 15 | Ctenolepsis cerasiformis (Stocks) Hook. F.*(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Cucurbitaceae | Whole plant | Manbarji (G) | (Hamadou, 2008) |
| 16 | Diospyros mespiliformis Hochst. ex A.DC.*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Ebenaceae | Bark | Kanya (H) Tokoye (Z) | (Hamadou, 2008) |
| 17 | Flueggea virosa (Roxb. ex Willd.) Voigt*(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Euphorbiaceae | Leaves | Cilmohy (P)  | (Hamadou, 2008) |
| 18 | Abrus precatorius L.*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Fabaceae | Fruits; Leaves | Guuru mundu (Z), Idon zakara (H) | (Ikhiri et al., 1984) |
| 19 | Acacia laeta R.Br. ex Benth.*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Fabaceae | Leaves | Akkora (H)Danga (Z) | (Ikhiri et al., 1984) |
| 20 | Lonchocarpus sericeus (Poir.) Kunth ex DC.*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Fabaceae | Roots | Bari tuuri (Z)  | (Hamadou, 2008) |
| 21 | Pericopsis laxiflora (Benth. ex Baker) Meeuwen*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Fabaceae | Roots; Bark | Makarfo (H) | (Baggnian et al., 2018) |
| 22 | Pterocarpus erinaceus Poir.*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Fabaceae | Bark; Leaves; Flours | Madobihia (H), Tolo (Z) | (Ikhiri et al., 1984) |
| 23 | Tamarindus indica L. *(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Fabaceae | Bark; Fruits |  Tsamiya (H), Bosey ˆ (Z)  | (Ikhiri et al., 1984) |
| 24 | Wissadula amplissima var. rostrata & Thonn.) R. E. Fries*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Malvaceae | Whole plant | Pola kunkundi (G) | (Hamadou, 2008) |
| 25 | Acacia erythrocalyx Brenan*(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Fabaceae | Roots | Serenpànbàngu (G)  | (Hamadou, 2008) |
| 26 | Acacia senegal (L.) Willd.*(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Fabaceae | Bark | Dakwara (H) Danga, Dada (Z)  | (Hamadou, 2008) |
| 27 | Andropogon gayanus kunth*(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Poaceae | Roots | Laali (Z), Gamba (H)  | (Hamadou, 2008) |
| 28 | Portulaca oleracea L.*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Portulacaceae | Bark | K'aro (H), Weinya zar (Z) | (Baggnian et al., 2018) |
| 29 | Crossopteryx febrifuga (Afzel. ex G.Don) Benth.*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Rubiaceae | Fuits; Leaves | Hincini morgu (Z), Tarozon awaki (H) | (Ikhiri et al., 1984) |
| 30 | Gardenia erubescens Stapf & Hutch.*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Rubiaceae | Bark | Gaudé (H), Gaudey (Z)  | (Hamadou, 2008) |
| 31 | Gardenia sokotensis Hutch. *(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Rubiaceae | Leaves; Flours | Kaurami (H) | (Ikhiri et al., 1984) |
| 32 | Gardenia ternifolia Schumach. & Thonn.*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Rubiaceae | Fruits; Leaves | Komdi (Z), Jabugibu (G) | (Ikhiri et al., 1984) |
| 33 | Mitragyna inermis (Willd.) Kuntze*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Rubiaceae | Leaves | Kaabe (Z), Geyya (H)  | (Ikhiri et al., 1984) |
| 34 | Waltheria indica L.*(*[*http://www.ethnopharmacologia.org/*](http://www.ethnopharmacologia.org/)*)* | Sterculiaceae | Roots ; whole plant | Nune basi (Z), Hankufwa (H) | (Hamadou, 2008) |
| 35 | Grewia flavescens Juss.*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Malvaceae | Bark ; roots | Kamanmua (H), Saali (Z) | (Hamadou, 2008 ; 12) |
| 36 | Cissus populnea Guill. & Perr.*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Vitaceae | Bark; Roots; Leaves | Loda (H), Lada (Z) | (Ikhiri et al., 1984) |
| 37 | Zingiber officinale Roscoe*(*[*https://plants.jstor.org/*](https://plants.jstor.org/)*)* | Zingiberaceae | Roots | Citta (H)  | (Hamadou, 2008) |
| 38 | Balanites aegyptiaca (L.) Delile*(*[*https://www.worldfloraonline.org/*](https://www.worldfloraonline.org/)*)* | Zygophillaceae | Bark | Aduwa (H) | (Adam et al., 1972) |

***H****: haussa ;* ***G****: gourmantché ; P : peul ;* ***Z****: zarma*

**4. DISCUSSION**

Literature review of ethnobotanical surveys that were carried out across the country Niger republic have permitted to census 38 species of aphrodisiac plants distributed among 22 families. A systematic review of medicinal plants used as aphrodisiacs and sexual dysfunction in sub-Saharan Africa revealed that 209 plant species belonging to 73 families are used in the treatment of sexual dysfunction in sub-Saharan Africa (Ajao et al., 2019). Unfortunately, this review did not mention any information concerning the use of medicinal plants as aphrodisiac in Niger republic. Batcho et al. (2020) conducted a study in central and southern Benin with the aim to document endogenous knowledge related to flora, valorization, promotion and conservation of plants species used for aphrodisiac purposes. From the results, a total of 124 aphrodisiac plants species from 59 families were recorded. Recently, Dikala et al. (2024) with his study aimed to identify the plants used to treat sexual dysfunction in Haut-Katanga (Democratic Republic of Congo), identified 45 different species, contained in 28 families. On the other hand, the specific richness recorded in this review is much higher than that of the 10 medicinal species inventoried by Sabo et al. (2017) through an ethnobotanical survey of medicinal plants used as aphrodisiacs in Bauchi local government area of the Federal Republic of Nigeria. The majority of the cited plant species in this study belong to the families Fabaceae (10) followed by Rubiaceae (5). Similarly, Dikala et al. (2024) and Batcho et al. (2020) both have reported Fabaceae having the highest representation at the respective rates of 15.7% and 14.49%. Predominance of aphrodisiac medicinal plants in these families especially Fabaceae might also be due to extensive range of their geographic distribution across the world and in Niger in particular.

In this study, root was recorded as the most used in the preparation of aphrodisiac recipes (33%) by the traditional healers, followed by bark (23%) and leaves (21%) as the main organs. Similarly, Dikala et al. (2024) in his study reported root (62%), bark (18%) and leaves (11%) as the most used plant parts in the preparation of aphrodisiac recipes. Some recipes may include organs such as leaves, roots, bark and fruit, alone or in combination. However, harvesting a tree's roots or its bark seems to have more negative ecological impacts than harvesting its leaves (Victorin et al., 2017). Of the 38 aphrodisiac plant species listed, 25 were cited for the first time as aphrodisiac plant and constitute one of the contributions of the present review. *Crossopteryx febrifuga*, *Balanites aegyptiaca* and *Cassia occidentalis* were cited as aphrodisiacs by Dikala et al. (2024), *Zingiber officinale*, *Cissus populnea*, *Tamarindus indica*, *Abrus precatorius*, *Cassia sieberiana*, *Leptadania hastata*, *Ceiba pentandra*, *Waltera indica*, *Gardenia erubescens* and *Cassia occidentalis* by Batcho et al. (2023) and Sabo et al. (2017).

**5. CONCLUSION**

This literature review contributed to a better understanding of the availability of aphrodisiac plants in Niger republic. The compilation of data from the reviwed ethnobotanical surveys identified 38 species. The Fabaceae family is the most represented. However, information regarding the mode of administration/preparation of the plants was not provided which means that significant effort needs to be gathered towards the compilation of indigenous knowledge through ethnobotanical surveys of the medicinal plants used as aphrodisiac in Niger republic. The fact that roots followed by bark are the most used plant organs presents a threat to the cited plant species and can pose some conservation challenges. None of the cited plants have been scientifically proven to possess aphrodisiac properties in order to justify the traditional usage of the plants and the associated toxicity. Therefore, laboratory based studies should be carried out on these plants in order to verify their pharmacological properties and safety.

**DISCLAIMER (ARTIFICIAL INTELLIGENCE)**

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

**REFERENCES**

Adam J.G., Echard, N., Lescot M. (1972). Hausa Medicinal Plants of Ader (Republic of Niger). In: Journal of Tropical Agriculture and Applied Botany, 19(8-9), 259-399; <https://doi.org/10.3406/jatba.1972.3119>.

Ajao, A.A., Sibiya, N.P., Moteetee, A.N. (2019). Sexual prowess from nature: A systematic review of medicinal plants used as aphrodisiacs and sexual dysfunction in sub-Saharan Africa. South African Journal of Botany, 122 (2019), 342–359. <https://doi.org/10.1016/j.sajb.2018.08.011>.

Aronson, J. K. (2024). When I use a word . . . Aphrodisiacs-taxonomy and doctrines. BMJ (Clinical research ed.), 386, q2019. https://doi.org/10.1136/bmj.q2019.

Baggnian I., Abdou, L., Yameogo, J.T., Moussa, I., Adam, T. (2018). Ethnobotanical study of medicinal plants sold in the markets of west-central Niger. Journal of Applied Biosciences, 132: 13392-13403. <https://dx.doi.org/10.4314/jab.v132i1.1>.

Batcho, I.A., Ewédjè, E.B.K., Yédomonhan, H., Adomou, A.C. (2020). Diversity and Endogenous Knowledge of Aphrodisiac Plants in South and Central Benin. Research Square. <https://doi.org/10.21203/rs.3.rs-46838/v1>.

Chitambala, G., & Bowa, K. (2020). A study of Pulse Pressure as a Measure of Erectile Dysfunction Among Men in Ndola, Zambia. Journal of Urology & Nephrology, 2(4), 191-195. <http://dx.doi.org/10.32474/JUNS.2020.02.000145>.

Diakité, M.L., Ouattara, A.Z., Diakité, A.S., Traoré, B., Kanté, M., Coulibaly, L., Berthé, H.J.G., & Tembely, A. D. (2016). Clinical, paraclinical and epidemiological profile of erectile dysfunction in consultation at the urology department of the Point G University Hospital. Mali medical, 31(4), 9–18.

Diallo, Y., Coume, M., Ondo, C.Z., Diao, B., & Sylla, C. (2012). Dysfonction érectile: profil épidémiologique dans une population de sujets retraités au Sénégal. Basic and Clinical Andrology, 22, 241–245. https://doi.org/10.1007/s12610-012-0200-5.

Diao, B., Alain K.N., Papa A.F., Lamine N., Odzebe, A., Bah, I., Sow, Y., Ba, M., Diagne, B.A. (2007). La dysfonction éréctile au Sénégal: Profil épidemiologique. Andrologie, 17, 223–229 (2007). https://doi.org/10.1007/BF03040731.

Dikala, O.F., Ngoy, K.E., Maloba, M.J. (2024). Ethnobotanical Studies of Reputed Aphrodisiac Plants Used in Traditional Medicine in Haut-Katanga in DR of Congo. International Journal of Innovative Science and Research Technology, 9(5). <https://doi.org/10.38124/ijisrt/IJISRT24MAY2042>.

Droupy S. (2005). Epidemiology and physiopathology of erectile dysfunction. Annales d'urologie, 39(2), 71–84. https://doi.org/10.1016/j.anuro.2005.04.004.

González-Jaramillo, N., Bailon-Moscoso, N., Duarte-Casar, R., & Romero-Benavides, J. C. (2023). A libertia patinoi (Cuatrec.) Delprete & CH Perss.(Borojó): food safety, phytochemicals, and aphrodisiac potential. *SN Applied Sciences*, *5*(1), 27.

Hamadou, H. (2008). Directory of the most commonly used plant species in traditional pharmacopoeia and the impact of sampling techniques on biological diversity in the W Biosphere Reserve of Niger. DEA thesis in Geography. file:///C:/Users/User/Desktop/Projet\_Genycology/Plante%20Niger%20Ref/NIGER%20PLANTS%20ETHNO/M%C3%A9m%20Hassane\_Pharmacop%C3%A9e%20(1).pdf.

Idrissa, H., Adehossi, I., Maliki, A.M., Amadou, H.L., Amadou, D., Habibou, H., Bonkano, A., Bako, H., Adehossi, E., Toure, A.I. (2022). Erectile Dysfunction in Hypertensive Patients in Niger: A Prospective Study of 100 Patients at the National Hospital of Niamey. Health Science & Disease, 23 (10), 36-42.

Ikhiri, K., Garba, M., Saadou, M. (1984). Research on Pharmacopoeia in Niger. (1st ed.). Organization of African Unity, Center for Linguistic and Historical Studies by Oral Tradition. Available from: http://greenstone.lecames.org/collect/revueph1/archives/HASHc148.dir/06-031-035.pdf.

Laminou, M.O., Boubé, M., Saley, K., Oumarou, B.G., Ali, M. (2107). Socioeconomic Uses of Woody Species in the Sahel: The Case of Guidan Roumdji in Niger. European Scientific Journal, 13(26). https://doi.org/10.19044/esj.2017.v13n26p355.

Lue, T. F., Giuliano, F., Montorsi, F., Rosen, R. C., Andersson, K. E., Althof, S., Christ, G., Hatzichristou, D., Hirsch, M., Kimoto, Y., Lewis, R., McKenna, K., MacMahon, C., Morales, A., Mulcahy, J., Padma-Nathan, H., Pryor, J., de Tejada, I. S., Shabsigh, R., & Wagner, G. (2004). Summary of the recommendations on sexual dysfunctions in men. The journal of sexual medicine, 1(1), 6–23. https://doi.org/10.1111/j.1743-6109.2004.10104.x.

McCabe, M. P., Sharlip, I. D., Atalla, E., Balon, R., Fisher, A. D., Laumann, E., Lee, S. W., Lewis, R., & Segraves, R. T. (2016). Definitions of Sexual Dysfunctions in Women and Men: A Consensus Statement From the Fourth International Consultation on Sexual Medicine 2015. *The journal of sexual medicine*, *13*(2), 135–143. <https://doi.org/10.1016/j.jsxm.2015.12.019>.

Melman, A., Gingell, J. C. (1999). The epidemiology and pathophysiology of erectile dysfunction. Journal of Urology, 161(1): 5–11. https://doi.org/10.1016/S0022-5347(01)62045-7.

Nouioura, G., Lyoussi, B., & Derwich, E. (2024). Rekindling desire: Unveiling the Aphrodisiac potential of Apiaceae Elixirs. *Phytomedicine Plus*, *4*(2), 100530.

Nyalile, K. B., Mushi, E. H. P., Moshi, E., Leyaro, B. J., Msuya, S. E., & Mbwambo, O. (2020). Prevalence and factors associated with erectile dysfunction among adult men in Moshi municipal, Tanzania: community-based study. Basic and clinical andrology, 30(1), 20. <https://doi.org/10.1186/s12610-020-00118-0>.

Owaba, A. D., Etim, E. I., Johnson, E. C., & Umoh, U. F. (2021). Aphrodisiac agents used in traditional medicine and their mechanism of action-A Review. *Journal of Pharmacognosy and Phytochemistry*, *10*(3), 126-153.

Oyelade, B. O., Jemilohun, A. C., & Aderibigbe, S. A. (2016). Prevalence of erectile dysfunction and possible risk factors among men of South-Western Nigeria: a population based study. The Pan African medical journal, 24, 124. https://doi.org/10.11604/pamj.2016.24.124.8660.

Reyes-García, J., Santos-Caballero, N., & Flores-Murrieta, F. (2016) Safety and Efficacy of Oral Mirodenafil in Mexican with Erectile Dysfunction. International Journal of Clinical Medicine, 7, 628-638. https://doi.org/[10.4236/ijcm.2016.79069](http://dx.doi.org/10.4236/ijcm.2016.79069).

Sabo, S. Y., Otimenyin, S. O., Uguru, M. O., Bukar, B. B. (2017). Ethnobotanical Survey of Medicinal Plants Used as Aphrodisiacs in Bauchi Local Government Area. Journal of Complementary and Alternative Medical Research, 4(4): 1-13. <https://doi.org/10.9734/JOCAMR/2017/39229>.

Victorin, H., Arlette, A., Monique, G. T., Hounnakpon, Y., Alexandre, D., Joachim, G., Akpovi, A. (2017). Ethnobotanical study of plants used in the treatment of female sterility in the Ouémé and Plateau departments of southern Benin. International Journal of Biological and Chemical Sciences, 11(4): 1851-1871. https://doi.org/10.4314/ijbcs.v11i4.34.

VIDAL. (2021). Treatments for erectile dysfunction [Internet]. Available from: <https://www.vidal.fr/maladies/sexualite-contraception/troubles-erection/traitements.html>.

Virag, R. (1982). Intracavernous injection of papaverine for erectile failure. Lancet (London, England), *2*(8304), 938. https://doi.org/10.1016/s0140-6736(82)90910-2.