

Plants Use in the Care and Management of Afro-Textured Hair: A Survey of 100 Participants

Naoual Nchinech^{1*}, Sili Akouwa Xolali Luck², El Amine Ajal², Abdelhak Chergui², Sanae Achour¹, Abdesselam Elkartouti¹, Yassir Bousliman³, Rachid Nejari², Imane Zakariya²

¹Sidi Mohammed Ben Abdellah University, Faculty of Medicine and Pharmacy of Fez, Medical Center for Biomedical and Translational Research, Fez, Morocco

²Mohammed V University, faculty of medicine and pharmacy of Rabat, pharmacognosy UPR, Rabat, Morocco

³Mohammed V University, faculty of medicine and pharmacy of Rabat, pharmacology and toxicology laboratory, Rabat, Morocco

DOI: [10.36347/sjams.2023.v11i11.022](https://doi.org/10.36347/sjams.2023.v11i11.022)

| Received: 24.10.2023 | Accepted: 21.11.2023 | Published: 30.11.2023

*Corresponding author: Naoual Nchinech

Sidi Mohammed Ben Abdellah University, Faculty of Medicine and Pharmacy of Fez, Medical Center for Biomedical and Translational Research, Fez, Morocco

Abstract

Original Research Article

Afro-textured hair has unique characteristics and requires specific care due to its curly, coily, and often fragile nature. The care practices adopted by individuals with afro-textured hair increase the incidence of certain pathologies that have become specific to this hair type over time. To treat these pathologies, an increasing number of people are turning to the use of plants due to the harmful nature of certain chemical components present in hair care products available on the market. Therefore, our work aimed to list the plants used by individuals with afro-textured hair and to verify their effectiveness in managing various hair pathologies. After an initial bibliographic section focusing on hair, including its histology, growth cycle, and hair pathologies, we conducted a survey among 100 individuals with afro-textured hair in Rabat over a period of 3 months. We identified a total of twelve plant species, eleven of which possess a range of beneficial properties in managing pathologies of afro-textured hair. The most cited plant was *Ricinus communis*, followed by *Cocos nucifera*, *Syzygium aromaticum*, *Aloe barbadensis*, *Argania spinosa*, *Rosmarinus officinalis*, *Vitellaria paradoxa*, *Olea europaea*, *Cannabis sativa*, *Trigonella foenum-graecum*, *Prunus dulcis*.

Keywords: Afro-textured hair, plants, hair care, hair pathologies, survey, pharmacist.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Classically in the literature, there are 3 ethno-hair profiles, namely: Asian, Caucasian and African hair [1]. To clarify any ambiguity around the term “African hair” we have chosen to use in this document the term “frizzy hair” to designate this hair profile. Frizzy hair is characterized by a unique, curly and voluminous texture that gives it much more delicate and specific care needs than other hair types. The care practices adopted by those with frizzy hair increase the incidence of certain pathologies among them, which, over time, have become specific to them.

Today, there are a myriad of hair products on the market to take care of frizzy hair, but these products often have harmful chemical ingredients that can harm hair health in the long run. This is why more and more people are turning to plants to find healthier and natural alternatives to take care of their frizzy hair. Plants contain active natural compounds that can benefit hair

health and beauty. Despite this growing interest in frizzy hair, there are still gaps in scientific knowledge regarding the biology of frizzy hair and hair care and treatments suitable for it.

The main objective of this survey was therefore to list the plants used by those with frizzy hair for their care in order to verify their effectiveness on the basis of scientific evidence in order to secondarily make it possible to list the indications, reasons for use and sources of information aimed at supplementing the pharmacists and beauty professionals knowledge to prevent any source of subsequent iatrogenics among their customers.

MATERIAL AND METHOD

In order to list the plants used by people with frizzy hair for hair care, an ethnobotanical survey was carried out between January and April 2023. The survey was carried out using questionnaire sheets among sub-

Citation: Naoual Nchinech, Sili Akouwa Xolali Luck, El Amine Ajal, Abdelhak Chergui, Sanae Achour, Abdesselam Elkartouti, Yassir Bousliman, Rachid Nejari, Imane Zakariya. Plants Use in the Care and Management of Afro-Textured Hair: A Survey of 100 Participants. Sch J App Med Sci, 2023 Nov 11(11): 1984-1988.

Saharan migrants living in Rabat, a city in Morocco located on the edge of the Atlantic Ocean in the northwest, delimited to the northeast by the prefecture of Salé, and to the south by the prefecture of Skhirate-Temara. All people were interviewed after obtaining their free and informed consent and were informed of the purpose of this study.

Our survey was conducted using a self-administered questionnaire which served as a tool for collecting information from the population studied. The questionnaire consisted of a questions series divided into three parts:

- The first part contains 5 questions relating to the participants profile: Gender, Age, Nationality, Hair problems encountered.
- The second part relating to plants used in the frizzy hair care: indications, forms, frequencies and use reasons.
- The third part concerns the satisfaction level, information sources and side effects.

The collected data was entered and statistically analyzed using Microsoft Excel 2013 spreadsheet. The results were reported in tables and diagrams.

RESULTS

As part of our study, we interviewed a total of 100 participants. The F/M sex ratio was 1.17. Eighty percent of the participants belonged to the age group between 21 and 30 years old.

Participants came from 12 sub-Saharan countries, the majority being Gabonese, the minority of Angola. Le taux des personnes ayant les cheveux crépus était de 94% contre 6% qui avaient les cheveux non crépus. Ces derniers avaient leurs straightened hair.

The frizzy hair people rate was 94% compared to 6% who had non-frizzy hair. These latter had straightened hair. The two major pathologies from which the participants suffered were dandruff (33%) and acquired trichorrhexia nodosa (28%). Only 2% of participants said they had no problems with their hair (Figure 1).

In our study, women was the most affected by pathologies such as dandruff, tangled hair, Acquired Trichorrexia Nodosa, hair loss. No man suffers from traction alopecia and no woman suffers from nuchal keloidal folliculitis. No adverse effects have been reported. No man suffers from traction alopecia and no woman suffers from nuchal keloidal folliculitis. No adverse effects have been reported. The satisfaction rate with the use of plants or herbal products for hair care was 73%.

Forty-four participants (44%) said they use plants or herbal products for their hair care. Among these 44 participants, 82% are women. We have identified a total of twelve plants used for frizzy hair care. These plants, their indications and use forms are recorded respectively in Tables 1 and 2.

In our study, 14% of participants say they “always” use plants or plant-based products for their hair care and 61% do it so “often”. Forty-two participants use these products because of their low cost, 36 for their effectiveness while 22 use them to avoid side effects occurrence.

The first information source regarding plants use reported by our respondents was their entourage (51%), followed by the media (43%). Participants obtaining information from healthcare professionals represent 4%. Herbalists were the least consulted by participants in terms of uses of plants for hair care with a rate of 2%.

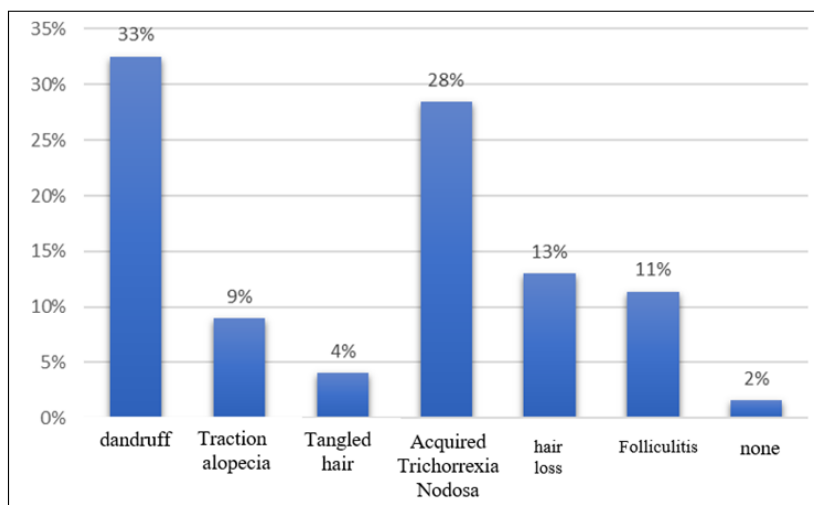


Figure 1: Common pathologies among those with frizzy hair

Table 1: Listed plants: scientific names, % of citations, indications, use forms

No.	Common names	Scientists names	% quote	Indications	Use forms
01	Aloe vera	<i>Aloe barbadensis</i>	11%	Acquired Trichorrexia Nodosa, Dandruff	Gel
02	Almond	<i>Prunus dulcis</i>	2%	Acquired Trichorrexia Nodosa	Extrait huileux
03	Argan	<i>Argania spinosa</i>	11%	Acquired Trichorrexia Nodosa, Tangled hair	Extrait huileux
04	Hemp	<i>Cannabis sativa</i>	2%	Alopecia, Traction Alopecia	Poudre, Extrait huileux
05	Clove	<i>Syzygium aromaticum</i>	13%	Traction Alopecia, Dandruff, Psoriasis	Extrait huileux, aqueux
06	Coco	<i>Cocos nucifera</i>	15%	Acquired Trichorrexia Nodosa, Dull hair	Huile végétale
07	Fenugreek	<i>Trigonella foenum-graecum</i>	2%	Alopecia, Traction Alopecia, Dandruff	Poudre
08	Ginger	<i>Zingiber officinale</i>	2%	Alopecia, Dandruff	Macérât huileux
09	Shea	<i>Vitellaria paradoxa</i>	9%	Acquired Trichorrexia Nodosa	Beurre végétal
10	Olive	<i>Olea europaea</i>	2%	Acquired Trichorrexia Nodosa	Extrait huileux
11	Castor	<i>Ricinus communis</i>	22%	Alopecia, Traction Alopecia	Extrait huileux
12	Rosemary	<i>Rosmarinus officinalis</i>	9%	Alopecia, Traction Alopecia, Dandruff	Extrait huileux

Table 2: Plant combinations: Indications and use forms

No.	Plant associations	Indications	Use forms
01	Argan + Aloe vera	Acquired Trichorrexia Nodosa	Emulsion
02	Olive + Rosemary + Clove	Dandruff, Traction Alopecia, Alopecia	Huiles
03	Shea + Coco +Argan	Acquired Trichorrexia Nodosa	Beurre

DISCUSSION

The city of Rabat is the second city in Morocco most inhabited by our target after Casablanca. Therefore, it was an appropriate choice to conduct our study [2]. The majority of participants were between 21-30 years old, this is consistent with the results of the last general demographic and housing census carried out in 2014 which reveal that 43.2% of the migrant population in Morocco, made up of 26% sub-Saharan Africans, was between 15-39 years old [3].

We identified a total of 12 nationalities during our investigation. This result can be explained by the migration policy which consists of a sort of “opening” of Morocco to migrants launched since the end of 2013 [4].

The majority of our participants (94%) have frizzy hair in its natural state, that is to say not having undergone chemical transformation. The remaining 6% have straightened their hair. This can be explained by the emergence and popularization of the “nappy” movement (contraction of the words Natural and Happy) since the 2010s.

This movement consists of keeping your frizzy hair in its natural state and removing all treatments that permanently modify it. Many people with frizzy hair have abandoned chemical treatments (e.g. straightening) which permanently modify the structure of their hair in favor of treatments aimed at preserving the original texture of their hair. This movement, although

considered a fashion effect, is in reality a question of identity for those who adhere to it. The other reasons mentioned by the latter are medical, environmental, aesthetic and financial [5].

The two most present pathologies among participants are dandruff (33%) and Acquired Trichorrexia Nodosa (28%). Dandruff is a common condition that affects almost 50% of the world's population. They appear at puberty, peak in incidence and severity at around age 20, and become less common in people over 50. The participants in our study mainly have an age group constituting a factor favoring the occurrence of the pathology [6]. In a study conducted in the United States and China, the prevalence of dandruff was 81–95% among African Americans, 66–82% among Caucasians, and 30–42% among Chinese people [7].

Those with frizzy hair are therefore more prone to dandruff; which explains the first place that this pathology occupies in our results. Two studies carried out in 2007 and 2017 reveal that the incidence of Acquired Trichorrexia Nodosa is higher among those with frizzy hair due to the texture of their hair and care practices that promote tangling, friction and breakage. The fact that several of the participants in the investigation suffer from Acquired Trichorrexia Nodosa is therefore justified [8, 9].

In our survey, 100% of those who suffer from Acquired Keloid Folliculitis are men and 100% of those who suffer from Traction Alopecia are women. A study

carried out in 2011 and published by the “International Journal of Dermatology” shows that Acquired Keloid Folliculitis has a predilection for frizzy hair and occurs 10 times more in men than in women [10].

The higher prevalence of Traction Alopecia in women is explained by the fact that it is caused by repeated braids putting pressure on the hair follicles. Women practice these care methods more than men. Only 2% of participants say they do not suffer from any pathology related to their hair. This reinforces the fact that those with frizzy hair are prone to many hair problems.

Our results show that women are more willing to do hair care than men. These are often limited to shampoo while women adopt several steps and care products. It should also be noted that sub-Saharan men mostly have their hair cut almost to the level of their heads, which does not require much care. We listed a total of 12 plants that participants used for hair care. Among these plants, we cite:

Castor oil (*Ricinus communis*) is the plant most cited (22%) by participants for promoting hair growth. Castor oil has gained popularity when it comes to hair growth. Although there is not yet scientific evidence clearly attesting to the ability of this oil to grow hair, we know that the ricinoleic acid it contains stimulates microcirculation in the scalp [11]. The oil also has nourishing properties as explained in the castor monograph in the appendices. It is more advantageous to use plants with scientifically proven growth properties such as rosemary and peppermint.

Hemp (*Cannabis sativa*) is used by participants to also promote hair growth. Hemp seed oil, obtained by pressing hemp seeds, is rich in polyunsaturated fatty acids (Omega 3 and Omega 6) which promote a healthy scalp and help hair growth. A study evaluating the effectiveness of this oil in the treatment of alopecia concluded that it is promising in promoting hair growth [12].

Fenugreek (*Trigonella foenum-graecum*), is used by some participants to promote hair growth. A study set out to evaluate the hair growth potential of three plants, *Semecarpus anacardium*, *Trigonella foenum-graecum* and *Trigonella corniculata*. The latter made it possible to conclude that *T. foenum-graecum* presented the best hair growth activity over a short time with sheathed and fortified hair shafts. Fenugreek is therefore effective in significantly promoting hair growth [13].

The majority of participants use plants for their hair care due to their low cost compared to conventional medicines. Indeed, most of the plants mentioned by the participants are accessible in Morocco at a lower cost. But this also raises the question of the authenticity and quality of the plants because the risk of falsification of plants and their poor conservation cannot be excluded.

The second reason participants use herbs for hair care is that herbs are more effective than conventional medications. This reason is consistent with the high level of their satisfaction.

More than 20% of participants say they use plants for hair care because they cause fewer side effects than conventional medications. This statement is consistent with the lack of reporting of adverse effects by participants. A survey carried out among herbalists in Beni Mellal on the use of plants in dermatology and cosmetology reveals that no adverse effects linked to the use of the listed plants were reported by the herbalists [14].

The very low consultation of herbalists can be explained by the language barrier that exists between migrants in Morocco and the natives. The majority of sub-Saharan Africans present in Morocco speak very little or not at all in the local dialect. Which makes discussions with herbalists difficult.

Note also that sub-Saharan migrants residing in Morocco for the medium or long term mostly organize themselves into associations and coordinations to facilitate integration. This may explain why the entourage is the first source of information regarding the use of plants for sub-Saharan people in Morocco.

Those with frizzy hair should turn more towards health professionals for more adequate management of pathologies with plants or plant-based products of assured quality.

Study Limitations

- Data Lack on the dosages of plants of interest in hair care.
- Lack of resources regarding certain hair pathologies.
- Lack of clinical trials confirming the effectiveness and safety of certain plants used in hair care.

CONCLUSION

The survey carried out among 100 people with frizzy hair in Rabat allowed us to list the plants commonly used to treat conditions. Although some plants are used incorrectly in some cases, we note that most plants are used for the correct indications by participants.

That said, our work constitutes a tool available to both health professionals and individuals who aspire to understand frizzy hair. It also opens up interesting

prospects for the development of plant-based hair care products, adapted to the specific needs of frizzy hair.

REFERENCES

1. L'influence de l'ethnie sur la structure du cheveu. Activilong [Internet]. [cited 2023 september 20]. Available from: <https://activilong.com/fr/content/96-linfluence-de-ethnie-sur-la-structure-du-cheveu>.
2. Gauthier, C. (2023). Site institutionnel du Haut-Commissariat au Plan du Royaume du Maroc. Etude sur les résidents étrangers au Maroc. [cited 2023 Aug 31]. Available from : https://www.hcp.ma/Etude-sur-les-residents-etrangers-au-Maroc_a827.html.
3. Gauthier, C. (2017). Note d'information du Haut-Commissariat au Plan à l'occasion de la journée internationale des migrants 18 décembre 2017. Site institutionnel du Haut-Commissariat au Plan du Royaume du Maroc. [cited 2023 Aug 31]. Available from: https://www.hcp.ma/Note-d-information-du-Haut-Commissariat-au-Plan-a-l-occasion-de-la-journee-internationale-des-migrants-18-decembre-2017_a2067.html.
4. Politique-Nationale-dimmigration-et-dAsile-_-Rapport-2018.pdf [Internet]. cited 2023 Aug 31]. Available from: http://marocainsdumonde.gov.ma/ewhatisi/2019/01/Politique-Nationale-dimmigration-et-dAsile-_-Rapport-2018.pdf
5. Crépues et fières de l'être. Le Monde.fr [Internet]. 5 févr 2015 [cited 2023 Aug 31]. Available from: https://www.lemonde.fr/societe/article/2015/02/05/crepues-et-fieres-de-l-etre_4570832_3224.html.
6. Borda, L. J., & Wikramanayake, T. C. (2015). Seborrheic Dermatitis and Dandruff: A Comprehensive Review. *J Clin Investigat Dermatol*, 3(2), 10.
7. Schwartz, J., Deangelis, Y. M., & Dawson, T. (2012). Dandruff and Seborrheic Dermatitis: A Head Scratcher.
8. McMichael, A. J. (2007). Hair Breakage in Normal and Weathered Hair: Focus on the Black Patient. *J Investig Dermatol Symp Proc*, 12(2), 6-9.
9. Haskin, A., Kwatra, S. G., & Aguh, C. (2017). Breaking the cycle of hair breakage: pearls for the management of acquired trichorrhexis nodosa. *Journal of Dermatological Treatment*, 28(4), 322-326.
10. Khumalo, N. P., Gumedze, F., & Lehloeny, R. (2011). Folliculitis keloidalis nuchae is associated with the risk for bleeding from haircuts. *International journal of dermatology*, 50(10), 1212-1216.
11. Gail VL de. Madmoizelle. (2022). Huile de ricin: non, elle n'aide pas à faire pousser les cheveux. [cited 2023 Aug 31]. Available from: <https://www.madmoizelle.com/cest-un-fait-rien-ne-prouve-que-lhuile-de-ricin-aide-a-faire-pousser-les-cheveux-1248449>
12. Farhood, I. G., Mamoori, A., & Sahib, Z. H. (2023). Clinical and Pathological Evaluation of Hemp Seeds Oil Effectiveness in the Treatment of Alopecia Areata. *Medical Journal of Babylon*, 20(1), 109-111.
13. Semalty, M., Semalty, A., Joshi, G. P., & Rawat, M. S. M. (2010). In vivo hair growth activity of herbal formulations. *IJP-International Journal of Pharmacology*, 6(1), 53-57. DOI: 10.3923/ijp.2010.53.57
14. Jandi, M. Plantes médicinales en dermatologie et en cosmétologie: Enquête auprès des herboristes de la région de Béni Mellal. Thèse de Médecine N° 206-17. Faculté de médecine et de pharmacie de Marrakech. [cited 2023 Aug 31]. Available from: <http://wd.fmpm.uca.ma/biblio/theses/annee-htm/FT/2017/these206-17.pdf>.