

## ORIGINAL RESEARCH ARTICLE

## Ethnobotanical Survey of Plants species used by Female in Cosmetic Practices in Katsina City - Nigeria

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### ABSTRACT

Like humanity and civilization itself, the idea of beauty and cosmetics is very old. Beauty is a major obsession among women. They therefore utilize a variety of cosmetics to keep their skin glowing. Elderly women and traditional medicine practitioners (TMP) are increasingly experimenting/using herbs, trees, and shrubs to determine their efficacy for beauty and dermatological care as the demand for plant-based cosmetics rises. The study was aimed at survey of plants and recipes from used by females in Katsina City, of the Northwestern Nigeria. Using a semi-structured questionnaire, 15 (TMP) and 20 Traditional Cosmetic businesses spread over 15 different areas of the city were interviewed between November 2021 and August 2022. The survey resulted in the documentation of seventeen (17) plant species representing fourteen (14) distinct families and seventeen (17) recipes. The most often utilized plants were found to be *Lawsonia inermis*, *Curcuma longa* and *Allium cepa* with a frequency of 12.5, 8.5 and 8% respectively. Tomato and meant leaves each with 2% frequency, were found to be the least frequently used ingredients in recipes. Due to the plants' demonstrated efficacy, as stated by the respondents, adequate recording, conservation, cultivation, and use of these cosmetic plants are required in order to prevent their extinction or threatened status.

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### INTRODUCTION

Ethnobotany is the study of the intricate connection between plant uses and culture. The study of ethnobotany focuses on how plants have been or are currently utilized, maintained, and perceived in human civilizations. This includes plants used in food, medicine, divination, cosmetics, dyeing, and textile production as well as in building, clothing, rituals, and music (Barel *et al.*, 2001). A cosmetic plant is any plant that contains chemicals that can be used for cosmetic purposes or that are precursors to the production of effective medications. According to the World Health Organization, a cosmetic plant is any plant that contains compounds that can be utilized for cosmetic purposes or as precursors to the creation of potent drugs (WHO, 1991). According to (Schmelzer and Gurib-Fakin, 2008), cosmetic plants significantly improve the social harmony and lifestyles of rural Africans. Over the years. Plants have been used as remedies for beauty care issues since antiquity, and several testimonies tell us that this was the case even then. Ancient women used ground plant materials to their hair, faces, and bodies, drank herbal astringents, and massaged their bodies with oil made from various herbs (Singh *et al.*, 2010). These significant

plant species have been harvested over time from the wild and utilized as cosmetics in regional traditional medicine, but little is known about their conservation status. Over 5000 years ago, Indian Ayurveda also advocated the use of herbs for skin and aesthetic treatment (Abbasi *et al.*, 2010). Plants can be used for beauty in their pure or combined forms. They work to cleanse human body of its internal impurities and external pollutants while also providing it with extra nutrients to help it shine and glow (WHO, 1991). Human skin receives natural, faultless care from plants, which also nourishes it and promotes interior growth. Traditional cosmetics and anti-aging skin care products have gained popularity recently because they are thought to be less toxic, effective, and thought to contain antioxidants that are helpful for treating skin issues, skin toning, smoothing, and increasing radiance and hydration (Yokota *et al.*, 1998; Hamilton, 2004; Bannister, 2006; Wu, 2008; Singh and Abubakar, 2011; Singh and Abubakar, 2013). Every culture has its own distinctive traditional cosmetics that incorporate plants/herbs, minerals, and fats to maintain skin brightness and attractiveness. Phytocosmetics are natural cosmetics with

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ingredients that are high and rich in plant recipes. The use of synthetic cosmetics products other than the traditional ones has made the information on folklore cosmetics scarce and on the verge of extinction. This has made traditional cosmetics unpopular, led to the loss of original traditional cosmetics recipes, and tainted the information on traditional phytocosmetics. In rural tribes, however, the use of natural plants and natural products has persisted (WHO, 1991). With globalization, the historical usage of herbal/plant items as cosmetics has been disregarded.

The use of natural plants and natural goods has persisted in isolated communities despite the neglect of the globalization of the transmitted usage of herbal/plant products as cosmetics. The majority of ethnobotanical research have ignored the use of natural ingredients as cosmetics, leaving just a few traces of information that was passed down orally (Abbasi *et al.*, 2010). Over 200 herbs, minerals, and lipids used to improve health and attractiveness have been reported in Ayurvedic medicine (Datta *et al.*, 2009). Singh and Abubakar (2013) reported on the use of discovered plant cosmeceuticals and classified them into four groups: toilet soap; hair care products; products for nail care; and creams, emulsions, lotions, gels, and oils for skin (hands, face, and feet). Additionally, plants with high use values were *Lawsonia inermis* L (*Lythraceae*), *Cocos nucifera* L (*Asteraceae*), *Butyrospermum paradoxum* (F. Gaertn) Hepper (*Sapotaceae*), and *Pterocarpus osun* Craib (*Fabaceae*) (Agbatutu *et al.*, 2022).

Recently, many formulas for cosmetics and personal care products based on Indian herbs have been created. In addition to their historically noted uses, certain recent studies have confirmed the usefulness of Indian herbs in personal care products. The term "herbal cosmetics" refers to products that have been specially created with one or more herbal elements to deliver specific cosmetic benefits only (Burkill, 1985). Due to their mild or complete lack of adverse effects, demand for herbal treatments is rising quickly. The best feature of herbal cosmetics is that only herbs and shrubs are used in their production. The natural components in herbs do not have any negative effects on the body of a person; rather, they supply the body with vitamins and other beneficial minerals (Kamal *et al.*, 1999). Cosmetic products are defined by the European Directives 93/35/EEC (European Commission) as any substance or preparation intended to be placed in contact with the various external parts of the human body (epidermis, hair system, nails, lips, and external genital organs), or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cosmetic purposes. The most reliable and accurate approach of discovering new information about medicinal plants or focused on those previously identified for bioactive constituents is considered to be ethnobotanical research or surveys

(Alebiosu *et al.*, 2012). The purpose of this study is to identify and catalog the cosmetics plants and practices used by women in Katsina city. This documentation will be used as a guide the development of potent cosmetic products and recipes from natural plants in the treatment and management of beauty cares of our bodies with little to no side effects.

## MATERIALS AND METHODS

### Study area

The survey was conducted in Nigeria's Katsina State's capital city, Katsina Metropolis. It is located at latitude 12.985531N and longitude 7.617144E with a total land area of 24,192 km<sup>2</sup>, and in 2016, the estimated population in Katsina was 429,000. (NPC, 2016) The city, entitled as the "Home of Hospitality," is located in the state's central region and rainy season is oppressive and generally overcast lasting for 5.1 month, while the dry season is windy and partly cloudy. The city is also quite hot all year round. The average yearly temperature ranges from 25 to 45°C Hausa-Fulani is the largest ethnic group in the state, and Islam is the most popular religion, Katsina is mostly an agricultural zone located in the Sahelian savannah.

### Sampling and Data collection

Interviews were conducted with 200 respondents, of which 140 were women (about 70%) and 60 were men (30%). The respondents are primarily Nigerian of the Hausa-Fulani ethnic group. They include elderly women (22.5%), young women (52.5%), local herb vendor (10%), and vendors of traditional medicines (15%). The respondents ranged an ages from 20-75, with the majority (77.5%) falling within the age band of 21 to 60. The respondents with the highest levels of formal education (27.5%) were the most common (Table 1). Kofar Sauri, Tudun Matawalle, Kofar Guga, Kofar Marusa, and Kofar Durbi all within Katsina city were the five different places where the respondents were surveyed.

The data were acquired using a series of semi-structured, open-ended questionnaires as well as informal/oral interviews with young and old women, local herb vendors, herbalists, and individuals with a strong background in native cosmetic plants and traditional medicine. The survey was carried out over the course of a year, from November 2021 to August 2022, and several visits to the respondents were made. Hausa, the local language, was utilized to construct and administer the questionnaires and to collect the necessary data from the respondents. The local name of the plant, the components employed, and the preparation techniques are among the details. The listed plants' local names were verified using published works, and the correct taxonomic nomenclature was verified in the plant list database at [www.worldfloraonline.org](http://www.worldfloraonline.org) and [www.plantlist.org](http://www.plantlist.org).

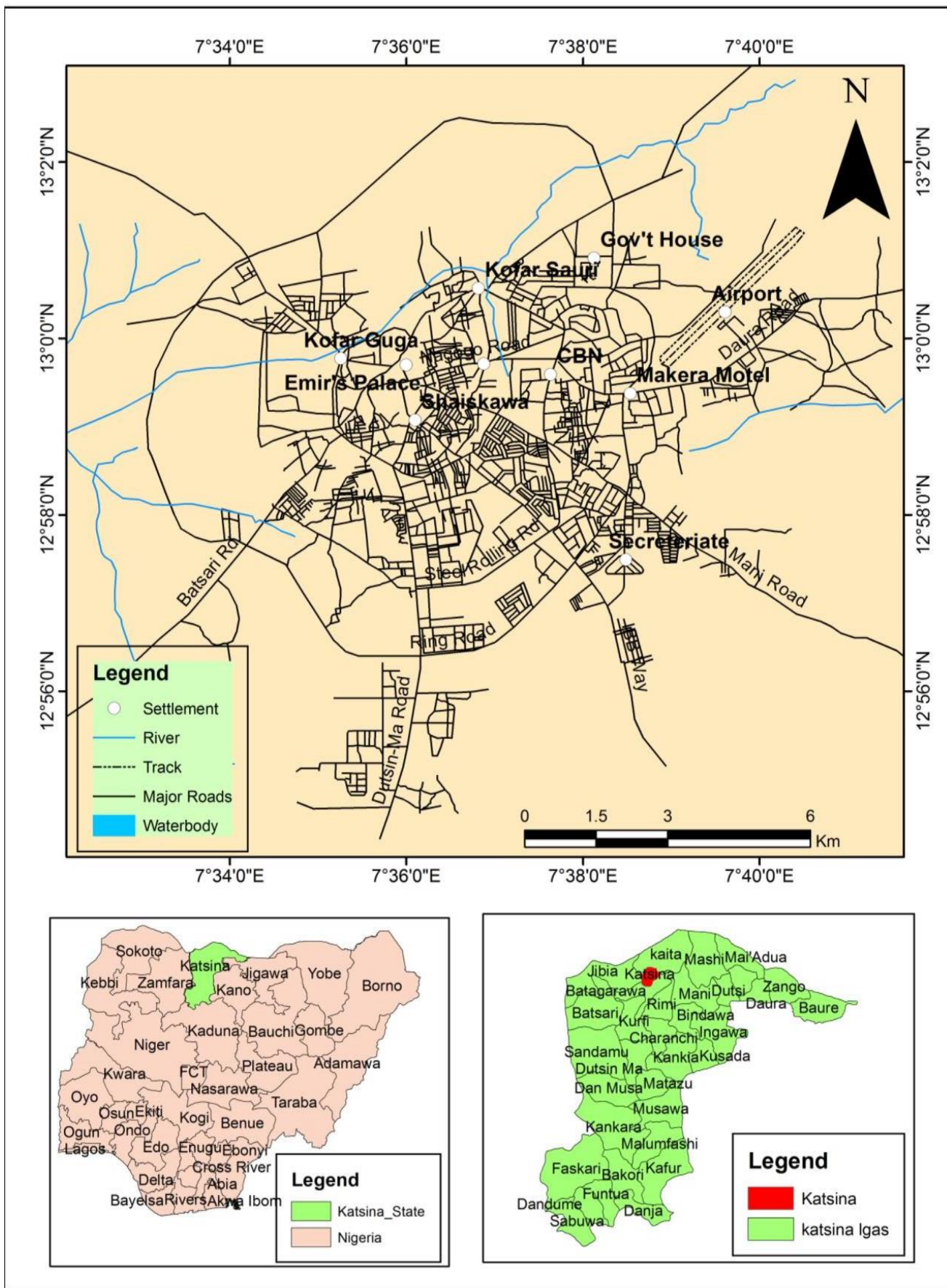


Figure 1: Map of Nigeria with Katsina State highlighted

**Table 1.** Summary of major sources of information available on ethno cosmetics

<b>Demography</b>	<b>Frequency (n=200)</b>	<b>Percentage (%)</b>
Elderly Women	45	22.5
Young Women	105	52.5
Local herbs sellers	20	10
Traditional Medicine seller	30	15
<b>Gender</b>		
Male	60	30
Female	140	70
<b>Age range</b>		
Below 20	30	15
21 – 30	40	20
31- 40	50	25
41 – 50	35	17.5
51 – 60	30	15
60 and above	15	7.5
<b>Ethnicity</b>		
Hausa	60	30
Fulani	50	25
Mixed (Hausa-Fulani)	90	45
<b>Religion</b>		
Islam	200	100
<b>Education</b>		
No formal	45	22.5
Primary	25	12.5
Secondary	35	17.5
Diploma	40	20
Degree and above	55	27.5

**RESULTS**

Seventeen (17) plant species from fourteen (14) families were identified as plants used in cosmetics practice (Table 2). Data included the plant families, local names, parts used, and frequency of occurrence. The families *Cucurbitaceae*, *Alliaceae*, and *Lamiaceae* each contained two

plants among the seventeen plant species, while the other families each had one plant. The leaves, fruit, and seeds were mostly utilized in the formulation of various cosmetic products.

**Table 2: List of recorded Plant Used for Cosmetic practice in Katsina Metropolis**

<b>S/N</b>	<b>Species Name</b>	<b>Plant Family</b>	<b>Part of plant utilised</b>	<b>English name</b>	<b>Hausa name</b>	<b>Frequency of occurrence</b>
1	<i>Citrullus lanatus</i>	Cucurbitaceae	Fruit	Water melon	Kankana	8
2	<i>Olea europaea</i>	<u>Oleaceae</u>	Oil	Olive	Zaitun	12
3	<i>Cucumis sativusa</i>	Cucurbitaceae	Fruit	Cucumber	Kokwanba	13
4	<i>Curcuma longa</i>	Zingiberaceae	Rhizome	Turmeric	Turmeric	17
5	<i>Solanum lycopersicum</i>	Solanaceae	Fruit	Tomato	Tomatur	4
6	<i>Nigella sativa</i>	<u>Ranunculaceae</u>	Oil/powder	Black seed	Habbatus-sauda	15
7	<i>Ziziphus jujube</i>	<u>Rhamnaceae</u>	Fruit	Jujube	Magarya	12
8	<i>Aloe vera</i>	Alliaceae	Gel	Aloe vera	Hantsar giwaa	10

**Table 2: Continued**

S/N	Species Name	Plant Family	Part of plant utilised	English name	Hausa name	Frequency of occurrence
9	<i>Citrus aurantifolia</i>	Rutaceae	Fruit	Lemon	Lemun tsami	11
10	<i>Allium cepa</i>	Alliaceae	Bulb	Onion	Albasa	16
11	<i>Lawsonia inermis</i>	<u>Lythraceae</u>	Leaves	Henna plant	Lalle	25
12	<i>Ocimum gratissimum</i>	Lamiaceae	Leaves	Scent leaves	Doddoya	12
13	<i>Trigonella foenum-graecum</i>	<u>Fabaceae</u>	Seed powder	Fenugreek	Hulba	10
14	<i>Mentha</i> <u>Lamiaceae</u>	Lamiaceae	Leaves	Mint leaves	Na'ana'a	4
15	<i>Daucus carota</i>	Apiaceae	Root	Carrot	Karas	14
16	<i>Moringa oleifera</i>	Moringaceae	Leaves/seed	Moringa	Zogale	11
17	<i>Cocos nucifera</i>	<u>Areaceae</u>	Fruit	Coconut	Kwakwa	6

**Table 3. Some of the most effective Cosmetic plants recipes from Women folk in Katsina Metropolis, Katsina State**

S/N	Method of Preparation
1	Make a smooth paste by combining 2 tablespoons of curd and 2 tablespoons of watermelon juice to make watermelon paste for fresh and beautiful skin. For fresh, radiant skin, apply the paste to your face or skin and let it sit for 15 to 20 minutes. Then, rinse it off with water.
2	To hydrate the skin and increase the efficiency of the moisturizer, add a few drops of olive carrier oil to the moisturizer of choice or apply it directly to the skin. Olive oil has calming characteristics that are beneficial for dry, irritated, or inflamed skin.
3	Cucumbers are incredibly good for the skin, so make a face mask by combining a tablespoon of cucumber pulp with some watermelon juice. Spread the mixture evenly over your face, and after 15-20 minutes, rinse it off with cold water.
4	Apply a paste of raw milk and turmeric powder on your face and neck. For radiant, younger-looking skin, allow it to dry before washing it off. This mixture will moisturize your skin from the inside out and help you achieve beautiful skin.
5	Slice a tomato in half and rub the liquid into your skin pores as you rub the tomato all over. 15 minutes after applying, wash it off. You can use it to remove any skin blemishes and have skin that is beautiful and radiant.
6	Applying black seed oil topically to the skin may moisturize hair. Moisturizing and softening the skin It also helps alleviate the symptoms of skin diseases including eczema and acne.
7	Various skin irritations and inflammations, such as psoriasis, eczema, and acne, have been treated topically with jujube juice and extract. To achieve the same results, eat jujube fruit. Along with keeping the skin energized with oxygenated blood, it can also aid in delaying the appearance of wrinkles and scars.
8	Cut a leaf from a live aloe vera plant, gather the gel with a spoon (some prefer to mix it with coconut or olive oil), and rub the gel or combination into the scalp. Let it sit for an hour, then wash the hair and scalp with a gentle shampoo. Repeat this procedure as necessary, two or three times per week. The hair might benefit from being strengthened and made to shine.
9	Lemon will gently exfoliate dry, dead skin cells. Squeeze watermelon juice into a dish, add one tablespoon of lemon juice, and one tablespoon of honey. Stir, then apply to skin. Let it sit for a while, then rinse with water.
10	To get rid of acne-causing bacteria, simply massage some fresh onion juice into your face or make an onion face pack with gram flour. You can also combine 1 tablespoon of onion juice with 1 tablespoon of olive oil or almond oil, blend well, and apply to your skin. After 15 minutes, wash it off with cold water.
11	Henna leaf powder is used to create decorative stains on your skin during temporary tattooing, a kind of body art. It is chosen over getting a tattoo since it is more natural, affordable, risk-free, and painless.
12	Chewing on the stem of a fragrance leaf destroys oral germs and helps prevent foul breath. Additionally, it can stop tooth decay. Tea brewed from smell leaf leaves can be used as a tonic or gargled to relieve sore throats.
13	As a versatile herb, fenugreek can be used for breast massage and has been proven to produce effective outcomes as well as tighten the breasts. You can massage your breasts with fenugreek seed paste after roasting and grinding some seeds into a fine powder. Leave the mixture on for 8 to 10 minutes before washing it off. It gives them a strong, substantial feel.

**Table 3: Continued**

S/N	Method of Preparation
14	To prepare a paste, combine mint leaves, cucumber, and honey in a food processor. Apply it to the skin, let it sit for 25 minutes, then rinse with cold water and moisturize thereafter. Your skin will become lighter after this procedure, making you appear young and vibrant.
15	Potassium-rich carrots aid in reducing dry skin because they are a natural moisturizer. Grate a carrot in half, then thoroughly blend it. Stir in some milk and a teaspoon of honey. Put this pack on your face, then leave it alone for 15 minutes.
16	Add half a tablespoon of lemon juice, half a tablespoon each of honey and rose water, and half a tablespoon of Moringa leaf powder to the mixture. To create a reasonably thick and smooth paste, check the consistency and add water as necessary. Apply a small bit of moisturizer to your face after drying it with a clean towel in the morning to achieve smooth and soft skin. Leave it on for 10 minutes before rinsing it off with lukewarm water.
17	For teeth whitening, you can remove oral germs and treat problems like gingivitis by swishing coconut oil around in your mouth for about 15 minutes. Additionally, you can make natural toothpaste by combining baking soda and coconut oil.

## DISCUSSION

It is impossible to overstate the importance of using plants as cosmetics in today's culture. In the Katsina city, respondents provided information on seventeen (17) plant species from fourteen (14) families and a sample of seventeen (17) cosmetics recipes, Table 1, 2 and 3. While numerous plant parts including leaves, fruits, seeds, rhizomes, bulbs, and oil were commonly utilized in aesthetic procedures, the henna plant, turmeric, onions, and black seeds recorded the highest frequency of occurrence. When preparing, administering, and consuming prepared meals, these compositions were typically blended with water, honey, oil, and other plants. There are reports on numerous scientific studies on the potential of some aesthetic plants, and these were comparable.

In order to save plants from becoming endangered or extinct, [Akinwumi and Sonibare \(2019\)](#) emphasized that accurate documenting and cultivation of species from ethnobotanical surveys are crucial. This supports and allays the concerns raised by respondents who noted that certain plants were rare in their natural habitats as a result of the growing demand for food and medicine ([Agbatutu et al., 2022](#)). Since sustainable cultivation will have a significant long-term impact on the environment, beauty care, and economy, the growing dependence on these plant-based cosmetic practices, particularly in developing countries, for beauty care can only be properly harnessed and managed if such measures are taken.

## CONCLUSION

Seventeen plant species belonging to fourteen families with seventeen (17) recipes for use in cosmetics were revealed through respondents, who are entirely women and traditional herb merchants in Katsina city of Northern Nigeria. This could open the door to more in-depth research into the efficacy of conventional beauty care techniques that are safe to use and have fewer harmful side effects. It is therefore, recommended that further research needs to be carried out to the health benefit of all the cosmetics recipes and their effectiveness

on the said purpose of beauty care and economic values to the nation.

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