

Effect of Utilizing Chemical Compounds from Selected Indigenous Herbs for Theatre and Film Makeup Formulations in Akwa Ibom State.

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ABSTRACT

The study investigated the effect of utilising chemical compounds from selected indigenous herbs for theatre and film makeup formulations in Akwa Ibom State. Laboratory protocols were used to analyse the phytochemical constituents of some selected indigenous herbs like camwood, plantain stem juice, hoolahenna, okra, and palm fruit to ascertain their necessity for theatre and film makeup formulations in order to reduce the high demand for foreign-made cosmetics. Findings from the study revealed that camwood contains saponins; plantain stem juice contains flavonoids; hollarhena contains steroids, glycosides, tannins, and phenolics; okra contains flavonoids; and palm fruit contains carotenoids useful for cosmetic production. From the study it was concluded that indigenous herbs should be maximised as an alternative option in the production of theatre and film makeups.

Keywords: *Chemical compounds, indigenous herbs, theatre, and film makeup formulations, Akwa Ibom State.*

INTRODUCTION

Make-up is an essential component in any artistic performance. According to Ekeke and Ekeke (2025), “make-up in performing arts – motion pictures or television, are any of the materials used by actors for cosmetic purposes and as an aid in taking on the appearance appropriate to the characters they play”. Umoh (2021) confirms that “In the film industries, makeup designers are basic necessities” (111). The increasing demand and need for foreign-made theatre and film makeup formulations is almost becoming a standard in the Nigerian cosmetic industry. One of the reasons could be due to high consumer preferences for imported cosmetics (Braide et al., 2026). Umoh (2024) reaffirms that “the increased appetite for foreign makeup materials is becoming a narrative in the cosmetic market” (93). Over the years, varieties of foreign theatre and film makeup materials have flooded the Nigerian cosmetic market, introducing appealing and innovative brands that are answerable to makeup needs and also gaining increased social interest despite the diminishing economy of the nation (Ekpo et al., 2024; Edet et al., 2024). Judging from the increasing rate of demand and the use of these exotic cosmetics over the years, it is possible that Nigeria may be one of the contributors to this remarkable growth in the global cosmetic industry, but perhaps with an incomparably low impact on the local theatre and film makeup production sector. Hence, this study sets out to change the narrative by selecting some indigenous herbs from Akwa Ibom State to ascertain their chemical compounds necessary for theatre and film makeup formulations,

thereby creating an awareness and also encouraging local producers of cosmetics towards maximising them as alternative options.

It may be informative to note that some of the exotic theatre and film makeup materials, as reported by Diamantino (2019), contain toxic-induced substances, probably when added as preservatives to guard the products against contamination. These chemicals are likely to factor skin impairment and other health challenges as adverse effects. Jones and Selinder (2022) reported that formaldehyde and parabens, when added to theatre and film makeup formulations, are classified as a group one carcinogen known to cause cancer in humans. It can also cause skin irritation and breathing difficulties in some people when consistently used over time. In line with the study, Umoh (2024) maintained that many foreign cosmetics react negatively, and some render the skin quite uncouth, coarse, and defective in the long run. Similarly, Scott (2022) suggested that formaldehyde, a known carcinogen; methylene, glycol, quaternion, mercury, diethyl, phthalates, isobutyl, and isopropyl are some of the toxic additives in regular cosmetics that should be banned to avoid later health complications. Further reports by Hima and Kaliaperumal (2018) reaffirmed that methylene chloride, which forms a combination of the regular hair dye, may cause health complications like blood cancer; some cosmetics have high levels of fluoride known as PFA, which is linked to infertility issues, impaired immune functions, and more.

Similarly, Natalie (2023) confirmed that eighty-two percent of the waterproof mascaras clinically evaluated contained a high volume of some harmful ingredient. Sixty-three percent of foundation and sixty-two percent of liquid lipstick also have high fluoride levels. Going by the different submissions by different authorities, there is a possibility that a good number of chemical compounds found in some indigenous herbs used for theatre and film makeup contain toxic-induced substances that are harmful to users' health. Due to the indispensability of theatre and film make-up in creating dramatic characters, make-up artists and actors patronise all sorts of cosmetic brands, not minding the ingredients combined to process them, and consequently, actors and other users are left in a dilemma of health hazards after the production (Ochefu, 2010; Utuk et al., 2024).

In this research, the selected indigenous herbs are camwood (iduod), hollarhenna (Abukun), okra (etighe), plantain stem juice (mbong ekped ukom), and palm fruit (eyop), which were collected for chemical compound screening as a function of determining their effect for theatre and film makeup formulations in Akwa Ibom State.

Theoretical Framework

The theory of appropriation was propounded by Mellisa (2023). The main idea of Bakhtin's theory of appropriation centres on establishing knowledge-based collaborations between the sciences and the arts. The theory identified the importance of cross-multi-disciplinary collaborations, which support the democratisation of knowledge development between two or more disciplinary domains. The concept of appropriation theory seeks to encourage the cross-fertilisation of knowledge by way of combining and engaging two disciplinary fields towards birthing new ideas or methods for specific courses of importance to the body of knowledge.

The theory basically portrays the art of experimentation of conceived ideas lifted from any source with the aim to facilitate a function relevant in another field, thereby enhancing effective collaborations to gear knowledge advancement. Art involves expressions. "From social and cultural perspectives, local

production may be a way of importing national sustainability performance by maximizing the values and potentials of indigenous materials to give alternative solutions to national needs by adding to income generation Umoh, 2024”. A creative artist may be inspired to draw from many sources to experiment with his ideas. Hence, art expressions may not be limited. In this study, the implication of appropriation theory is determined by examining materials through the knowledge of science and the use of laboratories to analyse samples to ascertain results needed to facilitate a purpose in the field of arts. However, to determine the chemical compounds of indigenous herbs for theatre and film makeup formulations, the collaboration of art and science must be applicable in order to introduce newness towards expanding human knowledge and creating meaningful values in the field of art to closely maximise available indigenous materials to ease the cost of acquiring foreign-made theatre and film makeups.

Review Of Studies on The Importance of Cosmetics and the Health Value of Indigenous Herbs.

There is serious global concern for professionals in different fields to indigenously find solutions to problems. This concern according to Nnanake Ekeke culminates, “in experts from various fields of humanity to fashion out ways and modalities through which the people can be awakened consciously...” (2024). Available reports by Kitty (2022) and Jonathan (2022) have shown efficiencies and health values of some indigenous herbs like henna, aloe vera, rose fluid, lavender oil, turmeric powder, beetroot, baobab oil, neem oil, shea butter, and mint powder for makeup formulations as presented in Table 1.

Table 1. Some Selected Indigenous Herbs, Sources, Cosmetics Importance and health Identities

S/N	ORGANIC COSMETICS	NATURAL SOURCES	BOTANICAL NAME	RELEVANCE AS MAKEUP	PHYTOCHEMICAL PROPERTIES AND IMPLICATION IN USER'S HEALTH	NATIVE IDENTITIES	REFERENCES
(i)	Henna	From a tree plant called Hina or mignonette	Lawsonia Inermis	Used for tattoo designs and mixed to produce colour hair dyes	Contains Flavonoids and Tannins which fight microbial infections on skin.	Laili in Hausa and kunshi in Yoruba	Flowering plants by Melissa Petruzzelo in Encyclopaedia Britannica Updated April 20, 2019
(ii)	Aloe Vera	Aloe Plant	Aloe Barba densis miller	Natural skin moisturizer	Contains Tannins, an anti-wrinkles agent.	Etierin in Yoruba	Using aloe vera on the face by Kathleen Kralowec in Medical News Today Updated June 2018
(iii)	Rose Fluid	Genus Hibiscus	Rosa	Used as natural astringent for facial cleaning	Contains Phenolics, an anti-oxidation compound.	Dide in Yoruba	Benefits of Rose Water by Herbal Dynamic Beauty in Nature Meets Science Updated May 2022
(iv)	Lavender Oil	Lavender Plant	Lavandula latifolia	Used as a natural anti-bacterial	Contains Terpenes, an anti-inflammatory compound.	lofinda in Yoruba	Using Lavender oil for skin by Ames Hena in

				ingredient to preserve makeup and as Sweat control agent to sustain the stay of makeup on skin			Medical News Today Updated September 2020
(v)	Turmeric Powder	Turmeric is a rhizomatous perennial plant belonging to ginger family	Curcuma	Used to enhance glowing effects in makeup design	Contains Curcuminiod which is an antiseptic property that reduces skin blemishes.	<i>Ata ile pupa</i> in Hausa <i>Foda or kurkur</i> in Hausa <i>Aranunen</i> in Efik/Ibibio	<i>Turmeric for Skin: benefits and risk</i> by Natalie Silver in Healthline Updated April 2021
(vi)	Beet Root	Beet plant	Beta Vulgaris	Used to produce lips colourant to derive pigment in makeup	Contains Betanins which rejuvenates dead cells.	<i>Tushen</i> in Hausa and <i>gberi</i> beet in Yoruba	<i>Using Beetroot for Lips Hydration</i> in Times India.com Updated June 2017
(vii)	Baobab oil	From Baobab tree	Ada Sonia digitata	Used as hair conditioner and to hold facial makeup against breaking.	Contains Phonelics, an anti-oxidant property	<i>Igiose</i> in Yoruba <i>Kuka</i> in Hausa	<i>Reasons Baobab is the best for your Hair</i> by Lucy Maes in Kaibae Microbiome Wellness Updated January 2016
(viii)	Neem oil	From neem tree	Azadirachtaind icaJuss	Used for hair conditioning and on the skin to stimulate glowing effect before makeup	Triterpenes and Flavonioids that both fight skin bacteria	<i>Dongoyaro</i> in Hausa <i>Akum</i> in Igbo	<i>Neem Oil for Skin Care</i> by Kitty Jay in Heathline Updated May 2019
(ix)	Shea butter	Shea tree	Vitellaria paraboxa	Rubbed on the skin as lubricant and sometimes mixed with other materials like charcoal to make an effect	Tannins reduces skin oil by balancing skin pH level	<i>Uri</i> in Yoruba <i>Ma-kada</i> in Hausa <i>Okwuma</i> in Igbo	<i>Sheabutter for Face Makeup</i> by Owen Kramer and Kathryn Watson in Healthline Updated July 2019
(x)	Mint	Mint plant	Mentha	Used as astringent	Diterpenes and Sterioids exerts potent anti-inflammatory activities and fight free radicals on skin.	<i>Ewe mint</i> in Yoruba <i>Na'ana</i> in Hausa	<i>Using mint for makeup</i> by Poornima Pandey in Herzindagi.com Updated March 2018

Jonathan (2022) also submitted that there are varieties of oil extractions from organic sources added to some regular make-up formulations, like foundation, that give it a lot of aesthetic appeal. Relatively, Ames (2022) also suggested that oil from lavender used in producing some cosmetics contains natural antibacterial properties that are very potent in controlling sweat when formulating makeup. From these

submissions, it may be noted that the combination of oil in some makeup materials may be for the advantage of holding sweat on the character's face to protect the makeup from wearing off under some conditions like light or sun. It is also important to note that oil extracted from other indigenous herbs like groundnuts, walnuts, coconuts, and shea butter, carrot, and turmeric, if extracted and refined for theatre and film makeup, may possess similar qualities. Urvashi (2002) suggested other organic ingredients and techniques of producing alternative herbal solutions to control sweat against wearing off makeup after application. The author recommends the mixture of dried ground orange peel, dried lemon peel, almond oil, wheat germ flour, ground thyme, a pinch of salt, and a few drops of jasmine oil mixed to become a paste and applied thoroughly on the face. That this solution will clean and stimulate the skin, leaving it petal soft, blemish-free, healthy, and shiny, preventing sweat from distorting the makeup.

Goyal and Jerold (2022) suggested the use of biocosmetics, which are environmentally friendly, protect long-term health, nourish, and heal the skin naturally, and are nonhazardous to hormone production and fertility. Philip (2022) presumed the value and utility prospect of organic-made cosmetics. That by 2025, the percentage of the total market that consists of natural and organic products will have grown considerably over synthetic ingredients. By these submissions, there is evidence that the quest for herbal cosmetics may increase in the global cosmetic market, and producers, marketers, and consumers would be more focused on indigenous herbal make-up going by the health safety assurances likened to their production. In addition, the author estimated that with the year-on-year growth in organic beauty, the global market should be worth \$22 billion by 2025. This suggests approximate growth of 8-10% per year. Records available in this study further highlighted some commonly cultivated indigenous herbs in Nigeria, like aloe vera, rose, mint, walnut, rosemary, shea butter, lavender oatmeal, kenaf (*Hibiscus cannabifolius*), coffee arabica linn, lavender oil, sunflower, olive, carrot, avocado, henna, beetroot, camwood, turmeric, palm oil, and chamomile, among other herbs that have high-profile ingredients with high cosmetic value. That the moisturising and relaxant effect of extract from lavender when applied on the hair and the colouring effect of the rose plant and chamomile are very potent in makeup (Fatima et al., 2013). The author revealed more insights on the cosmetic importance of some indigenous herbs like lavender, rose, rosemary, and mint plants, which moisturise the skin. It has a natural relaxant aid with antiseptic qualities. That rose is high in vitamin C content, which makes it a petal extract and moisturiser. Chamomile contained antibacterial and antimicrobial properties that make it good for healing. It is also a natural toner for hair. Rosemary naturally darkens the hair to hide grey. Mint is a deep dirt remover for make-up cleansing (Retrieved from mygardenlife.com).

By the suggestion of Hima and Kaliaperumal (2018), extractions from beetroot and turmeric are useful materials in formulating special effects in makeup. Adjudged from the analysis of Kathleen (2022), fluid samples from turmeric possess very strong makeup qualities and are evaluated as environmentally friendly colouring agents for painting the hair, palm, and skin. Nuha (2020) shares alternative measures to produce chemical-free lipstick, which the author identifies as home-grown herbs such as tomatoes, beetroot, turmeric, carrots, cocoa, and pomegranate. The author maintained that the solubility of the prepared herbal lipstick was checked in different solvents like methanol, ethanol, chloroform, and petroleum ether. All the organic combinations were found soluble in methanol. The author concluded that formulated herbal lipstick has better options for users than the regular ones. Adetoun et al. (2015) further revealed that there are varieties of indigenous herbs originally found in the western Nigerian region used for theatre and film makeup formulations in the early days that are still potent as cosmetic material for theatre and cultural activities of today. In the author's submission, Yoruba traditional

cosmetics originally include the Ororo as (lipstick), Tiro as (eyeliner), Laali as (nail polish), Osun as (skin toner), Atike as (powder), Ayoorun as (relaxer), Ewe Aailu as (conditioner), and Aidagbon as (hair/body cream). These were part of the numerous indigenous herbs locally sourced and used in beautifying the face, hair, and body during cultural activities. By the work of Umoh (2021), plants in Nigeria are rich in chemical compounds for producing various kinds of makeup fittings for theatre and film stages at reduced cost with risk controlled by using traditional substances that are properly screened in the laboratory, which gives it a high marketing prospect and increased social interest for biocosmetics globally in the near future. “The society depends on both scientific inventions and artistic innovations to gain development and advancement” (Umoh, 2024). This invention and innovation from the assertion of Umoh, agrees with tradition and culture of a people as submitted by Nnanake Ekeke and Dora Ekeke that, “the African society has its unique ways and methods in term of tradition and culture” (2025). Umoh (2025) notifies that “the use of natural plants, fruits, tree barks and roots, leaves, palm oil and palm kernel etc. for body adornment is one of the age long practices in Nigeria” (15). Therefore, there is a need to explore the advantages of indigenous herbs locally sourced from roots, herbs, oil, seeds, fluids, wax, and other local materials. It is believed that this would graciously amplify entrepreneurship opportunities and reduce dependence on foreign brands.

Some Indigenous Herbs Selected for Chemical Compounds Evaluation.

The indigenous herbs selected are Camwood (iduod). Plantain stems juice (mbong ekpad ukom). Hoollarhenna (Abukin) Okra (etighe) Palm fruit (eyop). In laboratory findings by Usendu (2023), essential phytochemical constituents useful for theatre and film makeup are saponins, flavonoids, steroids, glycosides, tannins, phenolics, and carotenoids, among others. By this submission, the laboratory protocols for the detection (screening) of the selected indigenous herbs are as follows:

1.



Camwood (*Pterocarpus erinacells*)

Source – Sourced from a mini forest in Ikono L.G.A

a. **Quantity** – About 12 pieces of the tree bark

b. Sample Preparation

Step 1 -The fiber (where the red pigments settle) were peeled off from the bark.

Step 2- The fibers were air-dried for 7 days and ground into powder to be extracted in dry form.

Extraction was performed by crushing the samples in mortar by pestle to obtain powder representative of the plant fibres.

Step 3 -The powder sample was stored in a disposable container and kept in a cool dry place.

c. Screening Process

The powdered samples were homogenized with distilled water at 1:50w/w and heating the homogenate to 70^oc for 15min followed by centrifugation to collect the extracts in aqueous solution. Saponins was tested by mixing 2ml of aqueous solution and 2ml of distilled water and shaken for 15min in a graduated cylinder. A 1cm foam layer appeared showing the presence of saponins.

2.



Plantain stem juice (*musa paradisiac*)

Source – samples were gotten from a local bush in Uyo

a. **Quantity** – 3 pieces weighing about 10g each.

b. Sample preparation

Step 1- The stems were cleaned from dirt and sliced into pieces.

Step 2 - Stem samples were air-dried for 3 days to dry-off moisture.

Step 3- The sliced samples were spread in baking pan and oven-dried at 180^oF for 3hrs.

Step 4 -The samples were extracted in powder form by blending the dried stem in an electric blender.

c. Screening Process

Some grams of the powder cucumber sample were homogenized with distilled water at 1:50 w/w and heating the homogenate to 70⁰c for 25mins and followed by centrifugation to collect samples in aqueous solution.

Flavonoids were tested by mixing 2ml of aqueous solution (being the dissolved cucumber extract in distilled water) and 1ml of 2N sodium hydroxide and mixed. The indication of yellow precipitate showed the presence of Flavonoids.

3.



Hollarhenna (*Lawsonia inermis*)

Source – Sourced from a mini forest at Uruan LGA

a. **Quantity - 10** leaves

b. **Sample Preparation**

Step 1-Samples were washed and thoroughly cleaned to be completely dirt free.

Step 2-They were desiccated for 3 days using calcium chloride as desiccant to remove moisture from the samples.

Step 3-To extract the leaves in dry quality, samples were ground into powder to obtain representatives of the plant sample for phytochemical analysis.

c. Screening Process

Different solvents were used to carry out the screening. The powder samples were soaked in 500ml methanol, ethyl acetate and distilled water for 3 days until soluble matter was dissolved. The resulting mixture was then filtered, and the filtrate was evaporated using an evaporating dish to remove solvents. The solution obtained from the filtered solvent was analyzed using thin layer Chromatograph (TLC). 10ml of 70% ethyl acetate were dissolved and filtered. A standard Whatman TLC plate with TLC silica gel was used. A drop of the gel was placed two inches from the bottom using a mixture of hexane and ethyl acetate in the ration of 2:1 and a ratio of 1:2 for methanol and n-hexane on the plate for soluble fractions.

The spot was visualized after the TLC plate was sprayed with 10% sulfuric acid followed by heating in the oven for 2 mins. The number of spots was observed, and the retention factor (RF) values calculated respectively. From the spots observed, steroids, glycosides, tannins and phenolics were detected.

4.



Okra (*Abel Mosclus esculentus*)

Source – The samples were plucked from a domestic garden in Uyo.

a. **Quantity** - 5 fresh pieces

b. **Sample Preparation**

Step 1- The Samples were thoroughly washed, cleaned, and sliced into smaller pieces.

Step 2 – Samples were dried in a thermostatically controlled oven and maintained at a temperature of $105\pm 50^{\circ}\text{C}$ for 28hrs to completely dry.

Step 3 -Extraction was performed by crushing the oven-dried fruits into powder to obtain dry representatives of the samples.

c. **Screening Process**

Some grams of the powder cucumber sample were homogenized with distilled water at 1:50 w/w and heating the homogenate to 70°C for 25mins and followed by centrifugation to collect samples in aqueous solution.

Flavonoids were tested by mixing 2ml of aqueous solution (being the dissolved cucumber extract in distilled water) and 1ml of 2N sodium hydroxide and mixed. The indication of yellow precipitate showed the presence of Flavonoids.

5.



Palm fruit (*Elaeis Guinensis*)

Source -Samples were selected fresh from palm bunch in Obio Akpa

a. **Quantity** – 30 pieces

b. **Sample Preparation**

Step 1-The fresh fruits were boiled with water in a kettle to melt the pericarp.

Step 2 -To extract oil from the fruit sample, they were pounded with pestle and mortar to peel the pericarp from the nuts.

Step 3 -The chaff was soaked in hot water for about 10 mins and sieved out to separate Chaff from the extractant.

Step 4-The fluid solution was stored in an open bowl and refrigerated for 24hrs.

Step 5 –Lipids (organic oil substance) were collected from the surface of the fluid after 24hours.

c. Screening Process

50ml of the lipids collected from the palm fluid was mixed in a 10ml chloroform (a colourless liquid solvent) in a test tube and vigorously shaken. The resulting mixture was filtered, and 85% sulfuric acid was added to the solution. A blue colour precipitate at the interface appeared indicating the presence of carotenoids.

The essence of screening these herbs was to identify the chemical compounds associated with them especially as health friendly chemicals when they are being processed into film makeup. However, the health implications of the phytochemicals detected are existing knowledge of traditional health and their benefits to users already established in some health-related articles as presented in Table 2.

Table 2. Results Implications of the Chemical compounds to Theatre and Film Make-up Formulations.

S/N	Samples	Phytochemical Compounds Detected	Implications To Cosmetics And General Health
i)	Camwood	Saponins	Rich compounds for skin cleansing, exfoliation and moisturizing
ii)	Plaintain stem juice	Flavaniods	Protects skin form microbial infection and pro-inflammatory radicals
iii)	Hollahenna	Steriods, Glycocides, Tannis	<ul style="list-style-type: none"> i. Rich anti-inflammatory compounds i. Anti-aging properties and hydrating agent that regulates skin pH level. i. Anti-wrinkle agent
iv)	Okra	Flavaniods	Protects skin from microbial infection
v)	Palm fruit	Caroteniods	Boost active skin cells to withstand free radicals

CONCLUSION

From the study it was concluded that some selected indigenous herbs from Akwa Ibom State should be maximised as an alternative option in the formulations of makeup for theatre and film, according to Dora Ekeke, “being a very conspicuous and visible element of design” (2024).

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