

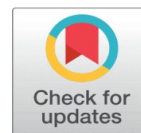
EXAMINING THE UTILISATION OF LOCAL AND SYNTHETIC INDIGO DYES AND QUALITY OF DYED FABRICS IN ÌTÒKÚ MARKET, ABÈÒKÚTA, ÒGÙN STATE, NIGERIA



Ajayi Noah Oluwasanjo ¹✉ , Adékòyà Elizabeth Olaniké ²✉

¹ School of Vocational and Technical Education, Department of Fine and Applied Arts, Adeniran Ogunsanya College of Education, P.M.B. 2007, Oto/Ijanikin, Lagos State, Nigeria

² School of Languages, Department of Yorùbá, Adeniran Ogunsanya College of Education P.M.B. 2007, Òtò/Ìjànikin, Lagos State, Nigeria



ABSTRACT

Africans had been producing fabrics locally before the advent of Western fabrics. Àdìrẹ fabrics are purely African textile concepts; dyed with local/indigenous materials and readymade synthetic materials in Abèòkúta, Òşogbo, Ìbàdàn, Kánò, Şókótó, and other parts of Nigeria, and Africa at large. The study focuses on how leaves, bark of plants, and trees are utilized in producing colors of dyes. For example, shade of red can be obtained from leaves of guinea corn (sorghum village), leave of teak wood (*tectona grands*), leaves of henna law (*Sonia intermis*), bark and roots of African rose wood (*ptrocerpus erinaceus*), and wood of the came wood “osun” (*baphia nitida*). The sap of old physic nut tree (*fatopha curca*) produces a black dye. Likewise, many other colours are produced when the need arises. When yellow is desired, *afromosia taxifora* or a root wood (*Morinda lucida*) or group grand are used. The mango tree bark, when dried and boiled with water gives a brown dye. Two other fruits *Kigelia African* and *vitex grandifolia* are also used for dye. There is an argument on which of the colour registered fast, is it the natural dye or the imported synthetic dye? The answer probably lies in the method of preparing and implementing the dye and the skill/creativity of the dyer. The study examines the utilization of local and synthetic indigo dyes and quality of dyed cotton fabric in Ìtòkú market, Abèòkúta, Ògùn State. Some participants were interviewed, and questionnaires were administered to respondents for data collection. The result of hypothesis tested justify that there is no significant difference between utilisation of local and imported dye in the quality of textile in relation to colours. Results and findings were discussed, comparism between the local and synthetic dyes was concluded and recommendations were made.

Keywords: Market Abèòkúta, Local Indigo Dye (LID), Quality of Dyed Fabrics (QDF), Synthetic Indigo Dye (SID), Utilization

Received 20 January 2021

Accepted 11 March 2021

Published 11 March 2021

Corresponding Author

Ajayi Noah Oluwasanjo,
ajayinoahsanjo103@gmail.com

DOI

[10.29121/shodhkosh.v2.i1.2021.22](https://doi.org/10.29121/shodhkosh.v2.i1.2021.22)

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Copyright: © 2021 The Author(s).

This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

1. INTRODUCTION

Research into origin of dyeing is set with difficulties in possibility to complete a list of the areas where dyeing is known to occur. The actual time dyeing started seems to be obscure and it is contained when and where in the world for thousands of years in the past. Its practice has been widely spread across the continents of the world Dyeing began when written records were not in existence, we found



sculpture representation of pattern garment on the wall of the Babylonians and Assyrians. Clay table from UR dated to around 2,200 B.C. also show pictures of dyes operations [Robinson \(1982\)](#). [Gardi \(1999\)](#) asserts one of the early known indigo dyes was found in Egypt dated to about fifth to sixth centuries A.D, they are shrouds with white patterns showing biblical scenes on a blue background. Another source says indigos dye was known in Egypt as early as 2,500 B.C. [Gardi \(1999\)](#) and samples of indigo dyes have also been found in Peru, China, India, Burma, and Japan before seventh century A.D.

Whichever account is correct, indigenous/local indigo dye is a rich culture and practice of Nigerians and Africans at large before the advent of civilisation and Western fabrics. Our forefathers produced indigo fabrics of different unique designs based on cultural, traditional, social, and economical background, with a range of lines such as straight, curved, broken, diagonal, circular, thick, and thin, and shapes like, circle, oval, square, rectangle, and cone. The indigo dyes are gotten from plants of different kind, and their artistic tendencies was fully justified in using these indigo fabrics to unfold stories and captions, among are *Ègbá méjì*, *Abé Olúmọ*, *Ìbàdán dùn*, *ìjàpá ọkọ yánníbo*, *Olókun*, *orí mi wà papọ*, among others. These Nigerian craftsmen often create designs in stylised birds, snakes, frogs, and scorpions; designs inspired by nature include different kinds of leaves, kola-nuts, and star; numerous items from everyday life include umbrellas and watches; and to a much lesser degree are designs of a purely decorative nature, not inspired by realism [Awófisáyọ et al. \(2017\)](#), [Oyedun \(2019\)](#). The aforementioned are enveloped in different motifs such as plant or flower, animal, geometrical, traditional, alphabetical/numerical, symbol, abstract, and pictorial motif.

[Lupo \(2002\)](#) affirms dyeing of fabrics as an ancient art that was early as 2,500 B.C. The Egyptian were dyeing fabrics in yellow, green, red, or blue colours which they used the first natural dyes made from flowers, leaves berries, shell fishes, and insect. According to [Lupo \(2002\)](#), [Williams \(2020\)](#), [Maiwa \(2013\)](#), William Henry Perkin an eighteen-year-old English chemistry student discovered how to make a dye from cola in 1856. This was the beginning of the introduction of synthetic dyes. Today, there are over 7000 different synthetic dyes or combination of dyes. During pre-colonial era, in Sothern part of Nigeria, locally dyed cloths (indigo) were used as exchange for food items in towns and markets; mostly Abèòkúta, Ìbàdán , Ọyọ , Ọ̀sogbo and Èdẹ in the Southwest [Adépégba \(1995\)](#), [Lupo \(2002\)](#), [Sànyà \(2015\)](#), [Awófisáyọ et al. \(2017\)](#). This was confirmed by Fagg (1976) in [Sànyà \(2015\)](#) that *Yorùbá are the finest practitioners of pattern dyeing which they call Àdìrẹ (tie-dye)*. Tie-dye is a direct interpretation of its Yorùbá language pronunciation, “Dì” means to Tie, while “Rẹ” means to soak, thus the word “Àdìrẹ – Tie-dye” came to existence. This traditional textile technology of Àdìrẹ is basically indigo dye, the focus of this study.

Consequently, as civilisation advanced the dye type used changed based on location and depending on the climate. People in Europe used wood clothes while people in the tropics used cotton fabrics. Nevertheless, Eicher (1976) in [Awófisáyọ et al. \(2017\)](#) reveals that Nigerian have a wide variety of domestic sources for dye. Among the more frequently used indigenous dyes are the varieties of indigo which grew throughout Nigeria include *indigofera arrecta*, *indigofera suffricottos*, *indigofera tinctoria*, and *lonchocarpus cyanescens*.

It is observed that the invention of synthetic dyes in production of textile today has reduced the use of local indigo dyes despite their good dyeing quality. Our argument is that does it mean there is no more land to cultivate the plants which indigo dyes are gotten from? Maybe the plant is no more growing well, peradventure

we don't have flare for indigo fabrics anymore thereby fading away our rich culture. Maybe the synthetic indigo dyes are better off, whichever, I believe if we fully embark on the use of indigo fabrics, we will surely cultivate the more of the plants like every other crops.

Therefore, the objective of this study tends to compare the use of local and synthetic indigo dyes in production of tie-dye fabrics in Itòkú market, Abẹ̀òkúta, Ògùn State. The comparison based on the intensity fastness of the dyes, glossiness of the dyes on textile materials, colour fastness and consumer's appeal. The study also answers what are the differences in the colour intensity and fastness of the two groups of dyes? Is there any difference in the glossiness of the fabric designed with the two dyes type? Is there any difference in the consumer's appeal of the two dye types? The research would be of great use to students in clothing and textile department, as well providing more information on utilisation of indigo dyes for textile production and beautification. It will re-awaken the interest and attempt to revive the use of traditional indigo dye (TID), which is presently at the verge of extinction. It will also document the necessary accessories for the preservation and continuity of traditional dyeing. Hence, the hypothesis tested towards achieving the objectives of the study was stated in null form; there is no significant difference between the local indigo and synthetic dyes in terms of colour fastness, intensity, glossiness, and consumer's appeal.



Figure 1 Views of Itòkú modern market and Àdirẹ shop, Abẹ̀òkúta, Ògùn state.

Source Authors, (2020)

Local Indigo Dye (LID)

It is imperative to know what dye is, before understanding its components and application. Oyèdùn, (2013) sees dye as the organic chemical compounds which impart colours to other materials by saturating them in an aqueous solution. It is a colour substance which could be bound to fibre (fabrics) to colour it or alter the already existing colour. Therefore, we can say indigo dye is a traditional natural blue black organic substance made locally to stain or alter the existing colour of a fabric to the dyer's desire Mawla (2020), Maiwa (2013). It is currently available in most city and markets like Itòkú in Abẹ̀òkúta, Ògùn State, which is the focus of this study. But how and when did indigo dyeing start at Abẹ̀òkúta?

Babalọ́lá (1990), Owálabí, (1986), Oyèbọ́lá (2001), şàlàyé pé aró dídá wo ilú Abẹ̀òkúta láti ọ̀dọ̀ àwọn Núpé tí a kó lẹ́rú láti ipínlẹ̀ Nájìà wá sí ọ̀dọ̀ gbajúgbajà arábìrìn oníşòwòò nì Efúnróyèkẹ̀ Ọ̀şúntínúubú, Ìyálóde Ègbá. Àwọn ẹ̀rú yìí n ń se e işẹ̀ lóko Ìyálóde nígbà tí wọn rí ewé àti itàkùn ẹ̀lú tí wọn n fí n ń se aşọ ní aró ní ọ̀dọ̀ wọn (Núpé), bí wọn se sọ fún Ìyálóde niyí tí ọ̀un náà sì sọ fún wọn pé kí wọn se àpẹ̀pẹ̀ bí

wón tí n rẹ é fún òun, léyìn tí wón ẹ é fún un, Ó ríí pé ó dára, èyí mú un sọ aṣọ ríre náà di isẹ gégé bí ẹni àkókó tí ó dá aró ní ìlú Abẹ̀òkúta, Ó sì fì ọ̀nà rẹ han ọ̀pòlọ̀pò ènìyàn.

In the nutshell, the above simply means it was the slaves of Madam Èfúnróyèké Ọ̀súntinúubú (Ìyálóde of Ègbá land), who discovered the indigo plant on her farm, they notified her about the usefulness of the plant and also demonstrated it for her. Hence, she commenced the practice of indigo dyeing as the first in this business at Abẹ̀òkúta, Ògùn State of Nigeria.

Meanwhile, it is pertinent to know as revealed by Ìyá Ìdòwú Aláró, a dyer at Ìtòkú market Abẹ̀òkúta, in an interview section in 2018 explains the process of natural local indigo. She said, *ewé aró*; indigo plants (*indigofera tinctoria*) are cut during the raining seasons before harvesting millet, and the plants are then spread in a field to absorb/catch the force of the rains.



Figure 2 Ewé aró; Japanese Indigo plant; *indigofera tinctoria*
Source Ken, 2020, [Samathan \(2016\)](#)

She affirms that, after bruising and peeling the indigo plant, it turns to blue black mass which the dyer (Ìyá Ìdòwú Aláró) scoops put with her hands and mould into balls. These balls are displayed in the sun in sizes in different districts; hence they are generally the size of tennis balls or bigger than it slightly. She reiterates that wood ashes (àwón eérú igi) are important material for this dyeing because it's a fixing agent and is usually prepared in a kiln. The kiln where the woods are burnt is made of mud or red earth (amò pupa). This ash as fixing agent could be derived through burning dry wood and thereafter mixed with the water from the leave (*indigofera*) pulp mixture; it was rolled into balls and dry. After the ash balls (àwón eérú tí a ̀̀ rùgúdú-rùgúdú) have dried, some short sticks will be arranged inside a wide-open pot to serve as sieve and place the ash balls on the sticks. Gently and continuously pour water over these balls and allow filtering into the pot, you will always replace with fresh ash ball until the dye pot (ìkòkò aró) is full.

Now, with enough mordant water sieved from the ash balls, you will add about forty to fifty dried indigo balls depending on the size of dye pot (ìkòkò aró) and stirred thoroughly. Leave the composition to ferment for between five and seven days. The sign of readiness will feature a blue slum on the surface and yellowish green under the surface of the solution. Wet the fabric, dip it into the dye pot (ìkòkò aró) several times and over a long period of time, about two to three days to get deep rich indigo colour. Remove the fabric, wash, and rinse, starch, dry, and iron. [Oyedun \(2019\)](#), [Ibrahim-Banjoko \(2009\)](#), also affirms this traditional indigo method of dyeing fabrics. [Lupo \(2002\)](#) asserts further that aside dark blue (indigo), leaves and bark of many plants and trees are used in producing other colour of dyes at stated in the abstract of this study above, to avoid unnecessary tautology.

Synthetic Indigo Dye (SID)

Gardi (1999) states that Japanese herbalists developed range of natural dyes. One of the most common was indigo, which became the Japanese national colour for work wears. Until the 1850s all dyes were natural in origin. Then a great deal of research into chemical dye stuffs began and the sciences became highly developed in France, Germany, and England. According to Gardi (1999), Lupo (2002), Williams (2020), Maiwa (2013) W.H. Perkin an English chemist, was searching for a cure for malaria, a synthetic quinine; accidentally discovered and produced the first synthetic dye called mauve in 1856. He found that the oxidation of aniline could colour silk. From a coal tar derivative, he made a reddish-purple dye (mauve). This marked the beginning of dyes stuffs industries and the production of synthetic dyes till present. Many colours were produced in an effort to provide colourful fabrics to people of all economic levels. The chemical dyes were so successful that the beginning of twentieth century synthetic dyes was used for most of the coloured textiles produced in Europe and America Gardi (1999), Lupo (2002), Williams (2020), Maiwa (2013). Because they are made in scientific formulae, the same colour can be reproduced and exactly matched likewise different types of dyes through the use of computer colour matching (CCM). Scientists continue to research dye development and today textile industries and manufacturers have thousands of different colours to choose from and dye types. The Society of Dyers and Colourists (SDC) and American Association of Textile Chemists and Colourist (AATCC) classify dyes by their chemical composition; either by hue or method of application, they include acid dyes, azoic dyes, basic dyes, disperse dyes, direct dyes, pigment dyes, sulphur dyes, vat dyes, and reactive dyes. Space does not permit us to explain them here.

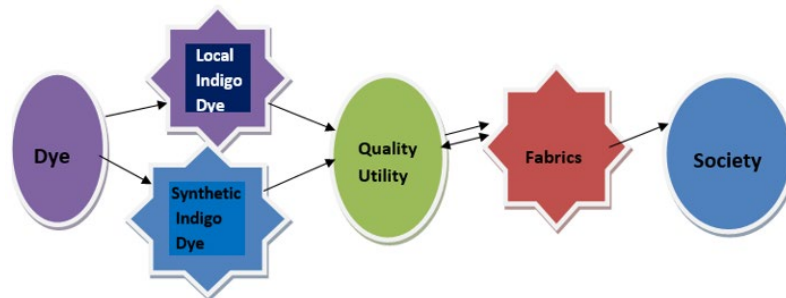


Figure 3 The model of local indigo dye (LID), synthetic indigo dye (SID and quality utility (QU)
Source Authors, 2020

The above model indicates that both the local indigo and synthetic indigo dyes (aró ibílè àti ti òyìnbó) have quality utilities on the fabrics in our society irrespective of the texture of the indigo. The quality utility of any indigo dye depends on the choice and taste of the individual who desire to have the fabric. In this regard, indigo dyes (local and synthetic) cannot be abandoned or swept under carpet in Nigeria, and Africa at large.

Patterns/Designs in LID and SID Fabrics

There are various patterns and designs (ona) used on the fabric of both the LID and SID, these designs include simple repeat pattern, half drop repeat pattern,

counter-change repeat pattern, half slide repeat pattern, full drop repeat pattern, mirror repeat pattern, block repeat pattern, scale style repeat pattern, all over repeat pattern, diamond repeat pattern, face to face repeat pattern, ogee repeat pattern, diagonal repeat pattern, and host of others. Apart from all these repeat pattern/designs mentioned above, other forms of motif arrangement can still be practised since art is expressive in nature [Oyedun \(2019\)](#).

2. METHODOLOGY

Dyeing Techniques

Dyeing techniques according to [Ọ̀sìbèrù \(2002\)](#), [Ibrahim-Banjoko \(2009\)](#), [Oyedun \(2019\)](#) are perceived as follows:

- 1) Sewing technique or Tritik or Stitching:** In most tie-dye countries the sewing or tritik method has been used. In West Africa today, sewing methods, with fine strand of raffia or baby wool are the sewing thread that are widely practiced. The success of the sewing method is entirely dependent on the ability to draw up the material into gather so closely on the sewing thread that the dye cannot penetrate it. The fold stitching is a method that requires needles and sometimes the use of sewing machine to create faster and more interesting designs.
- 2) Àdirẹ̀ Eléso (with seeds):** This technique produces small aides on the dyed background first, collect small pebbles or seeds of guinea corn, beans, or maize, according to how small you want the circles to be. Plan your design very well, put a seed on the wrong side of the cloth, and then tie raffia round the seed on the right side of the cloth. Using a knot and cut the end of the raffia with scissors or razor blade and go to the next seed.
- 3) Knotting Method:** One of the easiest and quickest ways of producing a dyed texture is to reduce the length of fabric into knots (róbóróbó). This can be tied in several ways, depending on the size, shape, and grain of the cloth.
- 4) Rope Method:** A most attractive pattern of the dyeing can be achieved using rope. This diamonds and narrow stripes can be made by using a length of rope with yam fabric. Take a piece of guinea brocade, lay it on a clean flat table, and place a length of rope on one side of the cloth.
- 5) Rolling Technique:** The fabric is roll into shape before dying. The rolling can be diagonally or straight stripe. This technique has some limitations. When the fabric is rolled and tired and dyed it is only the outer layers that absorb the dye better than the inner layer, thereby making the fabric to have a large area without colour.
- 6) Marbling Technique:** This technique gives a varied cloud like or marble texture. Sometimes the result took as if the fabric; had been caught in a shower of coloured rain. It is easy to do you simply crumple up a piece of the cloth in your hands until it forms a tight ball.
- 7) Tying or knotting Technique:** This technique produces circles on the dyed background. First look at your cloth carefully and plan your design. Mark out some spot with a 2B pencil and tie it gradually with raffia and build it tightly around the smoothed fabric wrong up towards the tip leave the end of the building raffia exposed. Bind back down the smoothed cloth

over the first layer of building pulling the raffia tightly. It ends up with a knot.

8) Folding Technique: Many striking patterns and effects, especially snipes are produced by the folding techniques, combined with binding. To get the best result, this method calls for very accurate workmanship generally speaking; very narrow stripes should be used for medium to wide stripes.

9) Clips and Peg Technique: The using of clips and peg has limitation. Clips and pegs can be used to hold the fabric whilst dying, fold the fabric into shape then hold with bulldog clips or pegs and dye it to acquire the desired design.

10) Pouring or Splashing Technique: Here, the fabric is spread on the ground and different dye colours are pour or splash skilfully on the fabric to achieve beautiful effects and design.

Dyeing Processes

The fabric to be dyed must be clean of dirt's and sizes. Make sure all sizing (starching) are removed by washing vigorously with soap and hot water. Then, plan your design by dying cloth in any combination. Mix dye thoroughly as indicated by the manufacturer (package/instruction) thereafter, dip material in warm water before dying. This will tighten the tied string and also conforms to the dyeing instructions on the dye box. Squeeze out excess water. Place/dip fabric in dye solution (aró) and stir constantly with stick or hand (use rubber gloves – ìbòwó oníróbà) so that the material will be dyed evenly. Leave the material in dye for only a few minutes or as you desire (may be longer) but not unnecessarily longer, so the dye will not penetrate the tied areas. You can now remove the fabric from dye and rinse in cold water (you may store away the dye for immediate use). If another colour is to be used, untie the strings desired re-die fabric other spots, and put in next colour dye solution. Start with the lightest colour and end with the darkest e.g., yellow should come before blue, orange before purple and so on. Finally, you can allow it to drip dry or squeeze out excess water and press dyed fabric with hot iron when it still damps which will also help set the colours.



A: Tying of fabric



B: Indigo dyeing of fabric



C: Spreading fabric after dyeing



D: Finished product after drying



E: Ironed and folded finished products



Figure 4 A-D: Indigo dyeing processes; Research Assistant Adéwuyì O.M. at work
Source Authors, 2020

3. ANALYSIS, RESULT, AND DISCUSSION

KEY: H = High, M = Medium and L = Low

Table 1 A: BROWN COLOUR, COLOURFASTNESS					
LOCAL DYE			IMPORTANT DYE		
H	M	L	H	M	L
Replicate I	-	-	3	Replicate I	- 4 -
Replicate II	-	5	-	Replicate II	- 5 -
Total			8	Total 9	
B. COLOUR INTENSITY					
LOCAL DYE			IMPORTANT DYE		
H	M	L	H	M	L
Replicate I	-	-	3	Replicate I	- 4 -
Replicate II	-	6	-	Replicate II	6 5 -
Total			9	Total 10	
C. CONSUMER APPEAL					
LOCAL DYE			IMPORTANT DYE		
H	M	L	H	M	L
Replicate I	-	-	3	Replicate I	- 3 -
Replicate II	-	6	-	Replicate II	- 5 -
Total			9	Total 8	

Table 2 A: Blue Colour, Colour Fastness					
LOCAL DYE			IMPORTANT DYE		
H	M	L	H	M	L
Replicate I	-	5	4	Replicate I	- 5 -
Replicate II	6	-	-	Replicate II	- 7 -
Total			10	Total 12	
B. COLOUR INTENSITY					
LOCAL DYE			IMPORTANT DYE		
H	M	L	H	M	L
Replicate I	-	5	-	Replicate I	- 4 -
Replicate II	7	-	-	Replicate II	6 - -
Total			12	Total 10	
C. CONSUMER'S APPEAL					
LOCAL DYE			IMPORTANT DYE		
H	M	L	H	M	L
Replicate I	-	3	-	Replicate I	- 4 -
Replicate II	7	-	-	Replicate II	- 7 -
Total			10	Total 11	

Table 3 A: Red Colour, Colour Fastness					
LOCAL DYE			IMPORTANT DYE		
H	M	L	H	M	L
Replicate I	-	3	-	Replicate I	- 5 -
Replicate II	7	-	-	Replicate II	- 7 -
Total			10	Total 12	
B. COLOUR INTENSITY					
LOCAL DYE			IMPORTANT DYE		
H	M	L	H	M	L

Replicate I	-	5	-	Replicate I	-	5	-
Replicate II	6	-	-	Replicate II	7	-	-
Total	11			Total	12		
C. CONSUMER'S APPEAL							
LOCAL DYE				IMPORTANT DYE			
H M L				H M L			
Replicate I	-	5	-	Replicate I	-	-	3
Replicate II	7	-	-	Replicate II	8	-	-
Total	12			Total	11		

Table 4 A: Yellow Colour, Colour Fastness							
LOCAL DYE				IMPORTANT DYE			
H M L				H M L			
Replicate I	-	5	-	Replicate I	-	-	3
Replicate II	7	-	-	Replicate II	-	5	-
Total	12			Total	8		
B. COLOUR INTENSITY							
LOCAL DYE				IMPORTANT DYE			
H M L				H M L			
Replicate I	-	5	3	Replicate I	6	-	-
Replicate II	8	-	-	Replicate II	8	-	-
Total	13			Total	14		
C. CONSUMER'S APPEAL							
LOCAL DYE				IMPORTANT DYE			
H M L				H M L			
Replicate I	-	-	3	Replicate I	-	-	4
Replicate II	7	-	-	Replicate II	6	-	-
Total	10			Total	10		

From the Table 4 A, B, C in relation to colour yellow; it shows that there is no significant difference between the local and imported dye, the reason is that F calculated is less than tabulated. Below is the key to the abbreviation use the collection of the sample.

4. PERCENTAGE AND FREQUENCY DISTRIBUTION QUALITY OF COLOUR LOCAL AND IMPORTED DYES

Table 5 Colour Fastness, Colour Intensity and Consumer's Appeal			
Frequency	% Frequency	% Frequency2	Percentage
Local 10	47.612	54.51	47.6
Imported 11	52.41	45.511	52.6
Total 21	100.022	100.21	100

The data in the Table 5 above shows that in the utilization of local dye and colour fastness and consumer's appeal is little higher in imported dye but has lower colour intensity compare with that of local dye. The difference is insignificant and can be due to some factors in the preparation of local dye.

5. QUALITY DISTRIBUTION OF RED COLOUR

Table 6 Colour Fastness, Colour Intensity, and Consumer's Appeal			
Frequency	% Frequency	% Frequency2	Percentage
Local 10	45.513	48.11	50
Imported 12	54.514	51.91	50
Total 22	100.027	100.021	100

The data in the Table 6 above shows that the quality of imported dye in terms of colour fastness and colour intensity is little higher than that of local dye. This could be as result of factors in the preparation of the local dye because the difference is significant.

6. QUALITY DISTRIBUTION OF BROWN COLOUR

Table 7 Colour Fastness, Colour Intensity, and Consumer's appeal			
Frequency	% Frequency	% Frequency2	Percentage
Local 8	47.111	52.49	52.9
Imported 9	52.91	47.68	47.7
Total 17	100.021	100.017	100

The data in the Table 7 above shows that the quality of imported dye in terms of colour fastness and colour intensity is little higher than that of local dye. This could be as result of factors in the preparation of the local dye.

7. CALCULATION OF MEAN AND STANDARD DEVIATION OF COLOUR

Local	=	A
Imported	=	B
X	=	Mean
	=	Standard Deviation

BLUE COLOUR

A	B	(A-X)	(AX) ²	(B - X)	(B - X) ²
Colour Fastness	10	11	-67	0.45	0.33 0.11
Colour Intensity	12	10	1.33	1.77	-0.67 0.45
Customer's appeal	10	11	-0.67	0.65	0.33 0.11
X	=	10.67	10.67		
2.67		0.67			
J	=	1.63	=	0.82	

RED COLOUR

A	B	(A-X)	(A-X) ²	(B-X)	(B-X) ²
Colour Fastness	10	1-Dec	1 0	0	
Colour Intensity	13	14 2	4 4	4	

Customer's appeal	10	1-Oct	-3	4
X	=	11	12	
6		8		
J = 2.45	=	2.83		

YELLOW COLOUR

A	B	(A-X)	(A-X) ²	(B-X)	(B-X) ²
Colour Fastness	12	8 0.33	0.11	-2.33	5.43
Colour Intensity	11	12 -0.67	0.45	1.67	2.79
Customer's appeal	12	11 0.33	0.11	0.6	0.45
35		31 0.67	867		
X	=	11.67		10.33	
$\sqrt{0.67}$		$\sqrt{8.67}$			
J	=	82	=	294	

BROWN COLOUR

A	B	(A-X)	(A-X) ²	(B-X)	(B-X) ²
Colour Fastness	8 9	-1.33	1.77	0. 00	
Colour Intensity	11 10	1.67	2.79	11	
Customer's appeal	9 8	0.33	0.11	-11	
28 27		4.67	2		
X	=	9.33	9		
$\sqrt{467}$		$\sqrt{2}$			
J	=	2.16	=	141	

8. RESULT OF THE TESTS OF HYPOTHESIS

HO: There is no significant difference between the utilization of local and imported dye in the quality of textile in relation to colours.

LOCAL DYE**IMPORTED DYE**

Colour Fastness	10	11
Colour Intensity	12	10
Customer's Appeal	10	11

Table 2 analysis of variance of blue (Indigo) colour between local and imported dyes

F-Rational Value	F-Ration Value	DF	Remark
F Ration Cal	F - Ration Tab	DF	Remark
1.233	1.321	2.3	Not significant

DF = Degree of freedom

From the [Table 8](#) above there is relationship between the local dye and imported dye since F. calculated is less than F. tabulated, we therefore reject the well hypothesis and conclude that there is no significant difference between the local dye and imported dyes in relation to blue colour.

HYPOTHESIS 4

HO: There is no significant different between the utilization of local and imported dye in the quality of textile in relation to colour.

LOCAL DYE IMPORTED DYE

Colour Fastness	12	8
Colour Intensity	11	12
Customer's appeal	12	11

Table 3 YELLOW COLOUR

F-Rational Value	F-Ration Value	DF	Remark
F Ration Cal	F - Ration Tab	DF	Remark
2.401	2.418	2.3	Not significant

DF from the [Table 9](#) in relation to colour yellow, it shows that there is no significant difference between the local and imported dye, the reason is that calculated is less than tabulated.

9. CONCLUSION

Besides plain indigo dyeing, Àdìrẹ the resist pattern dyeing, was an important industry at time, it employed a high percentage of the local population of people by then. As a result of the skills of these people a thriving trade, it was established earlier in this century Adire cloth and plain indigo dyes clothes were in high demand. For this reason, for new effort is being made to use a type which will remain fast.

Much wealth was derived from the scale of these indigo dyes fabrics (IDF). In fact, dyeing which is one of the artistic heritages of Yorùbá's notably Abẹ̀òkúta has contributed in no small measure to the social and economic development of the dyeing (Àdìrẹ) generally.

Socially, tradition indigo dyes cloths are worn as wrappers by women. They are seeing into skirt and blouse for ladies as well as jumpers for men and even shorts. Expatriate women buy indigo dyes cloth for clothing and more often for household such as curtains, cushion cover tats tablecloths and their country of origin. In fact, the old method of traditional indigo is at present however witness a great decline for example only few dyeing pots now remain iii the town unlike before where nearly every homage has a dyeing pot (àwọn ìkòkò aró).

The first notable factor is the contact with the western culture and education, the apprenticeship has now given way to the formal schools where they would be given white collars jobs after graduation. This has equally left the dyeing profession in the hand of few elderly women who have lucrative jobs to dyeing. Most people are now drifting from rural areas to the urban centres. Indigo plant which was formerly cultivated in open farmland is no longer cultivated. It is now difficult to find indigo era plants in nearby areas. The dyers now have to travel long distances to rural areas to obtain indigo plants which are sold exorbitant prices. The scarcity of Indigofera plant has led to the increase in the price of dyeing and this has led to the increase in utilization of synthetic dyes.

The increase in Europe printed fabrics in the 1960s took over from the traditional indigo dyed cloth (TTDC). Since the few people begin to cherish their cultural heritage whereby people are now gradually demanding for locally indigo dyed fabrics, more attention should be given to TTDC. Again, the nature of indigo dyeing itself shows that it is a profession for adult who have stop childbearing.

Because the discoloration of the hand and feet does not favour by the young ones, hence, they despite indigo dyeing.

Finally, the fact that the craft still survives in few places does not mean that nothing should be done to ravine or encourage its utilization.

10. RECOMMENDATIONS

The following recommendations are made for indigo continuous practice and survival:

Traditional indigo dyeing (TID) should be incorporated into the textile curriculum of schools (secondary and tertiary). Indigenous dyer or experts should be invited to demonstrate the crafts to the youth and constant excursion to dyeing depots should also be made.

Secondly, government should encourage the planting of *Indigofera* plants as part of campaign for tree planning in order to have enough plants for extraction of indigo dyes.

Thirdly, government should sponsor necessary research programme on dyeing and allow mass importation of the various dyeing chemicals such as caustic soda and indigo crystals.

Workshops, seminars, and exhibitions could serve as meeting forum for dyers to exchange ideas. Likewise, local indigo fabric cultural carnival and competition (LIFCCC) should be organised annually to celebrate this heritage.

Finally, our museums and galleries should embark on the collection of indigo textile materials and display them for people to appreciate and consume.

REFERENCES

- Adepegba, C.O. (1995). *Nigerian Art. Its Traditions And Modern Tendencies*. Ibadan : JODAD Publishers. <https://www.amazon.co.uk/Nigerian-art-traditions-modern-tendencies/dp/B0006F95NM>
- Awofisayo, O.A, Sanni, M.O. Ajayi, N.O. & Olufowobi, O.F. (2017). *Traditional Political System in Nigeria. Historiography, Arts and Challenges*. Lagos : Atlantic Publishing Company.
- Babalola, A. (1990). *Èkọ Ede Yoruba titun*. Ibadan : University Press Limited.
- Fern, K. (2020). *Indigofera Tinctoria - Useful Tropical Plants*. In <https://tropicaltheferns.info/viewtropical.php?id=indigofera+tinctoria>
- Gardi, R. (1999). *African Craft And Craftsman*. New York : Van no Strand. <https://www.amazon.com/African-crafts-craftsmen-Rene%20Gardi/dp/B0007HD4A4>
- Ibrahim-Banjoko, O.O. (2009). *Cultural and creative arts made easy : Textbook for Schools and Colleges*. Yaba, Lagos : Movic Publishing Company Limited.
- Lupo, A. (2002). *Beginner's Guide To Fabric Dyeing And Printing*. New York : Macmillan Publishers. <http://www.worldcat.org/oclc/10133194>
- Maiwa, (2020, September 15). Guide to natural dyes- indigo. In <http://maiwahandprints.blogspot.com/p/guide-to-natural-dyes.html>

- Mawla, G. (2020). Different Types of Dyes with Chemical Structure. <https://textilelearner.net/different-types-of-dyes-with-chemical-structure/>
- Oyedun, Y.F. (2019). *Excel In Arts For Secondary Schools, Colleges, Technical, Trade Centres And Tertiary Institutions*. Lagos : Yemsol Graphic Communication.
- Oyèbó lá, O.S. (2001). *Iṣẹ aṣo àdìrẹ síṣe ní Ìlú Ègbá ní agbègbè Itòkú lábẹ̀ Iṣẹ́ Gúúsù Abèòkúta. Iṣẹ́ àkànṣe fún gbígba iwé Èrì Èńsíì ní Federal College of Education, Abèòkúta, Ogun State.*
- Ọ̀ṣí bẹ̀rù, D. (2002). *A comprehensive art text book for secondary schools*. Lagos : RASMED Publication Limited.
- Robinson, S.P. (1982). *Beginner's Guide to Fabric Dyeing and Printing*. England : Butterworth-Heinemann Ltd. <https://www.amazon.co.uk/Beginners-Guide-Fabric-Dyeing-Printing/dp/0408005750>
- Samathan, J. (2016). Japanese Indigo Dye - Indigofera tinctoria. <https://allnaturaldyeing.com/japanese-indigo-indigofera-tinctoria/>
- Sànyà, A.G. (2015). *Iṣẹ́ Ìṣẹ̀mbáyé Yorùbá àti ọ̀rọ̀-ajé Nàìjíríà : Àpẹ̀rẹ̀ Àdìrẹ̀ Ègbá. BÁAWÀ, Jónà Èka Èkó Èdè Yorùbá, Federal College of Education, Ọ̀ṣìlẹ̀, Abèòkúta, Ògùn State, 1(1), 143-147.*
- Williams, R. (2020). Chemical and synthetic dyes. <https://fashion-history.lovetoknow.com/fashion-clothing-industry/chemical-synthetic-dyes>