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DIFFERENCE BETWEEN MORDAN SODA ASH AND TOHOR LIME ON THE RESULTS *OF THE IVORY* CACAK LEAF (SANCHEZIA *SPECIOSA*) ON WOLFIS FABRIC USING THE *POUNDING TECHNIQUE*

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Abstract

The *ecoprint technique* is the process of transferring motifs and colors to the fabric through direct contact, the technique of giving motifs and colors to the fabric using natural materials such as leaves, and flowers that do not produce waste that is harmful to the environment. This research is motivated by the application of an ivory cacak leaf ecoprint *motif (Sanchezia speciosa)* on wolfis material using a punching/pounding technique with mordan soda ash and mustard lime. This study uses an experimental method to determine the color name and color fastness. The type of data in this study is primary data with data collection techniques using research instruments in the form of questionnaires. The color name using mordan soda ash produces the color name of *mudy waters brown* #AC915C on the tip of the leaf, the name of *the color light brown* #D7C370 on the leaf bone branch, the name of *the color of wheat light brown* #E2D4B3 on the mother of the leaf bone, the name of the color *camougflage* green #777850 on the flesh of the leaf, the name of the color *of golden sundance* #C1AF68 on the edge of the leaf, and the name of the color of clam *shell pink* #BDB693 at the base of the leaves. While the color name using the lime mordan produces the name of *the golden sundance* color #B69F5E on the tip of the leaf, the name of *the pale golden* color #F2E4AF on the leaf bone branch, the name of *the color of wheat light Brown* #D8D3B5 on the mother of the leaf bone, the name of *the color camougflage green* #72794D on the flesh of the leaf, the name of the color *golden sundance* #BCA76F on the edge of the leaf, and the name of the pale *yellow color* #E4DDBD at the base of the leaves. The color fading resistance to washing in wolfis materials using mordan soda ash and lime was significantly different in the 3rd wash

Keywords: Ecoprint, Ivory cacak leaves, Mordan

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INTRODUCTION

One of the methods to give motifs and colors to textile materials is *EcoPrint*. According to Sartika & Adriani, (2023:11) Ecoprint is moving the pattern (shape) of leaves and flowers onto the surface of various fabrics. According to Sevira & Ernawati, (2024:120) "Ecoprint is a technique of transferring natural materials, in terms of color and also the shape applied to the fabric". according to Anugrah & Novrita, (2023:18365) "Ecoprint is the process of transferring colors and shapes from plants to fabrics through direct contact." Technique *EcoPrint* is the process of transferring motifs and colors to the fabric through direct contact, the technique of giving motifs and colors to the fabric using natural materials such as leaves, and flowers that do not produce waste that is harmful to the environment.

According to Octariza & Mutmainah, (2021:309) said "The ecoprint technique provides an alternative to textile production to reduce the impact of environmental pollution. This technique does not use machinery or chemicals but is more environmentally friendly". So this research is important to take advantage of plants such as leaves and flowers that exist in nature around us and become an alternative way for textile production to reduce the impact of environmental pollution using chemicals. One of the plants that can be used in the technique *Ecoprint* i.e. leaves Ivory cuckoo (*Sanchezia Speciosa)* which contains anthocyanin pigments that can be used as providing motifs and colors to environmentally friendly fabrics.

The ivory cacak is widely grown as an ornamental plant in tropical areas and botanical gardens because of its showy, bright and colorful leaves. The uniqueness of the leaves of the ivory cacak (*Sanchezia Speciosa)* as a technique *EcoPrint* It has bright green foliage and characteristic yellow veins flowing through the leaves so that it becomes a characteristic of the leaf, which is why researchers are interested in using the leaves of the ivory cacak (Sanchezia speciosa) as a medium for making ecoprints. According to Umoh et al., (2024:72)"The ivory cactus plant contains alkaloids, glycosides, flavonoids, triterpenoids, carbohydrates, steroids, phenolic compounds, saponins, and tannins". This is in line with the Aliffianti & Kusumastuti, (2020:10).

This study is an experimental study that aims to see the difference between mordan soda ash and tohor lime on the results of ecoprint using ivory cacak leaves (*Sanchezia*

speciosa) on wolfis material. The ecoprint process involves several stages, each of which affects the final result, including the stage of providing a very important mordan. Mordan has a great influence on the colors produced during the coloring process.

According to Adriani & Atmajayanti, (2023:231)"Mordan is a substance that connects natural dyes with fabric fibers so that it affects the color concentration in ecoprints". according to Anugrah & Novrita, (2023:18365) states "Mordan is a special substance that has the ability to strengthen the dyeing of fabrics and affect how the color comes out during the dyeing process." And according to Masyitoh & Ernawati, (2019:388) "Every mordan or fixation process affects the final result. The use of different mordanes and fixations will produce a variety of colors". It can be concluded Mordan is a substance that functions as a color generator and as a color enhancer so that the resulting color can absorb on the fabric and is fastness. According to Aprilia & Hendrawan, (2020:2803-2804) Mordan is divided into 2 parts, namely:

a) Natural, mordan natural are mordan substances that come from nature. The types of natural mordan are very diverse, namely: Asam (lime, apple cider vinegar, lemon, star fruit), Basa (betel lime, merang ash, tohor lime), Metal (alum, tunjung), Salt (kitchen salt); b) Synthetic, synthetic mordanes are mordanus substances obtained from chemical substances. Types of synthetic mordans are: Acid (cooking vinegar), Base (soda ash, baking soda, FE) and Metal (aluminum)

The mordanes used in this research are soda ash and lime. The authors in this ecoprint process used mordan, soda ash and lime because they are easy to find, easy to obtain, and effective as mordans along with natural dye dyes. According to Revianti & Novrita, (2019:404) "In addition, mordanes as reinforcing and color generators can affect the final color in the coloring process".

Soda ash is used in the mordant process to open the fibers of the fabric and remove the waxy substance on the fabric. In line with the Insyiah & Affanti, (2022:56) states that "soda ash is capable of hydrolyzing the fats (RCOOH) contained in wax into water-soluble soaps". Soda ash is a soda whose solution is alkaline fat, white in the form of a powder like a fragile flint that is easily used to adjust mori and indigosol solvents. Haryanto & Suheryanto, (2008:19-20) Declares that "soda ash has the chemical compound name Na2CO3, which is a chemical compound formed from a solution of

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table salt (NaCl) in concentrated ammonia (NH4OH) flowed by carbon dioxide (CO2) gas. Soda ash is highly absorbent of water, alkaline or alkaline solutions, and if you touch it with your hands, it feels cold." Based on this opinion, it can be concluded that soda ash which is used as a mordan functions to open the fibers of the fabric and remove waxy substances on the fabric that is soluble in water.

Tohor lime is a calcium compound that is widely found in nature and widely used in industry. Usually in nature it is found in the form of chunks. According to Megawati et al., (2019:105) said "The natural limestone obtained is processed by burning to produce tohor lime, or known by the chemical term calcium oxide (CaO)". In line with the opinion Rianti, (2021:76) Declares that "Tohor lime is a white and amorphous solid substance and has a melting point of 25700C. This lime is hygroscopic (absorbs water) and alkaline, so this material can be used as a drying agent, absorbs water or neutralizes acids.

Technique *EcoPrint* The technique used in this study is the hitting technique/ *pounding*. According to Nuraini & Hendrawan, (2021:3872)"Using the pounding method because the silhouette of the resulting motif can be clearly seen, while in the steaming method, the silhouette of the resulting motif is less clear at the edges of the motif". Because of this, the researcher uses the hitting technique/*pounding*. Strike technique or *pounding* That is, the process of transferring motifs to fabric is carried out by hitting natural materials with a hammer. In line with the Frederica & Adriani, (2024:72) states that "engineering *pounding*, that is, by hitting the leaves that are pasted on the cloth. Technique *pounding* is a technique to transfer the color and shape of plants on cloth obtained by hitting plants on cloth with a hammer". From this opinion, the pounding technique is an ecoprint technique that is carried out by hitting the leaves that are attached to the fabric using a hammer.

Manufacture *EcoPrint* requires fabric that is used as a medium for transferring motifs and colors. Fabric is a material made from woven yarns. The fabric structure is formed from the weaving of two types of yarns, namely warp yarn (elongated) and weft yarn (widened) with a certain size. In this study, wolfis cloth was used. Wolfis fabric is a fabric made of fibers *Polyester* mixed with other fibers used for clothing textiles. wolfis cloth is quite thick and not transparent, in line with the Prahastuti et al., (2019:114) “Wolfis has many advantages, namely soft, smooth, quite thick but light and not transparent". Based on observations made This wolfis fabric is also not easy to wrinkle,

dries quickly, and easily absorbs the color and shape of the motif after conducting an ecoprint pre-experiment with ivory cacak leaves, because this is why the researcher uses wolfis material as a technique *EcoPrint*.

METHOD

This study uses experimental research to study the effect of mordan, soda ash and tohor lime on the ecoprint yield *of* ivory cacak leaves (*Sanchezia Speciosa*) on wolfis fabric. *Ecoprint* was carried out to see the difference between mordan soda ash and tohor lime on the results of *ecoprint of* ivory cacak leaves (*Sanchezia speciosa*) on wolfis fabric.. The data used used used primary data and data collection methods in the form of questionnaires which were distributed to 18 panelists consisting of 3 limited individual panelists from lecturers of the IKK Department with the condition of experience evidenced by a letter of decree teaching in the field of textiles and not color blind and 15 panelists trained by students of the IKK Department on the condition that they have passed the textile analysis and knowledge course and are not color blind which is tested by the ishihara test.

The data was then processed and analyzed in percentages to determine the average of the respondents' answers regarding the color name (hue) and washing resistance of the ecoprint results on wolfis fabric using the pounding technique using mordan soda ash and tohor lime. The color name data generated by ecoprint is obtained using the *Colorblind Assistant* application on a computer that shows the color name and RGB it contains. The data from the study was analyzed using SPSS If you want to get the color name data generated by the ecoprint, use the *Colorblind Assistant* computer application that can show the color name directly through the RGB code it contains. Data processing of the influence of Mordan Soda Ash and Tohor Lime on wolfis fabric using Cacak Gading leaves (*sachezia speciosa)* which was tested by *Friedman K-Related Sample* test using SPSS (*Statistical Package for the Social Sciences*) version 26.0.

Research variables:

1. Free Variable X

   The results *of the ecoprint* of ivory cacak leaves (*Sanchezia Speciosa*) on wolfis cloth with mordan soda ash and tohor lime with the same treatment". There are 2 groups of X variables.

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a. X1, is the result of *an ecoprint* of ivory cacak leaves (*Sanchezia Speciosa*) on wolfis fabric with mordan soda ash.
b. X2, is the result of *an ecoprint* of ivory cacak leaves (*Sanchezia Speciosa*) on wolfis cloth with mordan lime.

2. Bound Variable Y

Variable Y, which is also referred to asvariabledependent orvariableresult, isvariablethat is measured or observed in an experiment or study. In line with the opinions expressed by Sugiyono, (2014:39) states "the dependent variable in Indonesian is often referred to as the bound variable, the bound variable is the variable that is influenced or the result, because of the existence of an independent variable"". bound variable Y is the result of the difference from the use of mordans soda ash and toast lime to the results *EcoPrint* Ivory chandel leaves (*Sanchezia Speciosa*) on wolfis fabric by color name *(Hue)* and color fastness.

RESULTS AND DISCUSSION

1. Color name (*hue)*

Color name data generated on staining *EcoPrint* obtained using the *Colorblind Assistant* which shows the name of the color, color code, and RGB contained in the color. According to Ernawati et al., (2008:191)"Color is the most prominent design element. With the presence of color, it makes an object that can be seen. In addition, color can also express the atmosphere, feelings, or character of the object being designed".The name of the result color *EcoPrint* leaves of Cacak Gading (*Sachezia speciosa)* It is divided into six, namely the name of the color of the tip of the leaf, the name of the color of the leaf bone, the name of the color of the mother bone, the name of the color of the leaf flesh, the name of the color of the leaf edge, and the name of the color of the base of the leaf.

a) Table 1. Color names with No mordans

It	Mordan Ecoprint	Assessment Indicators	Color	Color name	RGB	F	F%
1.	No Mordan	Ivory Leaf Tip Color		Golden Sundance #B19E68	R 177 G 158 B 104	4	22%
				Dark salmon pink #B19877	R 177 G 158	4	22%

					B 104		
				Muddy waters brown #B59866	R 181 G 152 B 104	10	55,6%
		Ivory leaf bone branch color		Canary yellow #CEC8A8	R 206 G 200 B 168	3	16,7%
				Clam shell pink #C6B289	R 198 G 178 B 137	11	61,1%
				Golden sundance #BFAD78	R 191 G 173 B 120	4	22,2%
		Mother color of the ivory leaf bones		Off - white beige #E2DAC8	R 225 G 218 B 200	4	22,2%
				Canary yellow #C5BCA8	R 197 G 188 B 169	8	44,4%
				Clam shell pink #CBC7AC	R 203 G 199 B 172	6	33,3%
		color of the flesh of the leaves Ivory Lizard		Olive #5E673D	R 094 G 103 B 061	11	61,1%
				Dark olive green #5A6833	R 090 G 104 B 051	6	33,3%
				Comouflage green #717A4F	R 113 G 122 B 079	1	5,6%
		Leaf edge color Ivory Lizard		Golden sundance #B8B072	R 184 G 176 B 114	3	16,7%
				Muddy waters brown #A49469	R 164 G 148 B 105	5	27,8%
				Canary yellow #B7AA89	R 183 G 170 B 130	10	55,6%
		Leaf base color		Golden sundance #B7A57B	R 183 G 165 B 123	6	33,3%

		Ivory Lizard		Clam shell pink #B9AC93	R 185 G 172 B 147	0	0%
				White light brown #E2D4B4	R 226 G 212 B 180	12	66,7%

Based on the description above, it can be concluded that the results of the ecoprint using ivory cacak leaves (*sanchezia speciosa*) on wolfis material without mordan, resulting in the color name *Muddy Waters Brown* with #B59866 color code has R (*Red*) 181, G (*Green*) 152, and B (*Blue*) 104 at the tip of the ivory cacak leaf, the color *of Clam shell pink* with a color code #C6B289 has R (Red) 198, G (Green) 178, and B (Blue) 137 on the leaf bone branches, *Canary yellow* with #C5BCA8 color code has R (*Red*) 197, G (*Green)* 188, and B (*Blue*) 169 on the leaf bone mother, *Olive* with #5E673D color code has R (*Red*) 094, G (*Green*) 103, and B (*Blue*) 061 on the flesh of the ivory cactus, the *Canary yellow* color with the color code #B7AA89 has R (*Red*) 183, G (*Green)* 170, and B (*Blue*) 130 on the edge of the ivory cuckoo leaf, and the last White *light brown* color with the color code #E2D4B4 has R (*Red*) 226, G (*Green)* 212, and B (*Blue*) 180 at the base of the ivory cuckoo leaf.

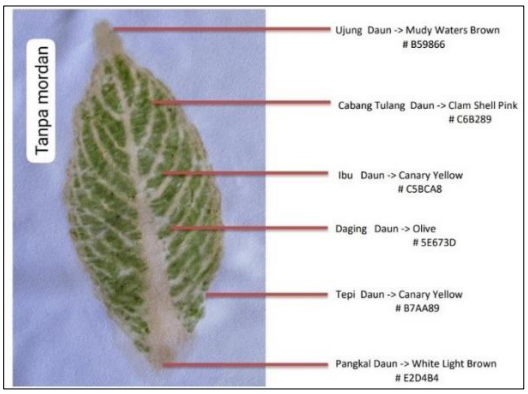

Figure 1. Results of color names without mordant
Source: Personal documentation

b) Table 2. Color name result with Mordan soda ash

It	Mordan Ecoprint	Indicators Valuation	Color	Name Color	RGB	F	F%
1	Mordan Soda Ash	Ivory Leaf Tip Color		Muddy Waters Brown #AC915C	R 172 G 145 B 092	12	66,7%
				Clam shell pink #C2AE95	R 194 G 174 B 149	2	11,1%
				Golden sundance #CEA56B	R 206 G 165 B 107	4	22,2%
		Ivory leaf bone branch color		Light brown #D7C370	R 215 G 195 B 112	11	61,1%
				Golden sundance #C5A753	R 197 G 167 B 083	5	27,8%
				Pale yellow #FAF9BF	R 250 G 249 B 191	2	11,1%
		Mother color of the ivory leaf bones		Pale golden #DFD1A2	R 223 G 209 B 179	2	11,1%
				Wheat light brown #E2D4B3	R 226 G 212 B 179	12	66,7%
				Canary yellow #E1D8A8	R 225 G 215 B 168	4	22,2%
		color of the flesh of the leaves Ivory Jackfruit		Olive #868358	R 134 G 131 B 080	3	16,7%
				Camougflage green #777850	R 096 G 086 B 034	13	72,2%
				Muddy waters brown #8A8754	R 138 G 135 B 084	2	11,1%

		The color of the edges of the ivory cacak leaves		Light brown #D6C182	R 214 G 193 B 130	7	38,9%
				Canary yellow #D2C980	R 210 G 201 B 128	2	11,1%
				Golden sundance #C1AF68	R 192 G 175 B 104	9	50%
		The color of the base of the ivory leaf		Canary yellow #B7AC76	R 183 G 172 B 118	6	33,3%
				Muddy waters brown #9F9563	R 159 G 149 B 099	2	11,1%
				Clam shell pink #BDB693	R 189 G 182 B 147	10	55,6%

Based on the description above, it can be concluded that the results *of the ecoprint* using ivory cacak leaves (*sanchezia speciosa*) on wolfis material with mordan soda ash produced the color name *Muddy Waters Brown* with a color code #AC915C has R (*Red*) 172, G (*Green*) 145, and B (*Blue*) 092 at the tip of the ivory cacak leaf, *Light brown* color with color code #D7C370 has R (*Red*) 215, G (*Green*) 195, and B (*Blue*) 112 on the leaf bone branch,, *Wheat light brown* with color code #E2D4B3 has R (*Red*) 226, G (*Green*) 212, and B (*Blue*) 179 on the leaf bone mother, *Camoufladge Green* with color code #777850 has R (*Red*) 096, G (*Green*) 086, and B (*Blue*) 034 on the flesh of the ivory cactus leaf, *Golden Sundance* with the color code #C1AF68 has R (*Red*) 192, G (*Green*) 175, and B (*Blue*) 104 on the edge of the ivory cactus leaf and the last color *Clam Shell Pink* with the color code #BDB693 has R (*Red*) 189, G (*Green*) 182, and B (*Blue*) 147 at the base of the ivory cactus.

Figure 2. Results of the color name mordan soda ash
Source: Personal documentation

c) Table 3. Color results with mordan lime

It	Mordan Ecoprint	Indicators Valuation	Color	Name Color	RGB	F	F%
1	Tohor Lime Mordan	Ivory Leaf Tip Color		Golden sundance #B69F5E	R 182 G 159 B 094	12	66,7%
				Muddy waters brown #AB9959	R 171 G 153 B 089	4	22,2%
				Lemon ginger brown #927F40	R 146 G 127 B 064	2	11,1%
		color of leaf bone branches Ivory Jackfruit		Light brown #DAD78F	R 218 G 215 B 143	5	27,8%
				Pale golden #F2E4AF	R 242 G 228 B 175	10	55,6%
				Golden sundance #BEAB6F	R 190 G 171 B 111	3	15,7%
		Leaf bone mother color Ivory Jackfruit		Wheat light brown #D8D3B5	R 216 G 211 B 181	11	61,1%
				Off – white snow #EEE1E1	R 238 G 225 B 225	5	27,8%
				Canary yellow #D7C89C	R 215 G 200 B 156	2	11,1%
		color of the flesh of the leaves		Dark brown #3C4518	R 060 G 069 B 024	0	

		Ivory Jackfruit		Dark Olive green #4F5B2D	R 079 G 091 B 045	4	22,2%
				Comougflage Green #72794D	R 114 G 121 B 077	14	77,8%
		Leaf edge color Ivory Jackfruit		Canary yellow #C7BF64	R 199 G 191 B 100	3	16,7%
				Golden sundance #BCA76F	R 188 G 167 B 111	11	61,1%
				Light brown #DDBD7E	R 221 G 189 B 126	4	22,2%
		Leaf base color Ivory Jackfruit		Pale yellow #E4DDBD	R 228 G 221 B 189	16	88,9%
				Clam shell pink #DAD2A9	R 218 G 210 B 169	0	
				Canary yellow #C2BD93	R 194 G 189 B 147	2	11,1%

Based on the description above, it can be concluded that the results *of the ecoprint* using ivory cacak leaves (*sanchezia speciosa*) on wolfis material with mordanus lime tohor produced the color name *Golden sundance* with #B69F5E color code has R (*Red*) 182, G (*Green*) 159, and B (*Blue*) 094 at the tip of the ivory cacak leaf, *Pale golden* color with #F2E4AF color code has R (*Red*) 242, G (*Green*) 228, and B (*Blue*) 175 on the leaf bone branch, *Wheat light brown* color with color code #D8D3B5 has R (*Red*) 216, G (*Green*) 211, and B (*Blue*) 181 on the leaf bone mother, *Camouflage Green* with #72794D color code has R (*Red*) 114, G (*Green*) 121, and B (*Blue*) 077 on the flesh of the ivory cactus leaves, *the Golden Sundance* color with the color code #BCA76F has R (*Red*) 188, G (*Green*) 167, and B (*Blue*) 111 on the edge of the ivory cactus leaf and the last Pale Golden color with the color code #E4DDBD has R (*Red*) 228, G (*Green*) 221, and B (*Blue*) 189 at the base of the ivory cacak leaf.

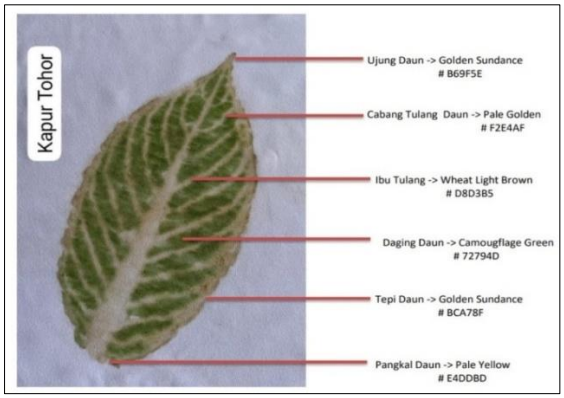

Figure 3. Results of the name of the color mordan lime tohor

Source:Personal documentation

Based on the description above, it can be concluded that the leaves of the ivory cacak *(Sanchezia speciosa)* can be used as a natural dye or motif on fabrics. The results of the research conducted by Nuraini & Hendrawan, (2021:3865) stated "The color produced by jengkol skin dye extract using mordan soda as on rayon fabric produces a yellowish cream color to a deep dark brown color". The results of the experiment that the researcher carried out were that the color produced using soda ash was thicker or older than that using Lime Lime. The results of the ecoprint study using ivory cacak leaves on wolfis cloth using lime on the leaf bone branches, bone mothers, leaf edges, and leaf bases lead to a brownish-yellow color, namely warrants *Pale Golden*, *pale yellow* and *Golden Sundance*. Results Umaira & Adriani, (2024:372) “In the study, it was found that ecoprint using kenikir leaves with mordan lime tohor produced a warm brown color and a canary yellow leaf bone arrangement. This was also conveyed by Fitri & Adriani, (2022:36) “Mordan lime tohor can produce brownish color names". Also supported by Arsa & Adriani, (2024:28) states "The color brown is also influenced by lime mordanus which has alkaline properties." However, in the results of the research that has been carried out, the ecoprint motif of ivory cacak leaves using soda ash and lime also produces a greenish color which is due to substances that pigment natural colors, namely flavonoids and tannins that affect the color results. In line with according to Pearl & Wildan, (2014:4) "Flavonoids and tannins are water-soluble pigments that give yellow, blackish-green and blue colors". Based on the results of the study, it can be concluded that the use of mordan soda ash and tohor lime produces a brownish-yellow green color, but the use of morda soda ash is more

concentrated. This is also supported by research according to Pradana et al., (2023:9) "Na2CO3 concentration affects the color aging of the dyeing result. This can happen due to an increase in the concentration of Na2CO3 which causes the pH of the dip solution to become more alkaline". In accordance with the theory that soda ash has the name of the chemical compound Na2CO3,

2. Fastness resistance to washing

Table 4. Results of color fastness to washing from the difference without mordan, mordan, soda ash and tohor lime.

It	Mordan	Color Fastness Results			Information
		Amount of Wash	F	F (%)	
1	No Mordan	1 time	12	55,6%	No Change
		2 times	12	66,7%	Change
		3 times	11	61,1%	Highly Variable
2	Soda Ash	1 time	12	66,7%	Little Change
		2 times	13	72,2%	Change
		3 times	9	50%	Highly Variable
3	Tohor Lime	1 time	10	55,6%	No Change
		2 times	12	66,7%	Change
		3 times	12	66,7%	Change

Table 5. Statistics describe the color fastness data against 1x washing produced on the ecoprint of ivory cacak leaf (Sanchezia speciosa) on wolfis without mordan, mordan soda ash and thor.

Descriptive Statistics						
	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles 25th
1-Time Wash Without Mordan	18	4.89	.323	4	5	5.00

1 Time Wash Mordan Soda Ash	18	4.78	.428	4	5	4.75
1 Time Washing of Mordan Lime Tohor	18	4.72	.461	4	5	4.00

Based on the table above, it can be explained that the research data has 18 panelists, the mean value of color fastness to washing is obtained as follows: 1 wash of wolfis fabric without mordan gets an average of 4.89, 1 wash with mordan soda ash gets an average of 4.78, 1 wash with mordan of tohor lime gets an average of 4.72.

Table 6. The results of the Friedman K-Related sample color fastness test against 1x washing on the ecoprint of ivory cacak leaves (Sanchezia speciosa) on wolfis without mordan, mordan soda ash and tohor lime.

Test Statisticsa	
N	18
Chi-Square	3.500
Df	2
Asymp. Sig.	.174
a. Friedman Test	

Based on the table above, it can be explained that *the Friedman test* of color fastness to washing produced *by the ecoprint* of the ivory cactus plant (*Sanchezia speciosa)* on wolfis material without mordan, mordan soda ash and tohor lime obtained a significant value of 0.174 which is greater than the significance level of 0.05 or 0.174 > 0.05. This means that there is no significant difference due to the use of mordan, soda ash and lime on color fastness to washing in 1x washing of *the results of Ecoprint* of ivory leaves *(sanchezia speciosa)* on wolfis material.

Table 7. Statistics describe the color fastness data against 2x washing produced on the ecoprint of ivory cacak leaf (sanchezia speciosa) on wolfis without mordane, mordan soda ash and tohor lime.

Descriptive Statistics						
	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles 25th
2 Wash Without Mordan	18	3.56	.511	3	4	3.00
2 Times Washing Mordan Soda Ash	18	3.61	.698	2	4	3.00
2 Times Washing of Mordan Lime Tohor	18	3.50	.514	3	4	3.00

Based on the table above, it can be explained that the research data has 18 panelists, obtained the mean value of color fastness to washing as follows: 2 times of washing of wolfis fabric without mordan got an average of 3.56, 2 times of washing with mordan soda ash got an average of 3.61, 2 times of washing with mordan of tohor lime got an average of 3.50.

Table 8. The results of the Friedman K-Ralated sample color fastness test against 2x washing on the ecoprint of ivory cacak leaves (Sanchezia speciosa) on wolfis materials without mordan, mordan soda ash and tohor lime.

Test Statisticsa	
N	18
Chi-Square	.545
Df	2
Asymp. Sig.	.761
a. Friedman Test	

Based on the table above, it can be explained that *the Friedman test* of color fastness to washing produced *by the ecoprint* of the ivory cactus plant (*Sanchezia speciosa*) on wolfis material without mordan, mordan soda ash and mordan lime tohor obtained a significant value of 0.761 which is more with a significance level of 0.05 or 0.001 > 0.05. This means that there was no significant difference due to the use of mordan soda ash and mordan lime tohor on color fastness to washing in 2x washing of *Ecoprint* results of ivory cacak leaf *(sanchezia speciosa*) on wolfis material.

Table 9. Statistics describe the color fastness data against 3x washing produced on the ecoprint of ivory cacak leaf (Sanchezia speciosa) on wolfis without mordan, mordan soda ash and tohor lime.

Descriptive Statistics						
	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles 25th
3 Washes Without Mordan	18	2.56	.511	2	3	2.00
3 Times Wash Mordan Soda Ash	18	3.00	.594	2	4	3.00
3 Times Washing Mordan Tohor Lime	18	2.44	.511	2	3	2.00

Based on the table above, it can be explained that the research data has 18 panelists, obtained the mean value of color fastness to washing as follows: 3 times of washing wolfis fabric without mordan got an average of 2.56, 3 times of washing with mordan soda ash got an average of 3.00, 3 times of washing with mordan of tohor lime got an average of 2.44.

Table 10. The results of the Friedman K-Ralated sample color fastness test against 3x washing on the ecoprint of ivory cacak leaves (Sanchezia speciosa) on wolfis materials without mordan, mordan soda ash and tohor lime.

Test Statisticsa	
N	18
Chi-Square	11.150
Df	2
Asymp. Sig.	.004
a. Friedman Test	

Based on the table above, it can be explained that *the Friedman test* of color fastness to washing produced by *the ecoprint* of the ivory cacak plant (*Sanchezia speciosa)* on wolfis materials without mordan, mordan soda ash and tohor lime obtained a significant value of 0.004 which is more with a significance level of 0.05 or 0.004 < 0.05. This means that there is a significant difference due to the use of mordan, soda ash and lime on color fastness to 3x washing of *the results of Ecoprint* of ivory cacak leaves *(sanchezia speciosa)* on wolfis material.

CONCLUSION

From the data of the research results, the color name (*hue*) *of ecoprint* can be produced using ivory cacak leaves (*sanchezia speciosa*) on wolfis material with mordan soda ash and tohor lime, on the mother of the leaf bone, leaf flesh and leaf edges produce the same color names but different color codes produced, while at the tip of the leaf, leaf bone branches, and leaf bases produce different color names and color codes based on The results used the Collorblind application obtained from the panelist data. Based on the results of this research, the use of mordan soda ash and mordan soda ash produces a brownish-yellow green color, but the use of morda soda ash is more concentrated or older than the use of mordan soda ash. This can occur due to an increase in the concentration of Na2CO3 which causes the pH of the dip solution to become more alkaline.

The results of the data obtained from 1 wash showed that there was no significant difference in color fading resistance to washing due to the use of mordan, soda ash and tohor lime on the results of Ecoprint of ivory cacak leaves (sanchezia speciosa) on wolfis material. In 2 washes, there was no significant difference in color fading resistance to washing due to the use of mordan, soda ash and lime on the results of Ecoprint of ivory cacak leaves (sanchezia speciosa) on wolfis material. Then in 3 washes, there was a significant difference in color fastness to washing due to the use of mordan, soda ash and lime on the results of Ecoprint of ivory leaf (sanchezia speciosa) on wolfis material.

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