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THE EFFECT OF ADDING ELECTROLYTES (NACL) IN TUNJUNG MORDAN ON ECOPRINT RESULTS USING JATROPA CURCAS LINN LEAVES WITH POUNDING TECHNIQUE ON CHIFFON MATERIAL

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Abstract

This research is motivated by the use of jatropha leaves to make motifs with the ecoprint technique. The purpose of this study is to describe the color name, color fastness and the effect of adding electrolyte to the tunjung mordan on the results of ecoprint by pounding technique on chiffon material. The type of research is experimental research with primary data types sourced from filling out a questionnaire of 18 panelists. Ecoprint of jatropha leaves without mordan produces the names of canary yellow on leaf sheets, pale golden on leaf bones, and reef green leaf bone branches. With mordan tunjung produces dark olive green on the leaf sheet, canary yellow on the leaf bone mother, and reef green on the leaf bone branch. The addition of electrolytes to the tunjung mordan produced the name of camouflage green on the leaf leaf, green smoke on the leaf bone, and reef green on the leaf bone branch. The color fading resistance to washing in chiffon material without mordan, in mordan tunjung, and the addition of electrolyte to mordan tunjung 1time and 2times Ho washing was declared accepted, meaning that there was no significant difference in the results of the K-Related Sample test on color fastness to washing. While 3times of washing Ho was rejected, it means that there is a significant difference in the results of the K-Related Sample test on color fastness to washing.

Keywords; *ecoprint, jatropha leaves, electrolyte, chiffon.*

Abstrak

Penelitian ini dilatarbelakangi oleh penggunaan daun jarak pagar untuk membuat motif dengan teknik ecoprint. Bertujuan mendeskripsikan nama warna, ketahanan luntur warna dan pengaruh penambahan elektrolit pada mordan tunjung terhadap hasil ecoprint dengan teknik pounding pada bahan sifon. Jenis penelitian yakni penelitian eksperimen dengan jenis data primer bersumber dari pengisian angket 18 panelis. Ecoprint daun jarak pagar tanpa mordan menghasilkan nama warna canary yellow pada lembar daun, pale golden pada ibu tulang daun, dan reef green cabang tulang daun. Dengan mordan tunjung menghasilkan dark olive green pada lembar daun, canary yellow pada ibu tulang daun, dan reef green pada cabang tulang daun. Penambahan elektrolit pada mordan tunjung menghasilkan nama warna camouflage green pada lembar daun, green smoke pada ibu tulang daun, dan reef green pada cabang tulang daun. Ketahanan luntur warna terhadap pencucian pada bahan sifon tanpa mordan, pada mordan tunjung, dan penambahan elektrolit pada mordan tunjung 1kali dan 2kali pencucian Ho dinyatakan diterima, berarti tidak terdapat perbedaan yang signifikan terhadap hasil uji K-Related Sample pada ketahanan warna terhadap pencucian. Sedangkan pencucian 3kali pencucian Ho ditolak berarti terdapat perbedaan signifikan terhadap hasil uji K-Related Sample pada ketahanan warna terhadap pencucian.

Kata Kunci; *Ecoprint, Daun Jarak, Elektrolit, sifon.*

INTRODUCTION

Ecoprint is one of the methods to give motifs and colors derived from plants to fabrics. According to Adriani & Atmajayanti (2023:231), the ecoprint technique is the process of transferring the shape and color of the leaves on the fabric directly so that leaf motifs will be printed on the surface of the fabric. By printing colors, patterns or motifs produced from ecoprints can be obtained from plants.

One of the plants that can be used in giving ecoprint motifs is jatropa cursas linn. According to Sartika (2023:11) states that "Castor leaves can be used for making ecoprints because they have a high tannin content".

Figure 1. Jatropa Cursas Linn.

The leaf of the fence jatropha has a beautiful leaf shape, this can be seen from the shape of the wide leaves, notched leaf blades, the edges of the leaves that are swollen, the fingered leaf bones and the veins of the leaves on the leaves. So this plant is used as a natural motif in ecoprints. According to Guranda (2016:43) said that jatropha leaves contain secondary metabolites; polyphenols, tannins, poloisaccharides and flavonoids. Tannins and Flavonoids are color pigments in plants so that it can be interpreted that plants that have these claws can be used as ecoprint media.

Furthermore, the use of fabric as a medium for making ecoprint motifs can also affect the results of the ecoprint process. In accordance with the opinion of Leha & Khayati (2022) stated "Chiffon fabrics are included in mixed and synthetic fibers. Fabrics with mixed materials and fully synthetic materials both have a good opportunity as ecoprint fabrics because based on the color fastness test to washing has a good value". According to Ardiani et al. (2019:50) stated that "Chiffon fabric has a good water absorption capacity of 0.070 cm/s". So that in the ecoprint process, the leaves stick to the fabric without any shift and because of that, the fabric can absorb the color of the leaves well.

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In this study, mordanting is carried out at the pre-mordan stage to remove all types of impurities on the fabric so that the absorption process of plant dyes is more optimal. In the mordanting process, it requires a supporting substance called a mordant substance. According to Adriani & Atmajayanti (2023:231) stated that "Mordan is a substance that connects natural dyes with fabric fibers so that it affects the color concentration in ecoprints". This means that the ecoprint technique requires mordan to improve the quality of ecoprint results.

On this occasion, the researcher used tunjung mordan, because tunjung is alkaline that reacts to Flavonoid compounds which causes the color of plants absorbed in the fabric to change to darker or older. This is in line with the opinion of Qomariah et al. (2022:20) saying that the use of tunjung has the strongest color advantage, namely a dark green color that is rich with a well-printed motif because the leaf bones are visible, thus the expression of ecoprint colors treated with tunjung in general does produce a darker and darker color. And also using the addition of electrolyte (NaCl) to the tunjung mordan.

NaCl or table salt is one of the chemical compounds that is included in the class of electrolyte solutions. This is in accordance with Djawa's opinion in Siti Dahlia, (2019:18) salt is useful for strengthening the color of faded laundry, especially on colored fabrics, besides that table salt is also an auxiliary agent to accelerate the entry of dyes into the material. The addition of electrolyte (NaCl) plays a role in maintaining the color of the motif on the fabric so that at the washing stage the color does not fade easily to accelerate the entry of dyestuffs. Add electrolyte (NaCl) as much as 5 grams to the mordan solution with a 1:10 vlot with a fabric weight of 9 grams.

After the process of transferring the color and shape of the leaf motif on the fabric, the fabric is immersed in a fixation solution with a 1:10 recipe and electrolyte (NaCl) is added again and soaked for 30 minutes. In the ecoprint process, to produce the color and shape of plants on fabric, the ecoprint technique is needed in the process. In the process of making ecoprints, ecoprint techniques are needed in the process. The process of making ecoprints requires ecoprint techniques so that the colors and motifs of leaves can be printed on the fabric. According to Nurmasitah et al. (2023:1) stated that the making of ecoprints has several techniques that are carried out, namely steaming techniques, pounding techniques, and boiling techniques.

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In this study, the pounding technique is used in carrying out the ecoprint process. Because the pounding technique produces the shape of the leaf motif and leaf bones that are more clearly visible on the surface of the fabric and the color of the leaf motif does not spread. In the opinion of Arif & Marsudi (2019:80) Pounding (pounding) Arrange the ingredients before the beating process, namely by giving a paper base, then given a red betel leaf (the bottom of the leaf with the leaf fingers is placed facing the fabric), then place the cloth on it, then beat it with a predetermined tool. The use of pounding techniques in the ecoprint process is safe. The process is faster and has a very minimal failure rate, as well as the result of a clear motif shape because it requires precision during the beating process so that it is suitable for application to ecoprint. The beating technique starts from the edge of the leaf following the leaf groove so that the process of transferring the motif on the fabric has the result of a leaf motif shape and a flat color.

Based on the explanation above, the author would like to further study the name of the color (hue) and the color fading resistance to washing resulting from the addition of electrolyte (NaCl) to the tunjung mordan on the results of ecoprints using jatropa curcas linn leaves with the pounding technique on chiffon material.

LITERATURE REVIEW

Ecoprint is a way of decorating fabric by utilizing various plants used. According to Umaira & Adriani (2024: 369) stated "Ecoprint is a process in which the pattern or shape of leaves and flowers is transferred to a fabric that has previously gone through a mordan process". The selection of plants as a print medium greatly affects the results of ecoprints. According to Sartika, (2023:11) that jatropa curcas linn leaves can be used as a natural medium for ecoprints because the leaves of this plant contain high tannin levels of around 7.41-8.28%. In line with the opinion of Rahman et al., (2021:74) said "Phytochemical screening of jatropha leaves (Jatropha curcas) contains secondary metabolite compounds such as alkaloids, polyphenols and tannins, flavanoids, and saponins". Jatropa curcas linn leaves have a weaving leaf bone arrangement, so that jatropha leaves look unique and beautiful and suitable for use as ecoprint motifs.

In the process of making ecoprints to print plant motifs on fabric, the ecoprint technique is required. According to Wirajaya et al., (2024: 2730) stated "A simple and easy-to-do ecoprint technique is the pounding technique, which is an ecoprint

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technique that is carried out using a hammer-like hammer, so that colors and motifs from natural materials can be transferred to the printing medium". Cigar chiffon fabric is a mixed or synthetic material that has hydroscopic properties that are heat resistant, boil resistant and have a good fastness value so that it can be used as a textile material for making ecoprints. According to Fitriana et al., (2019:23) stated that "Chiffon materials are classified as thermoplastic fibers/artificial fibers". Furthermore, Qomariah's opinion, (2013:74) states that Chiffon is a thin textile that is simply woven from twist valve threads (twists) that can absorb up to 85% of water.

Mordanting is the stage of fabric processing in mordan solution in the ecoprint process. According to Irianingsih, (2018:10) "Before use, the fabric must be processed first which is called mordanting. The purpose is to remove the layer of wax or bleach that adheres to the surface of the fabric so that the colors of the plants are easily absorbed". According to the opinion of Adriani & Atmajayanti, (2023:231) states "Mordan is a substance that connects natural dyes with fabric fibers so that it affects the color concentration in ecoprints". According to Sartika's opinion in Umaira & Adriani, (2024:369) states "The liquids used as color binder in the ecoprint process are alum, lime, table salt, coconut sugar, tamarind sugar, tamarind, lime, tunjung, coconut water". In this study, natural mordanes were used, namely electrolyte (NaCl) (table salt) and tunjung ($FeSO_4$).

According to Derisa, (2012:3) stated that in the natural dyeing process, electrolyte (NaCl) plays a very important role in maintaining the color that has been absorbed in the fabric. In line with the opinion according to Nisa' & Singke, (2018:42) states that in the process of pre-mordanting and fixation by adding auxiliary substances, namely salt, it can produce a slightly dark color. Furthermore, according to the opinion of Adriani & Atmajayanti, (2023:231) states that: "Tunjung is a mordan that has sulfur content, pale blue crystalline oxygen with the molecular formula $FeSO_4$, iron, and is weakly alkaline with a pH of 8-10. In the alkaline mordan ecoprint, it will produce a dark or dark leaf motif".

Fixation is the final process in making ecoprints, fixation is carried out to lock and awaken dyes that have entered textile fibers. This is in accordance with the opinion of Naini & Hasmah, (2021:272) stating that "Fixation is the last step in the eco print technique, namely locking the color on the fabric so that it does not fade".

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Furthermore, Pujilestari, (2014:32) stated "The fixation process is in principle to condition the dye that has been absorbed in a certain time so that there is a reaction between the dye material, and the dye substance and the material used for fixation".

METHOD

This research method uses an experimental method. The object of the research is chiffon fabric which is given ecoprint dyeing with a pounding technique using jatropa curcas linn with the addition of electrolyte (NaCl) to the tunjung mordan. Basically, this section explains how the research was conducted. The data collection technique used a questionnaire containing indicator scores regarding color names (hue) and color fastness to washing which were assessed by 3 panelists who were lecturers or teaching staff who had taught textile courses and 15 students who had completed textile courses. The data processing method uses the Friedman K-Related Sample test. This test was carried out using the SPSS (statical product and service solution) application.

RESULTS

This study explains the name of the color (hue) and the color fading resistance to washing produced in the process of applying the ecoprint motif with the addition of electrolyte (NaCl) to the end mordan using jatropa curcas linn leaves with the pounding technique on the chiffon material.

1. Hue

To get the color name, color code, and RGB of each color, it is necessary to use the Colorblind Assistant application. Based on the assessment of the panelists with the highest percentage, it can be seen that the results of the ecoprint using jatropha leaves with a pounding technique on chiffon material without mordan produce canary yellow #B2BF75 on the leaf sheet, pale golden #D8D6A5 on the leaf bone mother, reef green #D7DFA6 on the leaf bone branches. The results of the ecoprint using jatropha leaves with a pounding technique on chiffon material without the addition of electrolyte (NaCl) to the tunjung mordan produced a dark olive green #5F6F4C color on the leaf sheet, Canary Yellow #AFV19B on the leaf bone mother, reef green #B7BA9D on the leaf bone branch and the addition of electrolyte (NaCl) on the tunjung mordan. Furthermore, the results of the ecoprint using jatropha leaves with a pounding technique on chiffon material with the addition of electrolyte (NaCl) on the tunjung

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mordan produced Camouflage Green #848B62 on the leaf sheet, Green smoke #A5A89 on the leaf bone, reef green #C7C8A1 on the leaf bone branches. The results of the warrant name can be seen in the following tables 1, 2 and 3.

Table 1. Description of the result of the name of the color (Hue) on the leaf of the fence jatropa.

Mordan	Color	Color Name	Color Code	RGB
No Mordan		*Canary yellow*	#B2BF75	R 178 G 191 B 117
Mordan tunjung		*Dark olive green*	#5F6F4C	R 095 G 111 B 076
Addition of electrolyte (NaCl) to the tunjung mordan		*Camouflage green*	#848B62	R 132 G 139 B 098

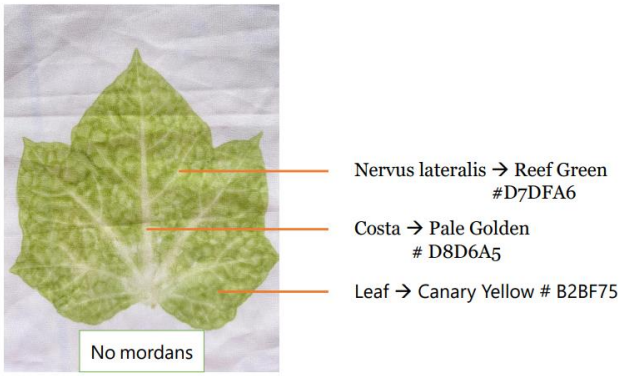

Figure 2. Results of the study without Mordan.

Table 2. Description of the result of the color name (Hue) on the mother bone of the jatropha leaf.

Mordan	Color	Color Name	Color Code	RGB
No Mordan		Pale Golden	#D8D6A5	R 216 G 114 B 165
Mordan tunjung		Canary Yellow	#AFB19B	R 175 G 177 B 155
Addition of electrolyte (NaCl) to the tunjung mordan		Green Smoke	#A5A893	R 165 G 168 B 147

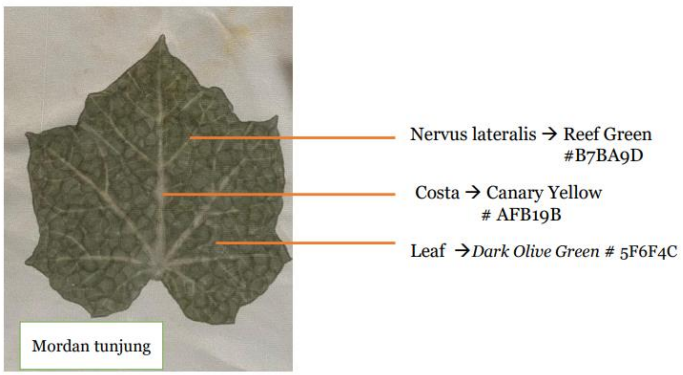

Figure 3. Mordan Tunjung's Research Results.

Table 3. Description of the result of the color name (Hue) on the jatropha leaf bone branch.

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Mordan	Color	Color Name	Color Code	RGB
No Mordan		*Reef Green*	#D7DFA6	R 215 G 223 B 166
Mordan tunjung		*Reef Green*	#B7BA9D	R 183 G 186 B 157
Addition of electrolyte (NaCl) to the tunjung mordan		*Reef Green*	#C7C8A1	R 199 G 200 B 161

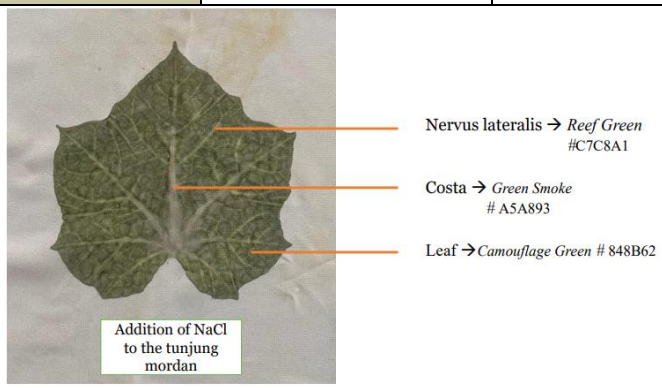

Figure 3. Research Results Addition of Electrolyte (NaCl) to Mordan Tunjung.

2. Color Fastness Resistance to Washing

Based on the results of the analysis of color fastness data on washing using lerak soap in 18 panelists, in 1 wash there was a mean value of 4.44 without mordans and mordans and 4.56 with the addition of electrolytes (NaCl) to mordans. Friedman K-Related Sample test of color fastness to washing at 1 wash can be seen in table 4.

Table 4. Friedman K-Related Sample Test Results Color Fastness Resistance to 1 Wash.

Test Statistics[a]	
N	18
Chi-Square	0.533
Df	2
Asymp. Sig.	.766
a. Friedman Test	

The Friedman K-Ralated sample test of color fading resistance to washing at 1 wash on the ecoprint results using jatropa curcas linn leaves with pounding technique on chiffon material without mordan, mordan, and the addition of electrolyte (NaCl) to mordanus produced a significant value of 0.766 which was greater with a significance level of 0.05 or 0.766 > 0.05. As seen in the table above. This is that there is no significant difference due to the use of mordanus tunjung and the addition of electrolyte (NaCl) to mordanjung to color fastness to washing in 1 wash of ecoprint results using jatropa curcas linn leaves with pounding technique on chiffon material.

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The results of the ecoprint using jatropa curcas linn leaves with pounding technique on chiffon material without mordan, mordan, and the addition of electrolyte (NaCl) to mordan jung with 2 washes showed a mean value of 3.56 without mordan, 3.72 mordan, and 3.78 with the addition of electrolyte (NaCl) to mordan. Friedman K-Related Sample test color fading resistance to washing in 2 washes can be seen in table 5.

Table 5. Friedman K-Related Sample Test Results Color Fastness to Washing 2 Times.

Test Statistics[a]	
N	18
Chi-Square	3.250
Df	2
Asymp. Sig.	.197
a. Friedman Test	

The Friedman K-Ralated sample test of color fastness to washing in 2 washes on the ecoprint results using jatropa curcas linn leaves with the pounding technique on chiffon material without mordan, mordan, and the addition of electrolyte (NaCl) to mordan, produced a significant value of 0.197 which was greater with a significance level of 0.05 or 0.197 > 0.05. As seen in the table above. This is that there is no significant difference due to the use of mordan tunjung and the addition of electrolyte (NaCl) to mordan tunjung to color fading resistance to washing in 2 washes of ecoprint results using jatropa curcas linn leaves with pounding technique on chiffon material.

In 3 washes of ecoprint results using jatropa curcas linn leaves with pounding technique on chiffon material without mordan, mordan, and the addition of electrolyte (NaCl) to mordan, the mean value of 3.22 without mordan, 3.89 mordan, and 3.33 with the addition of electrolyte (NaCl) to mordan. The Friedman K-Related Sample test of color fastness to washing at 3 washes can be seen in table 6.

Table 6. Friedman K-Related Sample Test Results Color Fastness to Washing 3 Washes.

Test Statistics[a]	
N	18
Chi-Square	6.168
Df	2
Asymp. Sig.	.045
a. Friedman Test	

The Friedman K-Ralated sample test of color fading resistance to washing in 3 washes on the ecoprint results using jatropa curcas linn leaves with a pounding technique on chiffon material without mordan, mordan, and the addition of electrolyte (NaCl) to mordan produced a significant value of 0.045 which was greater with a

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significance level of 0.05 or 0.045 > 0.05. As seen in the table above. This is that there is a significant difference due to the use of mordanus tunjung and the addition of electrolyte (NaCl) to mordan tunjung on the color fading resistance to washing in 3 washes of ecoprint results using jatropa curcas linn leaves with pounding technique on chiffon material.

3. Analysis Of The Effect Of Electrolyte Addition (Nacl) On Mordan Tunjung.

The results of ecoprint using jatropa curcas linn leaves pounding technique on chiffon material with no mordan, mordan tunjung and the addition of electrolyte (NaCl) on mordan tunjung test Friedman K-related samplel for color fading resistance to washing 1 time showed a significance value of 0.766>0.05, 2 washes showed a figure of 0.197>0.05 for 3x washing brings down the number 0.045 < 0.05. Therefore, 1 time and 2 times of Ho washing were declared accepted, which means that there was no significant difference in the results of the K-Related Sample test on color fastness to washing. Meanwhile, 3 times of washing Ho was rejected, which means that there was a significant difference in the results of the K-Related Sample test on color fastness to washing due to the effect of the addition of electrolyte (NaCl) on the tunjung mordan and without the addition of electrolyte (NaCl).

DISCUSSION

The results of ecoprint using jatropa curcas linn leaves pounding technique on chiffon material with no mordan, mordan tunjung and the addition of electrolyte (NaCl) on mordan tunjung test Friedman K-related sample for color fading resistance to washing 1 time showed a significance value of 0.766>0.05, 2 washes showed a figure of 0.197>0.05 for 3x washing brings down the number 0.045 < 0.05. Therefore, 1 time and 2 times of Ho washing were declared accepted, which means that there was no significant difference in the results of the K-Related Sample test on color fastness to washing. Meanwhile, 3 times of washing Ho was rejected, which means that there was a significant difference in the results of the K-Related Sample test on color fastness to washing due to the effect of the addition of electrolyte (NaCl) on the tunjung mordan and without the addition of electrolyte (NaCl).

Ecoprint of jatropa curcas linn leaves on leaves without mordan produced a color name (Hue) Canary Yellow with a color code of #B2BF75 with R (Red) 178=37%, G (Green) 191=39% and B (Blue) 117=24% with a percentage of 94% of the number of

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panelists. With the mordan tunjung, the color name (Hue) Dark Olive Green with a #5F6F4C color code with R (Red) 095=34%, G (Green) 111=39% and B (Blue) 076=27% with a percentage of 61% of the number of panelists. Furthermore, with the addition of electrolyte (NaCl) to the tunjung mordan, the color name (Hue) Camouflage Green with a #848B62 color code with R (Red) 132=36%, G (Green) 139=38% and B (Blue) 098=27% with a percentage of 50% of the number of panelists.

Ecoprint of jatropha leaves on costa without mordan produced a color name (Hue) Pale Golden with a color code of #D8D6A5 with R (Red) 216=44%, G (Green) 114=23% and B (Blue) 165=33% with a percentage of 50% of the number of panelists. With the tunjung mordan, the color name (Hue) Canary Yellow with a #AFB19B color code with R (Red) 175=35%, G (Green) 177=35% and B (Blue) 155=31% with a percentage of 44% of the number of panelists. Furthermore, with the addition of electrolyte (NaCl) to the tunjung mordan, the color name (Hue) Green Smoke with a #A5A89 color code with R (Red) 165=34%, G (Green) 168=35% and B (Blue) 147=31% with a percentage of 78% of the number of panelists.

Ecoprint of jatropa curcas linn leaves on Nervus lateralis without mordan produced the color name (Hue) Reef Green with a #D7DFA6 color code with R (Red) 215=36%, G (Green) 223=37% and B (Blue) 166=27% with a percentage of 44% of the total number of panelists. With the color name (Hue) Reef Green with a #B7BA9D color code with R (Red) 183=35%, G (Green) 186=35% and B (Blue) 157=30% with a percentage of 44% of the number of panelists. Furthermore, with the addition of electrolyte (NaCl) to the tunjung mordan, the color name (Hue) Reef Green with a #C7C8A1 color code with R (Red) 199=36%, G (Green) 200=36% and B (Blue) 161=29% with a percentage of 56% of the number of panelists.

In the research of Aryani et al., (2022:53) stated "Plants that can be used for eco-print are castor leaves". The color name in the results of the ecoprint pounding technique using jatropa curcas linn is influenced by mordan to increase the absorbency of the fabric to natural dyes. According to Anugrah & Zulfia Novrita, (2023:18356) "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. Every mordan process has an effect on the final result." In the results of the official & Nelmira's research, (2024:70) the results of the ecoprint mordan tunjung on cotton using fern leaves on

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the leaf produced the color name (Hue) Dark Brown with the code #484D0A, on the leaf bone produced the color name (Hue) Olive with the code #9DA88.

The color name of the ecoprint of jatropha leaves is also influenced by the addition of electrolyte (NaCl) to the mordan. According to Arifin in Sari, (2013:5) "In essence, the addition of electrolyte to the solution is an effort to increase the amount of dye absorbed by the fiber, even though various dyes will have different similarities". Furthermore, according to Pringgenies et al. (2013: 6-7), fabric fibers also greatly affect the color produced in this material, because each type of fabric has different properties. Chiffon fabric is a fiber that comes from synthetic or mixed fibers and contains polyyester levels has a good chance as an ecoprint fabric. The use of the addition of electrolyte (NaCl) to the tunjung mordan without the addition of electrolyte (NaCl) using the same type of castor leaf on the chiffon fabric resulting from the ecoprint will produce different colors, this is because the use of electrolyte (NaCl) will produce different colors.

Furthermore, to determine the quality of the dye produced by the ecoprint of jatropha leaves, it is necessary to conduct a color fastness test to washing. This is in line with the opinion of Syafitri, Adriani & Novrita (2015:4) that to determine the resistance of the dyes used, it is necessary to carry out a washing test. In this study, the color fastness test to washing was carried out using liquid soap, the results of Ecoprint Using Jatropa Curcas Linn with Pounding Technique on Chiffon Material without Mordan in 1 wash 56% of the panelists stated that it changed slightly, in 2 washes 56% of the panelists stated that it changed slightly and in 3 washes 44% of the panelists stated that it changed. The results of the ecoprint using jatropa curcas linn leaves with pounding technique on chiffon mordan tunjung in 1 wash 56% of the panelists stated that it changed slightly, in 2 washes 72% of the panelists stated that it changed slightly, and in 3 washes 67% of the panelists stated that it changed. Furthermore, the results of the ecoprint using jatropa curcas linn leaves with a pounding technique on chiffon material with the addition of electrolyte (NaCl) on the tunjung mordan in 1 wash 56% of the panelists stated that it did not change, in 2 washes 67% of the panelists stated that it changed slightly, and in 3 washes 50% of the panelists stated that it changed. Sari's opinion (2013:32) that "salt is useful for confirming the color of washed clothes, especially colored fabrics". Furthermore, in the research, Adriani (2024:2) stated that "Low washing resistance requires that dyeing with natural dyes must be accompanied

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by the use of mordans on the material to be given an ecoprint motif".Chiffon fabric as a textile material for making ecoprints because it has good fastness resistance. This is in accordance with the results of Leha's (2022:9) research which uses chiffon material for the manufacture of mindi leaf ecoprints and states that fabrics with mixed materials and fully synthetic materials both have a good chance as ecoprint fabrics because based on color fastness tests to washing have a good value".

The results of the K-Related Sample test for 1 time showed a figure of 0.766 > 0.05, 2 times of washing showed a figure of 0.197 > 0.05 and for 3 times of washing showed a figure of 0.045 < 0.05. From the data, it can be seen that at 1 time and 2 times of washing there is no significant change in color fastness to washing and 3 times of washing there is a significant change in color fastness to washing due to the addition of electrolyte (NaCl) in the tunjung mordan and without the addition of electrolyte (NaCl).

Color fading resistance due to the use of the addition of electrolyte (NaCl) to the tunjung mordan and without the addition of electrolyte (NaCl) to the results of the ecoprint of jatropa curcas linn leaves with the pounding technique on the chiffon material. Therefore, 1 time and 2 times of Ho washing were declared accepted, which means that there was no significant difference in the results of the K-Related Sample test on color fastness to washing. Meanwhile, 3 times of washing Ho was rejected, which means that there was a significant difference in the results of the K-Related Sample test on color fastness to washing due to the effect of the addition of electrolyte (NaCl) on the tunjung mordan and without the addition of electrolyte (NaCl).

CONCLUSION

The color name (Hue) produced from the results of the ecoprint using jatropa curcas linn leaves with a pounding technique on chiffon material without mordans on the leaves produces Canary Yellow color with #B2BF75 color code. On the mother leaf bone Produces the color name Pale Golden with the code #D8D6A5, and the leaf branch bone produces the color name (hue) Reef Green with the color code # D8DE9F. The results of using mordan tunjung on the leaves produced a Dark Olive Green color with a #5F6F4C color code. In the mother of the leaf bone produces the color name Canary Yellow with the code #AFB19B, and the leaf branch bone produces the color name (hue) Reef Green with the code #B7BA9D. Meanwhile, the results of ecoprint

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with the addition of electrolyte (NaCl) mordan tunjung, on the leaf produced Camouflage Green color with a color code #848B62, on the leaf bone mother produced the color name Green Smoke with the #A5A893 code, and the leaf branch bone produced the color name (hue) Reef Green with the #D8D6A5 code.

Color fastness to the washing of ecoprint results of jatropa curcas linn leaves with pounding technique on chiffon material with no mordan, the results of the assessment at 1 time and 2 times of washing 56% of the panelists stated that there was little change, in 3 times of washing 44% of the panelists stated that it changed. The washing of the results of the ecoprint mordan tunjung in 1 time 56% of the panelists stated that it changed slightly, in 2 washes 72% of the panelists stated that it changed slightly, and in 3 washes 67% of the panelists stated that it changed. Furthermore, the washing of ecoprint results with the addition of electrolyte (NaCl) to the mordan tunjung results of the assessment in 1 wash 56% of the panelists stated that it did not change, in 2 washes 67% of the panelists stated that it changed slightly and in 3 washes 50% of the panelists stated that it had changed. Based on the results of the color fading fastness test on the washing of the ecoprint results of jatropa curcas linn, jatropa curcas linn with the pounding technique on chiffon material with the addition of electrolyte (NaCl) to the tunjung mordan has better fading resistance than the ecoprint results using tunjung mordan. This explains that the addition of electrolyte (NaCl) to the tunjung mordan is good for ecoprints to make them more resistant to washing.

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The selection of jatropha leaves should be on jatropha plants whose leaves are not too young and not too old and are still fresh so that the process of transferring the color and shape of the ecoprint can be done properly.

1. In the process of beating or pounding techniques on chiffon materials, the hammers used are wooden hammers, rubber hammers with a flat size and surface so that the colors printed on the fabric do not widen and the fabric, as well as the leaves that are hit are not easily damaged.
2. The beating technique is carried out consistently, without using strong energy so that the plants used are not destroyed and produce an even transfer of color and shape.

3. In the process of washing the leaves, the leaves of the jatropha should not be soaked for too long so that the leaves do not absorb water and cause the color to widen during the leaf beating process.
4. Furthermore, the results of this research are expected to be a reference for the Department of Family Welfare Sciences, Family Welfare Education Study Program about the Ecoprint technique.
5. It is hoped that in the next research, it will be possible to conduct experiments using jatropha leaves with different mordans or different treatments so that they can produce colors from different textile motifs.

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