Gorga : Jurnal Seni Rupa
Vol 13, No 2, (2024) 651-659
ISSN 2301-5942 (print) | 2580-2380 (online)
https://dx.doi.org/10.24114/gr.v13i2.62681

Available online : https://jurnal.unimed.ac.id/2012/index.php/gorga

Alum, Arbor, Whiting on Tie-Dyed Batik (Jumputan) with Turmeric Dye (Curcuma Domestica Val)

Oksy Rimayana[1)*], Adriani[2)]
[1),2)] Department of Family Welfare, Faculty of Tourism and Hospitality, Universitas Negeri Padang, Indonesia
*Corresponding Author
Email : orimayana@gmail.com

***How to cite*:** Rimayana, O., & Adriani, A. (2024). Alum, Arbor, Whiting on Tie-Dyed Batik (Jumputuan) with Turmeric Dye (Curcuma Domestica Val). *Gorga : Jurnal Seni Rupa*, *13*(2), 651-659. https://dx.doi.org/ 10.24114/gr.v13i2.62681

Article History : *Received: August 15, 2024. Revised: August 25 , 2024. Accepted: December 2, 2024*

ABSTRACT
Tie-dye batik (jumputan) is one of the batik but made with simpler techniques and equipment. This research utilizes turmeric as a natural dye. This study aims to describe (1) the name of the color (hue), (2) fastness, (3) the difference in mordant on the name of the color (hue), fastness on batik ikat dip (jumputan) using natural coloring turmeric (curcuma domestica val). This type of research is experimental research, the data in this study are primary data sourced from 18 panelists. The data collection technique used is a questionnaire, then the data is processed and analyzed with the Friedman K-Realted Sample test. The results of the study on the name of the color (hue) without using mordant on color 1) Yellow #FFFF00, on color 2) Gold #FCF853, in color 3) Yellow #F7EF00. Alum mordant for color 1) Yellow #F4E841, color 2) Paris Daisy Yellow #F6093D, color 3) Gold #F6D620. Conifer mordant color 1) Golden Rod #D5A606, color 2) Dark Golden Rod #C59809, color 3) Dark Golden Rod #C59809. Whiting mordant color 1) Light Brown #E9CA66, color 2) Paris Daisy Yellow #EFCD51, color 3) Orange #E5B107. The results of data analysis of fastness obtained a significance of 0 which is smaller than the significance level.The effect of dyeing on washing resistance obtained a significance value of 0.001 which is smaller than the significance level of 0.000 <0.05 with the result that Ha is accepted and H_o is rejected. This means that there is a significant change.

KEYWORDS

Batik Ikat Dip (Jumputan), alum, arbor, whiting, turmeric

This is an open access article under the CC–BY-SA license

INTRODUCTION

Tie-dye (jumputan) batik is included in batik whose motifs are obtained by the jumputan technique. Batik ikat dip (jumputan) is made by tightly tying several parts of the fabric which are then dipped in dye. According to Asmarani et al. (2021:1) “The process of making jumputan is simple and easy, not using canting and malam”. The motifs or patterns formed in ikat-dyed batik (jumputan) will vary depending on how the binding and coloring are done. In ikat-dyed batik (jumputan) produces interesting and unique color gradations. According to Juwita (2018: 19) “Jumputan has interesting motifs and colors so its fans are not only from Yogyakarta but also many from other cities”. At this time with the large number of enthusiasts for the results of tie-dyed batik (jumputan) so that the craftsmen switch to using synthetic dyes that provide more varied colors. So that the use of synthetic dyes has an impact on the environment According to Pratistita M (2024: 277) “A mixture of colored liquids and synthetic chemical compounds, waste from the textile dyeing process is very polluting to the environment because it has a high value of Chemical Oxygen Demand (COD) and Biological Oxygen Demand (BOD), as well as other pollutants derived from the dye itself”.

Gorga : Jurnal Seni Rupa
Vol 13, No 2, (2024) 651-659
ISSN 2301-5942 (print) | 2580-2380 (online)
https://dx.doi.org/10.24114/gr.v13i2.62681
Available online : https://jurnal.unimed.ac.id/2012/index.php/gorga

Using natural dyes for coloring is an alternative to chemical dyes. According to Gratha (2012: 14) "Dyes in plants come from wood, bark, roots, root bark, seeds, seed coats, leaves, fruit and flowers" Coloring with natural dyes produces products that are naturalist, culturist, exclusive and also of high value. The content of dyes contained in natural dyes is very diverse so that the resulting colors are diverse. Edia (2013: 7) states "In terms of price, natural dyes cannot compete. However, in terms of quality, the natural color of indigo is softer and more durable. However, the results of synthetic material coloring are sharper, in contrast to natural colors that look soft, but in terms of overall prestige natural colors are clearly more beautiful, ".

In this study, the natural dye used is turmeric (Curcuma domestica Val). According to Said (2007:9) "The dye in turmeric, better known as curcumin, is used as an alternative because it is a harmless natural dye". The curcumin substance contained in turmeric makes turmeric can be used as a dye. Turmeric (Curcuma domestica Val) is also easy to grow and widely found in Indonesia. In the use of natural coloring, a color binding agent is needed, namely a mordant. According to sulistiyani (2015: 29) "Mordant functions as a color generator and as a color amplifier so that it is resistant to fading". So the application of mordant in coloring will make the color more resistant to fading. In this study the mordants used were aluminum sulfate alum (AI2SO4), Fero Sulfate arbor (FeSO4), Calcium Carbonate whiting (CaCO3).

According to Fitriani in Amelia (2015: 7) "Pre-mordanting the color absorption is stronger because before dyeing the material is first given a mordant. Meta-mordanting, it is easier to work with but the color absorption of the material is less, while post-mordanting the color absorption is stronger but it is difficult to provide a color match because the resulting color is influenced by the mordant substance used". In this study, the author used the post mordanting technique because it has a stronger color absorption. The material used in dyeing is a material that has good absorption of natural dyes. According to Manurung (2012:184) "Cotton fabrics from wood fibers have similarities, where the main content is cellulose". Therefore, according to what was stated by Zulikah and Adriani (2019: 210), namely "Primissima cotton (mori primissima) is one type of fabric that comes from sellulose fibers or plants".

METHOD

This research includes experimental research, because it experiments with differences in mordants on the results of natural coloring of turmeric (curcuma domestica Val) on tie-dyed batik (jumputan) The instruments in the study were in the form of color names (hue), fastness, differences in tie-dyed batik (jumputan) using natural turmeric dyes (curcuma domestica Val). The research instrument is a questionnaire that is assessed by panelists. Panelists totaled 18 people, namely 3 Fashion Teaching Staff of the Department of Family Welfare Science, Padang State University who taught in textile knowledge and textile coloring courses. And a trained panel of 15 students of the Department of Family Welfare (Fashion) State University of Padang who have passed the textile knowledge and textile dyeing courses.

The questionnaire data that has been collected is then processed in tabular form with assessment categories, for color names using the colorblind assistant application. Data processing using Statistical Product and Realted Sample, through the K-Friedman Realted Sample test.

RESULT AND DISCUSSION

1. Color Name (Hue)

Table 1. Description of Color Name (hue) Without Mordant

No	Mordant treatment Color	Color	Color name	Color name Color code & RGB	F
1.	No color mordant 1		*Yellow*	#FFFF00 R255 G255 B000	13

Gorga : Jurnal Seni Rupa
Vol 13, No 2, (2024) 651-659
ISSN 2301-5942 (print) | 2580-2380 (online)
https://dx.doi.org/10.24114/gr.v13i2.62681
Available online : https://jurnal.unimed.ac.id/2012/index.php/gorga

2.	No color mordant 2		*CanaryYellow*	#FCF853 R252 G248 B083	12
3.	No color mordant 3		*Yellow*	#F7EF00 R247 G239 B000	13

The Result of Batik Ikat Celup (Jumputan) Without Mordant
(Source: Personal Documentation)

Based on the results of research that has been done, turmeric extract (Curcuma domestica Val) can be used as a natural dye. The name of the color (hue) produced in dyed ikat batik (jumputan) without the use of mordant in (color 1) is Yellow #FFFF00 with R 255 G 255 B 000, in (color 2) is Gold #FCF853 with R 252 G 248 B 003, in (color 3) is Yellow #F7EF00 with R 247 G 239 B 000.

Table 2. Description of Color Name (hue) of Alum Mordant

No	Mordant treatment	Color	Color Name	Color code & RGB	F
1.	Alum mordant color 1		*Yellow*	#F4E841 R244 G232 B065	12
2.	Alum mordant color 2		*ParisDaisyYellow*	#F6093D R246 G217 B061	7
3.	Alum mordant color 3		*Gold*	#F6D620 R246 G214 B032	12

The Result of Batik Ikat Celup (Jumputan) Mordan Tawas
(Source: Personal Documentation)

Gorga : Jurnal Seni Rupa
Vol 13, No 2, (2024) 651-659
ISSN 2301-5942 (print) | 2580-2380 (online)
https://dx.doi.org/10.24114/gr.v13i2.62681
Available online : https://jurnal.unimed.ac.id/2012/index.php/gorga

In the results of tie-dyed batik (jumputan) using alum mordant in (color 1) is Yellow #F4E841 with R 244 G 232 B 065, in (color 2) is Paris Daisy Yellow #F6093D with R 246 G 217 B 061, in (color 3) is Gold #F6D620 with R 246 G 214 B 031.

Table 3. Description of Color Name (hue) Conifer Mordant

No	Mordant treatment	Color	Color Name	Color code & RGB	F
1.	Arbor mordant color 1		*GoldenRod*	#D5A606 R213 G165 B006	14
2.	Arbor mordant color 2		*Dark Golden Rod*	#C59809 R196 G152 B009	14
3.	Arbor mordant color 3		*Dark Golden Rod*	#C59809 R197 G152 B009	14

Figure 3. The Result of Batik Ikat Celup (jumputan) Mordan Tunjung
(Source: Personal Documentation)

In the results of tie-dye batik (jumputan) using arbor mordant in (color 1) is Golden Rod #D5A606 with R 213 G 165 B 006, in (color 2) is Dark Golden Rod #C59809 with R 196 G 152 B 009, in (color 3) is Dark Golden Rod #C59809 with R 197 G 152 B009. On the results of tie-dye batik (jumputan)

Table 4. Description of Color Name (hue) of Lime Mordant

No	Mordant treatment	Color	Color Name	Color code & RGB	F
1.	Whiting Lime Mordant color 1		*Light Brown*	#E9CA66 R233 G202 B102	18
2.	Whiting Lime Mordant color 2		*Paris Daisy Yellow*	#EFCD51 R240 G207 B081	10
3.	Whiting Lime Mordant color 3		*Orange*	#E5B107 R229 G177 B009	11

Gorga : Jurnal Seni Rupa
Vol 13, No 2, (2024) 651-659
ISSN 2301-5942 (print) | 2580-2380 (online)
https://dx.doi.org/10.24114/gr.v13i2.62681
Available online : https://jurnal.unimed.ac.id/2012/index.php/gorga

Figure 4. Results of Batik Ikat Celup (Jumputan) Mordant Kapur Sirih
(Source: Personal Documentation)

In the results of tie-dyed batik (jumputan) using whiting mordant in (color 1) is Light Brown #E9CA66 with R 233 G 202 B 102, in (color 2) is Paris Daisy Yellow #EFCD51 with R 240 G 207 B 081, in (color 3) is Orange #E5B107 with R 229 G 177 B 009.

Based on the results of research that has been done, turmeric extract (Curcuma domestica Val) can be used as a natural dye. The name of the color (hue) produced in tie-dyed batik (jumputan) without the use of mordant in (color 1) is Yellow #FFFF00 with R 255 G 255 B 000, in (color 2) is Gold #FCF853 with R 252 G 248 B 003, in (color 3) is Yellow #F7EF00 with R 247 G 239 B 000. In the results of dyed ikat batik (jumputan) using alum mordant in (color 1) is Yellow #F4E841 with R 244 G 232 B 065, in (color 2) is Paris Daisy Yellow #F6093D with R 246 G 217 B 061, in (color 3) is Gold #F6D620 with R 246 G 214 B 031. In the research of Ramelawati & Adriani (2017) stated that the dyeing of shallot extract (Allium Ascalonium L) using mordantaw produced Golden Rod color #CA8B21. In another study conducted by Muharrani & Adriani (2023: 57) on natural dyeing using inai leaf extract using Olive alum mordant #7675518, whiting Golden Sudance #BDB76B, arbor Dark Olive Green #32441E.

In the results of tie-dyed batik (jumputan) using arbor mordant in (color 1) is Golden Rod #D5A606 with R 213 G 165 B 006, in (color 2) is Dark Golden Rod #C59809 with R 196 G 152 B 009, in (color 3) is Dark Golden Rod #C59809 with R 197 G 152 B009. In contrast to the results of research conducted by Yulled & Adriani (2021: 99) that dyeing cotton material using turmeric extract (curcuma longa) with mordant arbor produces Muddy Waters Brown color. Whereas in the research of Widy & Novrita (2020) the results of dyeing cotton material with banana stem extract ambon mordant arbor produced the color name Clam Shell Pink.

In the results of tie-dyed batik (jumputan) using whiting mordant in (color 1) is Light Brown #E9CA66 with R 233 G 202 B 102, in (color 2) is Paris Daisy Yellow #EFCD51 with R 240 G 207 B 081, in (color 3) is Orange #E5B107 with R 229 G 177 B 009. In research conducted by Muharrani & Adriani (2023: 57) the results of color names in natural dyeing using inai leaf extract using whiting Golden Sudance #BDB76B, arbor Dark Olive Green #32441E. In the research of Fatihatulrahmi & Novrita (2019) on Sawo Leaf Extract Dyeing Using Silk Material, whiting mordant produces Dark Golden Rod color with code #D3820B. With the results of the study, there are differences in color in the results of tie-dyed batik (jumputan) using turmeric coloring (Curcuma domesrica Val) with different mordants on the resulting name. Saputri & Novrita (2012: 85) state that the difference in mordant affects the dyeing results because the resulting color will be different. The color difference that occurs is due to the pH content in each mordant is different. According to Adriani (2016:70) says “The higher the pH of the acid, the brighter the color will be”. The pH content in alum is 9, the pH content in whiting is 11-12.5, while the pH content in arbor is 8.

Strengthened by the opinion of Anugrah H & Novrita (2023) Good color density is influenced by different types of mordants depending on the size of the pH in the mordant. The higher the acid pH the brighter the resulting color and vice versa. From this opinion, it is known that the pH of the mordant affects the resulting color. The higher the acidic pH, the brighter the color will be. The higher the pH of the base in the mordant will produce a darker color.

Gorga : Jurnal Seni Rupa
Vol 13, No 2, (2024) 651-659
ISSN 2301-5942 (print) | 2580-2380 (online)
https://dx.doi.org/10.24114/gr.v13i2.62681
Available online : https://jurnal.unimed.ac.id/2012/index.php/gorga

2. **Faded Resilience**

Based on the results of research on color fastness from different mordants on the results of tie-dye batik (jumputan) using natural turmeric dyes (Curcuma domestica Val) without using mordant in the first wash the color looks slightly changed / reduced, in the second wash it means that the color looks slightly changed / reduced, in the third wash it means that the color looks changed / reduced. Based on the results of research on color fastness from different mordants on the results of tie-dye batik (jumputan) using natural turmeric dyes (Curcuma domestica Val) using alum mordant in the first wash the color looks no change, in the second wash the color looks slightly changed / reduced, in the third wash the color looks slightly changed / reduced.

Based on the results of research on color fastness from different mordants on the results of tie-dye batik (jumputan) using turmeric natural dyes (Curcuma domestica Val) Using arbor mordant in the first wash the color looks slightly changed / reduced, in the second wash the color looks slightly changed / reduced, in the third wash the color looks changed / reduced. Based on the results of research on color fastness from different mordants on the results of tie-dyed batik (jumputan) using natural turmeric dyes (Curcuma domestica Val) using whiting mordant in the first wash the color looks slightly changed / reduced, in the second wash it looks slightly changed / reduced, in the third wash the color looks changed / reduced.

With the results of the research on fastness produced on the results of dyed ikat batik (jumputan) using turmeric extract (Curcuma domestica Val) without mordant in the first wash with a score of 80 the color looks slightly changed / reduced, in the second wash with a score of 71 the color looks slightly changed / reduced, in the third wash with a score of 58 the color looks changed / reduced. turmeric (Curcuma domestica Val) with alum mordant in the first wash with a score of 85 the color looks no change at all, in the second wash with a score of 73 the color looks slightly changed / reduced, in the third wash with a score of 62 the color looks slightly changed / reduced. In Anugrah H & Novrita's research, the Application of Eco Print Teak Leaves (Tectona Grandis) on Cotton Material Using Alum Mordant states that Alum functions as a color binder in the fiber during the eco print process, making natural colors stronger and not easily faded. In line with Adha (2020: 24) says that “alum when mixed with water, it will form an aluminum hydroxide solution that will be used to bind the color to the fibers during the eco print process. helps teskstil to absorb color. In addition, alum also makes the color absorbed in the fabric will not fade easily”.

Based on the results of the research, the fastness produced on the results of tie-dye batik (jumputan) using natural turmeric coloring (Curcuma domestica Val) with arbor mordant in the first wash with a score of 80 the color looks slightly changed / reduced, in the second wash with a score of 62 the color looks slightly changed / reduced, in the third wash with a score of 47 the color looks changed / reduced. In the research of Arsa & Adriani (2024: 28) the results of the washing resistance of Japanese papaya leaf ecoprint (Cnidosolus Aconitifolius) on cotton material that utilizes arbor mordant there are differences due to the influence of the use of mordant alum, whiting, and arbor on the clarity of the motif shape and washing resistance.

Based on the results of the research, the fastness produced on the results of tie-dye batik (jumputan) using natural turmeric coloring (Curcuma domestica Val) with whiting mordant at the first wash with a score of 80 the color looks slightly changed / reduced, at the second wash with a score of 66 the color looks slightly changed / reduced, at the third wash with a score of 42 the color looks changed / reduced. In the research of Arsa & Adriani (2024: 28) the results of the washing resistance of Japanese papaya leaf ecoprint (Cnidosolus Aconitifolius) on cotton material that utilizes whiting mordant when washed in the first wash scored 80, in the second wash scored 65, in the third wash scored 56, in the fourth wash scored 45. Then the final total percentage score is 68.33% with a good category. So it can be concluded that the fastness of turmeric (Curcuma domestica Val) coloring is quite good.

Gorga : Jurnal Seni Rupa
Vol 13, No 2, (2024) 651-659
ISSN 2301-5942 (print) | 2580-2380 (online)
https://dx.doi.org/10.24114/gr.v13i2.62681
Available online : https://jurnal.unimed.ac.id/2012/index.php/gorga

Table 7. Friedman Test K-Realted Sample Washing resistance

No	Test Statistic	No Mordant	Alum	Arbor	Whitimh on tie-dye
1	N	18	18	18	18
2	Chi-square	28.526	27.745	27.745	32.708
3	Df	2	2	2	2
4	Symp.Sig	<.001	<.001	<.001	<.001

Thus, the fastness in this study shows that there is a significant difference in the results of the difference in alum mordant, arbor, whiting using turmeric natural dye extract (curcuma domestica val) on the results of tie-dyed batik (jumputan).

3. Data Analysis Results

Table 5. Descriptive Statistics of Fastness Data

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Tanpa_Mordan_1xcuci	18	4.00	.000	4	4
Tanpa_Mordan_2xcuci	18	3.56	.511	3	4
Tanpa_Mordan_3xcuci	18	2.94	.236	2	3
Tawas_1xcuci	18	4.28	.461	4	5
Tawas_2xcuci	18	3.67	.485	3	4
Tawas_3xcuci	18	3.11	.323	3	4
Tunjung_1xcuci	18	4.00	.000	4	4
Tunjung_2xcuci	18	3.11	.323	3	4
Tunjung_3xcuci	18	2.39	.502	2	3
Kapur_Sirih_1xcuci	18	4.00	.000	4	4
Kapur_Sirih_2xcuci	18	3.33	.485	3	4
Kapur_Sirih_3xcuci	18	2.11	.323	2	3

Based on the table above, it is clarified from research on 18 panelists that the mean value without mordant 1x wash 4.00, 2x wash 3.56, 3x wash 2.94. Using alum 1x wash 4.28, 2x wash 3.67, 3x wash 3.11. Using arbor 1x wash 4.00, 2x wash 3.11, 3x wash 2.39. Using whiting 1x wash 4.00, 2x wash 3.33. 3x wash 2.11.

Table 6: Friedman K-Realted Sample Test Results of Washing Resistance

Test Statistics[a]

N	18
Chi-Square	157.257
Df	11
Asymp. Sig.	<.001

a. Friedman Test

The results of the analysis of the Friedman K-Related Sample test for fastness to the results of tie-dyed batik (jumputan) using natural turmeric coloring (curcuma domestica val) obtained a significance value of 0.01 which is smaller than the significance level of 0.000 < 0.05. This means that there is a significant difference in the washing resistance of different mordants of alum, arbor, whiting on the results of tie-dyed batik (jumputan) with turmeric extract (curcuma domestica val).

Gorga : Jurnal Seni Rupa
Vol 13, No 2, (2024) 651-659
ISSN 2301-5942 (print) | 2580-2380 (online)
https://dx.doi.org/10.24114/gr.v13i2.62681
Available online : https://jurnal.unimed.ac.id/2012/index.php/gorga

CONCLUSIONS

Without using mordant, the color name (hue) produced in tie-dyed batik (jumputan) in (color 1) is Yellow #, in (color 2) is Gold #FCF853, in (color 3) is Yellow #F7EF00. Using alum mordant on (color 1) is Yellow #F4E841, on (color 2) is Paris Daisy Yellow #F6093D, on (color 3) is Gold #F6D620. Using arbor mordant on (color 1) is Golden Rod #D5A606, on (color 2) is Dark Golden Rod #C59809, on (color 3) is Dark Golden Rod #C59809. Using whiting mordant on (color1) is Light Brown #E9CA66, on (color 2) is Paris Daisy Yellow #EFCD51, on (color 3) is Orange #E5B107.

The effect of different mordants on fastness obtained from the Friedman K-Related Sample test results using turmeric extract (Curcuma domestica Val) without mordant as follows: 1x wash gets a mean of 4.00, 2x wash gets a mean of 3.56, 3x wash gets a mean of 2.94. Obtained a significance value of 0.01 which is smaller than the significance level of 0.000 <0.05 = Ho is rejected. Using alum mordant as follows: at 1x wash gets a mean of 4.28, at 2x wash gets a mean of 3.67, 3x wash gets a mean of 3.11. Obtained a significance value of 0.01 which is smaller than the significance level of 0.000 < 0.05 = Ho is rejected. Using arbor mordant as follows: at 1x wash gets a mean of 4.00, at 2x wash gets a mean of 3.11, 3x wash gets a mean of 2.39. Obtained a significance value of 0.01 which is smaller than the significance level of 0.000 <0.05 = Ho is rejected. Using whiting mordant as follows: at 1x wash gets a mean of 4.00, at 2x wash gets a mean of 3.33, 3x wash gets a mean of 2.11. obtained a significance value of 0.01 which is smaller than the significance level of 0.000 <0.05 = Ho is rejected. This means that there is a significant difference due to the use of mordant on the fastness of the results of tie-dyed batik (jumputan) using turmeric coloring (curcuma domestica val).

The author gives suggestions, namely: (1) It is hoped that this research can be a source of reading for PKK study program students with a concentration in Fashion Management, Department of IKK FPP UNP to conduct subsequent research using natural dyes, especially turmeric (Curcuma domestica Val). (2) The existence of this research, the author hopes to motivate students to conduct further research related to natural dyes of turmeric extract (Curcuma domestica Val) with other influencing factors. (3) To complement the results of the research that has been done, it is better if the next research is examined regarding other factors such as the use of temperature variations and electrolytes in the dyeing process on the results of dyeing using turmeric extract (Curcuma domestica Val).

REFERENCES

Adriani, A., & Atmajayanti, C. (2023). Pengaruh Mordan Tunjung Dan Kapur Sirih Terhadap Hasil Ecoprint Daun Iler (Coleus Scutellarioides Linn. Benth). *Gorga : Jurnal Seni Rupa*, *12*(1), 231-236. https://doi.org/10.24114/gr.v12i1.44599

Ahmad & Hidayati. (2019). "Pengaruh Jenis Mordan dan Proses Mordanting Terhadap Kekuatan dan Efektifitas Warna Pada Pewarnaan Kain Katun Menggunakan Zat Warna Daun Jambu Biji Australia". *Indonesia Journal of Halal*, vol. 1 no. 2 hal 84-88. https://shorturl.at/bJYVT

Anugrah, H., & Zulfia Novrita, S. (2023). Penerapan Eco Print Daun Jati (Tectona Grandis) Pada Bahan Katun Menggunakan Mordan Tawas. *Jurnal Pendidikan Tambusai*, *7*(2), 18364–18371. https://doi.org/10.31004/jptam.v7i2.9272

Diana, P., & Andriani. (2023). Pengulangan Pencelupan Terhadap Hasil Warna Pada Bahan Semi Wol Menggunakan Ekstrak Kulit Pohon Angsana (Pterocarpus Indicus) dengan Mordan Tawas. *Jurnal Pendidikan Tambusai*, *7*(3), 22317–22325.https://shorturl.at/ncvHC.

Fatihaturahmi, & Novrita, S. Z. (2019). Pengaruh Perbedaan Mordan Tawas Dan Kapur Sirih Terhadap Hasil Pencelupan Ekstrak Daun Sawo Menggunakan Bahan Sutera. *Gorga : Jurnal Seni Rupa*, *8*(1), 237-242. https://doi.org/10.24114/gr.v8i1.13606

Izzah, N., & Adriani. (2022). *Pengaruh Mordan Tawas Terhadap Hasil Pencelupan Bahan Katun Menggunakan .04*, 269–276. http://busana.ppj.unp.ac.id/index.php/jpbst

Ramelawati, & Adriani. (2017). *Pengaruh Mordan Tawas Dan Jeruk Nipis (Citrus Aurantifolia) Terhadap Hasil Pencelupan Ekstrak Bawang Merah (Allium Ascalonium L) Pada Bahan*

Sutera. 2–4.https://shorturl.at/nAmQ5

Masyitoh, & Ernawati. 2019. "Pengaruh Mordan Tawas dan Cuka Terhadap Hasil Pewarnaan Eco Print Bahan Katun Menggunakan Daun Jati (*Tectona Grandis*)". *Gorga: Jurnal Seni Rupa* vol. 8 no 02 juli-desember 2019.https://shorturl.at/vtNpB

Saputri, A., & Novrita, S. Z. (2021). *Perbedaan Berat Mordan Tunjung, Tawas dan Kapur Sirih Terhadap Hasil Pencelupan Kulit Buah Alpukat Pada Bahan Katun*. *03*(02), 80–90.https://shorturl.at/3ScE2

Wahyuni, R., & Novrita, S. Z. (2024). *Pengaruh Mordan Tunjung Terhadap Hasil Pencelupan Kain Katun Mengunakan Ekstrak Daun Nangka (Artocarpus Heterophyllus L) Program Studi Pendidikan Kesejahteraan Keluarga , Universitas Negeri*. *8*, 10379–10389.https://shorturl.asia/XkYtQ

Widy, & Novrita. (2020). Pengaruh Mordan Kapur Sirih Dan Tunjung Terhadap Hasil Pencelupan Ekstrak Batang pisang ambon pada bahan katun. *Jurnal Kapita Selekta Geografi*, *3*(2), 47–59.https://shorturl.at/XiSxn

Yuled, U. R., & Adriani, A. (2021). Perbedaan Mordan Tunjung dan Baking Soda Terhadap Hasil Pencelupan Pada Bahan Katun Dengan Menggunakan Ekstrak Kunyit (curcuma longa). *Jurnal Pendidikan, Busana, Seni, Dan Teknologi*, *3*(2), 97–103.

Yonanda, D.A. 2019. Pengaruh Jenis Zat Fiksasi Terhadap Ketahanan Luntur Warna Pada Tekstil Katun, Sutera, Satin Menggunakan Zat Warna Biji Buah Durian (Durio Zibethinus Murray). Skripsi : Universitas Negeri Yogyakarta

Zulikah, K., & Adriani, A. (2019).Perbedaan Teknik Mordanting terhadap Hasil Pencelupan Bahan Katun Primisima Menggunakan Warna Alam Ekstrak Daun Lamtoro (Leucaena Leucocephala) dengan Mordan Kapur Sirih. Gorga: Jurnal Seni Rupa, 8(1), 209-213.https://doi.org/10.24114/gr.v8i1.13179.