



*Tamarind*: One gram of cooking tamarind dissolved in 10mL water.

### 2.5. Dyeing of natural fibres

The prepared natural fibres were dyed by *Rubia cardifolia* plant dye (100mL) using tip coating method. The fibres are soaking in the natural dye solution for 30 minutes and add 2mL of mordants after 30minutes by meta-mordanting method.

### 2.6. Light fastness analysis

The dyed natural fibres are analyzed light fastness under sun light. The grayscale is used to measure the light fastness.

### 2.7. UV spectral study

The natural dye with mordants mixed solution was characterized using UV/Vis Spectrophotometer – 2203 in the range of 200 to 1000nm ( $\lambda$  max).

## 3. Results and Discussion

The mordant is very important role in dyeing industries. The mordants are the fixative agent that adheres well to both the fibre and to the dye [4]. The *Rubia cardifolia* natural dye to give different colours like red, yellow, pink, brown, black, and their mixing on natural fibres with the help of different mordants (Figure 1).

The light fastness study was very important for dyeing of natural fibres. Because the natural dye coated materials are easily fading by sunlight, water etc. The different mordants used this study to fix the dye on fibre material and produced different colours and coloured fibre materials have long life and do not fade by sunlight (Table 1).

The *Rubia cardifolia* dye with different mordants were analyzed UV spectra represent at figure 2. The *Rubia cardifolia* dye has single absorption in 233nm. The without mordant have three major absorption 243, 348 and 387nm. The dyes mixed with (salt) sodium chloride mordant have three major absorption in 243, 348 and 387nm. The dye mixed with sodium bi carbonate has three major absorption maxima in 243, 344 and 387nm. The dye with oxalic acid has single absorption maxima at 243nm.

The dye with tannic acid mixed has three absorption maxima in 248, 344 and 387nm. The dye with ferrous sulphate contains three absorption maxima at 243, 353 and 387nm. The dye with tin metal mixed has a single absorption in 238nm. The potassium alum mixed *Rubia* dye contains a single absorption maximum in 233nm. The dye with tamarind mixed has a single absorption at 238nm.

## 4. Conclusion

India has a rich tradition in traditional industries. The natural dyes are used to dyeing of traditional craft products. The mordant is very important for dyeing of natural fibres. The mordants are act as fixative to fix the natural dye on natural fibre materials. The mordant used natural dye coated fibre material have different attractive colour and do not fade by sunlight. The natural dye coated natural fibre products, craft works are high expensive and good for health. The eco-

friendly products of traditional industries not only have great potential for growth in production and export but can also to widespread generation of employment opportunities in the rural areas of the country.

## 5. Acknowledgement

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## 6. References

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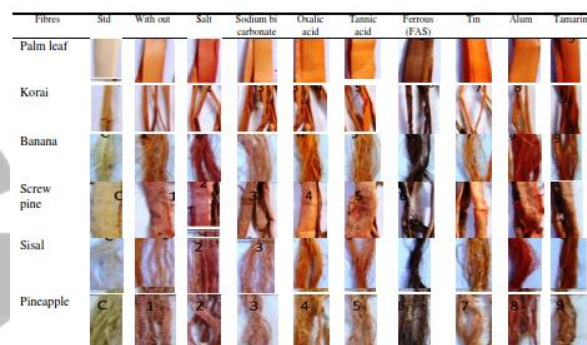


Figure 1: *Rubia cardifolia* plant dye coated natural fibres using different mordants.

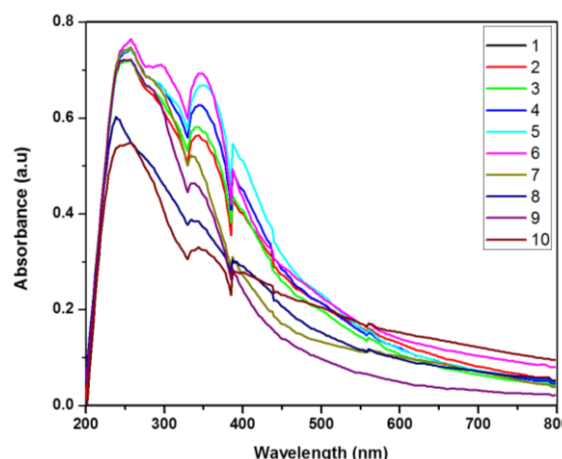


Figure 2: UV spectral data of dye with different mordants. UV data 1 is *Rubia cardifolia* plant extraction. 2. Dye without mordant. 3. Dye with sodium chloride. 4. Dye with sodium bi carbonate. 5. Dye with oxalic acid. 6. Dye with Tannic acid. 7. Dye with ferrous sulphate. 8. Dye with tin metal. 9. Dye with potassium alum. 10. Dye with cooking tamarind.

<b>Fibre</b>	<b>With out</b>	<b>Salt</b>	<b>Sodium Bi carbonate</b>	<b>Oxalic acid</b>	<b>Tannic acid</b>	<b>Ferrous (FAS)</b>	<b>Tin</b>	<b>Alum</b>	<b>Tamarind</b>
Palm leaf	1-2	2-3	2-3	1-2	3-4	4-5	3-4	3-4	3-4
Korai	1-2	2-3	1-2	2-3	3-4	2-3	2-3	2-3	2-3
Banana	2-3	2-3	2-3	3-4	3-4	3-4	4-5	3-4	4-5
Screwpine	2-3	1-2	3-4	2-3	2-3	4-5	2-3	3-4	3-4
Sisal	2-3	2-3	2-3	3-4	3-4	3-4	3-4	3-4	3-4
Pineapple	3-4	2-3	2-3	3-4	2-3	2-3	3-4	2-3	2-3

Table 1: Light fastness analysis natural dye coated fibre materials. 1-2 (poor), 2-3 (fair), 3-4 (good) and 4-5 (excellent).

