

A Review on Rust Dyeing and Ayurveda Dyeing on Silk with Onion Peel and Harad

Harleen Kaur¹, Dr.Harpreet Kaur*²

¹Research Scholar, P.G. Department of Fashion Designing, Kanya Maha Vidyalaya (Autonomous), Jalandhar, Punjab, India

²Head of the Department, P.G. Department of Fashion Designing, KanyaMahaVidyalaya (Autonomous), Jalandhar, Punjab, India

ABSTRACT

Natural dyes are obtained from natural sources. Most are of plant origin and extracted from roots, wood, bark, berries, lichens, leaves, flowers, nuts, and seeds. Others come from insects, shellfish, and mineral compounds. Natural dyes were the only source of color for textiles, leather, basketry, and other materials until synthetic dyes were developed in the latter half of the nineteenth century. Ayurvedic dyeing is also an ancient method of dyeing using plants, roots, flowers, seeds, barks, leaves and natural minerals. It uses natural mordants for fixing shades and natural gums for holding the goodness of herbs into the fabric. The focus of Ayurvedic Dyeing is to make the fabric oriented for wellness of the body. The use of fabrics and garments to deliver health solutions is actually a very old concept called Ayurveda. Ayurveda is a Sanskrit word where 'Ayur' means health and 'Veda' means wisdom and 'Vastra' is cloth or clothing. It is totally organic, sustainable, and biodegradable. Onion is known for its microbicidal properties. Harad is an indigenous herb known in ayurveda and easily available in the kitchen and home. This is antifungal, anti-bacterial, and antiviral. In the present research, this herb is used to make natural dye as this is well known for their medicinal properties. Mordant used was alum, which has antiseptic properties and is safe for skin and environment. The objective of the study was to make the technique of natural dyeing easy to carry out for home dyers using ingredients from home and to encourage the traditional sustainable practice of preparing Ayurveda, the organic healing cloth. Rust dyeing is an eco-friendly form of dyeing that creates unique surface patterns using scavenged objects of rusted iron. As a dye source, the oxidized iron yields permanent, gorgeous, deep orange tones on fabric and paper. It's a fabulous way to upcycle a garment. A review was done on the research already done in the field of natural dyeing with special focus on dyeing on Silk fabric with vegetable dyes specially, onion peel and also Harad. Besides that it was also tried that review papers were found on the technique of Rust dyeing. After a thorough review, analysis was done on which techniques have already been applied by previous research and where the gaps were there so as to provide a detailed road map for upcoming scholars on this., also modules need to be prepared on these and without previous review of research this is not possible. This is especially important for researchers who want to repeat natural dyeing again and again with established results because the only drawback of natural dyeing is that same color combination is not achieved. So, standardization of this technique is important. A study of K/S value was also done, a review on this was also done

So as to standardize the process through chemical methods and also to enhance the empirical validity of this study.

Keywords: Natural dyeing, Ayurvedic dyeing, Ayurvastra, Herb dyeing, , Upcycling ,Rust Printing, Mordant

I. INTRODUCTION

1.1 Natural Dye

Natural dyes are obtained from natural sources. Most are of plant origin and extracted from roots, wood, bark, berries, lichens, leaves, flowers, nuts, and seeds. Others come from insects, shellfish, and mineral compounds. Natural dyes were the only source of color for textiles, leather, basketry, and other materials until synthetic dyes were developed in the latter half of the nineteenth century. Of the thousands of natural color substances, very few became significant commercially.

<https://fashion-history.lovetoknow.com/fashion-clothing-industry/natural-dyes>

1.2 Effects of Synthetic Dyes

Synthetic dyes are relatively easily available and cheap and have become big business. This has caused indigenous knowledge of the extraction and processing of natural dyes to diminish. Also the production and use of synthetic dyes has made the textile processing industry one of the most polluting industries in the world.

1.3 AYURVASTRA - A Healing Herb Dyed Fabric

The concept of Ayurvastra was practiced in India before the industrialization of the textile industry. Even today, in some parts of south India, ayurvedic herbal dyed clothes are used to carry a newborn child, which will act as an antibacterial barrier for the child.



Plate 1.2: Herbs

source -<https://textilevaluechain.in/in-depth-analysis/articles/textile-articles/ayurvastra/3>

1.3.1 Principles of Ayurvastra

1. Herbal dyeing without chemicals.
2. Protects human skin from many diseases by body transpiration

3. When skin comes in contact with “Ayurveda”, body loses toxins & its metabolism is enhanced.
4. Absorption of the drug through skin is a passive process i.e through the barrier
5. The most effective time to wear ayurveda is during sleep.

1.4 Sources for Dyeing

1.4.1 Onion Peel

The onion (*Allium cepa*), also known as the bulb onion or common onion, is a vegetable that is the most widely cultivated species of the genus *Allium*. The outer skin of onion which is generally thrown away as waste can be used to extract yellow color natural dye.

(Saxena.S& A.S.M.Raja,2014

<https://en.wikipedia.org/wiki/Onion>



Plate 1.4: onion skin

source:<https://ars.els-cdn.com/content/image/1-s2.0-S0144861720317859-gr1.jpg>

1.4.2 Harad

Terminalia chebula, commonly known as black- or chebulicmyrobalan,. Dried myrobalan fruits have high tannin content and also contain a natural dye that is used for producing bright yellow shades for all textile materials. Myrobalan is also used as a natural mordant to fix different natural dyes on textile materials. https://en.wikipedia.org/wiki/Terminalia_chebula ,(Saxena.S& A.S.M.Raja,2014



Plate 1.5 : Harad

source:<https://5.imimg.com/data5/SELLER/Default/2021/7/WX/DM/AQ/7694266/harad-extract-500x500.JPG>

1.5 Mordants

Mordant or dye fixative is a substance used to set (i.e. bind) dyes on fabrics by forming a coordination complex with the dye, which then attaches to the fabric (or tissue). The method of mordanting animal fibers is with aluminum sulfate. Aluminum sulfate is a metallic salt derived from bauxite, a mixture of minerals.

1.6 Rust Printing

Rust dyeing is an eco-friendly form of dyeing that creates unique surface patterns using scavenged objects of rusted iron. As a dye source, the oxidized iron yields permanent, gorgeous, deep orange tones on fabric and paper. It's a fabulous way to upcycle a garment into a stunning piece for autumn wardrobe.

<https://www.junctionmag.co.nz/junctionmag/2020/4/28/rust-dyeing>

<https://www.frederickbookarts.org/post/rust-printing-with-lauren-koc>

II. REVIEW OF LITERATURE

2.1 Natural Dye

2.1.1 According to Verma.S&Gupta.G , (2017) ,Dyes derived from natural materials such as plant leaves, roots, bark, insect secretions, and minerals were the only dyes available to mankind for the coloring of textiles until the discovery of the first synthetic dye in 1856. However, environmental issues in the production and application of synthetic dyes once again revived consumer interest in natural dyes during the last decades of the twentieth century. In the earlier days, dyes were derived only from natural sources. But natural dyes suffer from certain inherent disadvantages of standardized application and the standardization of the dye itself as dyes collected from similar plants or natural sources are influenced and subjected to the vagaries of climate, soil, cultivation methods etc.

2.1.2 Guha. A.K , (2019)state that textile industries are very useful for human beings but these are destroying ecosystems because of the generation of huge wastewater containing toxic substances. Prime reason for toxicity is the use of synthetic dyes. To save our environment there is no alternative to natural dye. There are many sources of natural dyes in the universe.

Conclusion

The review above papers on natural dyeing show that the textile industries are destroying ecosystems because of the generation of huge wastewater containing toxic substances. However, environmental issues in the production and application of synthetic dyes once again revived consumer interest in natural dyes during the last decades of the twentieth century. To save our environment there is no alternative to natural dye

2.2 AYURVASTRA - A Healing Herb Dyeing

2.2.1 Rangari .N.T, et al. ,2012 described that Ayurveda cloth is used by Ayurveda health clinics in the treatment of a broad range of diseases such as diabetes, skin infections, eczema, psoriasis, hypertension, high blood pressure, asthma, arthritis, rheumatism, cardiac problems and as general health products. The Ayurveda reinforces the importance of sustaining the planet for future generations and for the well being of the current generation using age-old practices, which do not add up to global warming but help in minimizing it. It is expected that unique technology and thereby opening up a new area of entrepreneurship, job orientation and economic stability will be welcomed by the society as a whole. job

opportunity for young people on one hand and on the other contribute towards offering economic stability to the nation.

2.2.2 According to Singothu.J , (2016)Ayurveda is the ancient medicine in India to treat many diseases by using herbs. Ayurveda is composed of two different words. These are Ayur and Veda. Ayur means life or lifespan and Veda means knowledge. When it combines the meaning is 'Science of Life' or 'Wisdom of Life'. The roots of Ayurveda dates back 1000 BC. This is the only medicine available before industrialization. Even today some parts of India believe that Ayurveda is the only answer to treat or to give relief for some diseases. Parts of the plant will be used for the treatment in Ayurveda. Adding the medicinal value to the fabric by dyeing the fabric in a dye prepared by Ayurvedic herbs and achieving great results in treatment of many diseases is a great idea. A new technology launched and developed by the with a great view of giving medicinal value to the fabric, this herbal clothing is formally known as Ayurveda. Ayurveda is not only to treat the illness but also takes care of the environment as the process is nontoxic and eco friendly.

Conclusion

The above review papers on Ayurveda dyeing show that it has a medicinal property which heals body from many diseases like diabetes, skin infections, eczema, psoriasis, hypertension, high blood pressure, asthma etc. 'Ayur' means 'life' or lifespan and 'Veda' means 'knowledge'. Parts of the plant are used for the treatment in Ayurveda. Adding the medicinal value to the fabric by dyeing the fabric in a dye prepared by Ayurvedic herbs and achieving great results in treatment of many diseases is a sustainable idea.

2.3 Sources of Dyeing

2.3.1 Onion Peel

Uddin.G, 2014 described that At present, a higher demand is put towards the use of natural dyes due to increased awareness of the environmental and health hazards associated with the synthesis and use of synthetic dyes. This research was conducted using onion outer skins as a potential source of natural plant dyes. In this study, extraction of dye was carried out in aqueous boiling method. Pre Mordanting technique was followed using different mordants, namely alum, ferrous sulfate, tin, tannic acid, tartaric acid, and their combinations on silk fabric. Fabric samples dyed without using any mordant were then compared with the dye samples pretreated with the mordants. The range of colors developed on dyed materials was evaluated by measuring the color values with respect to K/S values and color coordinates. It was concluded that the color values were found to be influenced by the addition of mordants, and thus different fashion hues were obtained from the same amount of dye extract using different mordants. The color fastness properties were found to be satisfactory and improved in many cases. From the fastness results, it was obvious that these dyes can also be applied on silk fabric without using any mordant if required.

Conclusion

The above review papers on onion peel show that as a source of dyeing, it has excellent results. It shows very good color fastness, washing fastness. This dye can be applied on silk without using any mordant.

2.3.2 Harad

According to Yeon.K.M ,(2014) The purpose of this study was to investigate the dyeing properties and antimicrobial ability of silk and wool fabrics dyed with Terminalia chebula Retzius (TCR) extract using two extraction solvent, hot water and methanol. Dyeing properties of fabrics were studied by investigating the

characteristics of colorant, changes in dye uptake under different dyeing conditions, and by investigating color change when mordants were applied. Also, color fastness, and antimicrobial activity of dyed fabrics were estimated. Fabric dye without mordant was yellow in color, and when dyed with mordant, fabric showed various colors depending on mordant types except Sn. Color fastness to washing was generally fine and color fastness to light was moderate. But the color fastness to rubbing and dry cleaning was outstanding. Lastly, dyed fabrics showed very good antimicrobial.

Conclusion

The above review papers on Harad show that as a source of dye, it has good color fastness and washing fastness. Natural dyes are eco-friendly, non-hazardous and sustainable. But the use of metal mordants such as copper, chromium, tin and zinc could make the application of natural dyes unsustainable since they are heavy metals. Hence, sustainable natural dyeing could be achieved with natural mordanting assistants such as myrobalan.

2.4 Rust Dyeing Process

Ramadhani, S & Hendrawan, A, 2020 described that Rust-dyeing is a dyeing technique on textiles or fabrics that forms a motif on the surface and undergoes a natural process that occurs when metal corrodes, oxidizes to form rust due to the touch of air, water, and moisture to form a unique yellow, reddish orange motif, brown to black. Rust dyeing is one of the potential alternative natural dyes because this dye is not widely known, used and easy to process and can create unique visualizations or one of a kind and produce different patterns, designs and color effects in each manufacturing process and technique. Environmentally friendly and safe. This study aims to produce a rust dyeing technique as an environmentally friendly alternative natural dye that will be applied to textiles. Rust dyeing has a high value of craftsmanship, is exclusive and does not have a negative impact on the environment. To achieve this goal, the researchers collected the required research supporting data using experimental methods and data collection methods, namely observations, interviews, literature studies and experiments to find the optimal formula for applying rust dyeing and procedures.

Conclusion

The above review paper on Rust dyeing shows that the rust natural dye technique dyeing has a lot of potential to be made into alternative natural dyes because the colors produced are always graded and have different characteristics of each fabric used as a transfer medium and can also absorb on fabric polyester. For rust dyeing with an early mordant of salt in all kinds of fabrics produces a smoke effect and printing perfect motifs, dense color and graded. This coloring is mixed out to see the resulting color. Tone and rust dyeing staining is not sensitive to final mordant material used as the place for absorption of rust dyeing is already maximum, and the absorption capacity of the fabric the most optimal is to use cotton 100% twill.

III. REFERENCES

- [1]. Kadolph, S.J. (n.d.). Natural Dyes. Retrieved from <https://fashion-history.lovetoknow.com/fashion-clothing-industry/natural-dyes>
- [2]. Anonymous. (n.d.). The Colors of Nature. Retrieved from <https://thecoloursofnature.com/natural-dyes/a-brief-history/>.
- [3]. (Jyothirmai, S. & Panda, S. (2016). Ayurveda – Herbal Clothing (A New Technology To Heal Naturally), National Institute of Fashion Technology

- [4]. Saxena,S. &Raja, A.S.M, (2014). Natural Dyes: Sources, Chemistry,Application and SustainabilityIssues
- [5]. <https://ars.els-cdn.com/content/image/1-s2.0-S0144861720317859-gr1.jpg>
- [6]. <https://5.imimg.com/data5/SELLER/Default/2021/7/WX/DM/AQ/7694266/hara-extract-500x500.JPG>
- [7]. Anonymous.(n.d). Mordant.Retrieved from <https://en.wikipedia.org/wiki/Mordant>
- [8]. Anonymous.(2020). Rust dyeing .Retrieved from <https://www.junctionmag.co.nz/junctionmag/2020/4/28/rust-dyeing>
- [9]. Guha, A.K. (2019). A Review on Sources and Application of Natural Dyes in Textiles, Department of Textile Engineering, Southeast University, Tejgaon, Dhaka, Bangladesh
- [10].Singothu,J. (2016). Ayurveda – Herbal Clothing, , National institute of fashion technology (NIFT), Telangana, India
- [11].Uddin, G. (2014). Effects of Different Mordants on Silk Fabric Dyed with Onion Outer Skin Extracts, Department of Textile Engineering, Faculty of Engineering, Ahsanullah University of Science and Technology, Dhaka 1208, Bangladesh.