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## TEXTILES WITH A HEALING TOUCH

### INTRODUCTION

Not long back, Fashion was considered to thrive on excess and waste, with little correlation between needs and wants, and had short life cycle to ensure maximum consumption. The result was that often comfort factor was neglected in favour of novelty and 'new look', resulting in clothes which were neither human friendly nor environment friendly.

Today there is a worldwide change in the way the Fashion is viewed or perceived by different segments of consumers. Gradually the keywords have changed to eco-friendly, sustainable, chemical-free, recycled.... At present, with the fast updated news and awareness regarding ozone depletion and new scientific research about the impending problems of global warming, a strangely enthusiastic and welcomed sense of urgency is felt around the world.

Most environmentalists argue in favor of the use of natural fibers on the pretext that they are bio-degradable, non-allergenic and are comfortable to wear. But even natural fibers require treatment with chemicals in initial production stages. Hence the focus is on 'green' textiles which include organic cotton, Bamboo fabric, hemp etc. Organic cotton is grown without the use of pesticides from plants which are not modified genetically. Naturally coloured organic cotton is also gaining popularity with the environmentalists and designers. Sustainable fashion is a part of growing design philosophy and trend.

The latest trend is 'back to nature' in every aspect of life. Alternate ways of recycling, regeneration and preservation has brought back the focus on alternate medicine and therapy i.e naturopathy, yoga, acupressure, healing by touch etc. Traditional practices and crafts are sought after by many people bringing traditional dyeing practices, hand block printing, hand weaving to the lime light.

It is a well known fact that skin functions not only as a protective barrier but also as a conduit for outside substances to enter the body. Researches have proved that skin takes up toxins and chemicals from the clothing and the environment. Hence it has the ability to absorb herbs and medicines found in natural dyes in clothing. Knowledge of these facts has led to renewed interest in fabrics dyed in natural dyes and *Ayurvedic* herbs and plant extracts.

#### THE HUES FROM NATURE-

It is not known how old the tradition of dyeing with natural matter is, but it is highly probable that the discovery of natural dyes was sheer accident, a by-product during the quest for the elixir of life in alchemic laboratories. Ancient Indian dyeing process of madder and indigo were discovered many years back. Indigo tinted the cloth blue; Lac provided the red, iron gave the black and turmeric was used for yellow. India's expertise in vegetable dyes dates back to ancient times as the remnants of madder dyed fabrics were found in *Harrapa*, the excavated site of Indus Valley Civilization. Even in the millennium before Christ, Indian textiles were known in Egypt, Central Asia and South-East Asia. The Europeans and their homes were adorned with the printed and dyed textiles from Gujarat and southern part of India.

The first synthetic dye, discovered in 1856 by William Perkin, an English chemist, reached India and gradually replaced the natural dyes. By the end of 19<sup>th</sup> Century synthetic indigo was in the market, and after a span of almost 150 years all traces of natural dyes became extinct till recently.

Natural dyes are of plant or animal origin, but very few members of the animal kingdom produce substances which give out substantial coloring matter. The dyes of plant origin are also known as vegetal dyes. In India, approximately 500 species of plants are known to produce dyes, which are usually grown on marginal and waste-lands. Dyes obtained from vegetable matter, minerals or insects are used not only to impart color to textiles but also to drugs, cosmetics, food and coloration of many other products such as candles, paper, wood etc. Natural dyed products provide an opportunity to the dyers for adding value to enhance the aesthetics and performance related properties of the textiles.

Natural dyes can be divided into three classes on the basis of their application on textiles. **Substantive dyes**, which are easiest to apply, require impregnating the textile with extract containing coloring matter. Turmeric (*Curcuma domestica*), safflower (*Carthamus tinctoria*) and saffron are the examples of substantive dyes. The **natural Vat dyes** comprise of indigoid class of dyes. These dyes are reduced in water in order to make them soluble. Yarns or fabrics are immersed in indigo dye bath. On exposure to oxygen in the air, the reduced form is oxidized into blue pigment. The largest class of natural dyes is **mordant dyes**, which require assistance of metallic salts that form complexes within the fabric to which dye molecules bind. The metals that serve as mordants include salts of aluminium, antimony, chromium, copper, iron and tin. However, only iron and aluminium are used in environmentally responsible natural dyeing process. Vegetable oils such as sesame, groundnut and castor have also been

used to complex the metallic mordant salts. Iron is a mordant that also imparts color. It is best applied as a ferrous acetate solution on a tannin treated textile.

The dyes are obtained from leaves, fruits, fruit skin or rind, bark, root bark or tree secretion, which are renewable resources. Some of the commonly used natural dyes are Indigo, Myrobolan, Pomegranate fruit rind, red Sandal wood, Henna, Saffron and Safflower etc. In fact, cultivation, collection and extraction of dye material provides employment and rich benefits to many people. Various tribal communities in India are involved in this occupation as they have the knowledge to identify the specific species of plants. They also protect these plants and cultivate some to generate sustainable income.

Researchers have found that Natural dyes do not pose any health hazard. So far, it has been found that the naturally found coloring matter act in many cases as health cures. Vegetal dyes are prepared from non-allergenic and non-toxic plants. Although tests are still being conducted, it has been observed that the natural dyed cotton clothing specially the ones mordanted with alum, impart deodorizing properties. These textiles also exhibit mosquito and insect repellent properties.

It has been recorded in Indian historical text that *Aal (Morinda citrifolia)*, *madder(Rubia cordifolia)* and *Indigo(Indigofera tinctoria)* had cooling effect and hence the fabrics dyed with these coloring agents were used as head cloth or clothing especially by people who were involved in occupations which required them to be in the sun for long hours. The '*Chirala Rumals*', square kerchiefs dyed with madder in Andhra Pradesh, in south India, were used by fishermen and also by Muslim men in the middle east to cover their head in the sun. The indigo dyed and hand block printed '*Ajrakh*' cloth were used as head-cloth, shoulder-cloth or as a wrapper by Muslim men belonging to the '*Maldhari*' community i.e traders, as their work required them to travel frequently in dessert regions of India and Pakistan.

Indigo considered 'cool' and 'magical' color was widely used for cooling feverish conditions. Although the physicians in China, Africa and India treated people with indigo for insect bites, intestinal worms, fever, rabies and cholera, the medicinal properties of healing with touch are associated with dyeing textiles with indigo. In Arab, indigo cloth coated with beeswax and oil was wound around the wounds and was more effective than antiseptic creams. The Omani Bedouin indigo was nicknamed '*haras*' which means 'the guardian'. (Balfour-Paul.J, 2004)

The textiles dyed in turmeric using buttermilk, known as '*Pomcha*', were presented as a wrapper or veil, to the young mother in Rajasthan, almost as soon she delivered an infant. The turmeric was believed to impart anti-septic properties to the cloth and hence was wrapped around mother and new born to protect them from catching infections.

Recently, studies were undertaken by the researchers at the Department of Textile Technology and Chemistry at the Indian Institute of Technology (IIT), New Delhi, to test the inherent anti-microbial properties of natural dyes against three Gram-negative bacteria. Seven out of eleven selected natural dyes showed effective antimicrobial activity against one or more of the bacteria studied. Out of seven, three dyes obtained from *Kamala (Mallotus philippinensis)*, *Gall nuts (Quercus infectoria)* and Pomegranate (*Punica granatum*) exhibited reasonably good wash fastness and hence it is expected that the antibacterial therapeutic effect will be durable. Use of natural dyes for adding antimicrobial properties to clothing and to textiles in the field of medicine and hospitality can provide exciting opportunity for designer, manufacturer and the consumer.

Another remarkable property of natural dyes is its ability to absorb ultraviolet light. Thus it provides protection from the harmful effects of the sun, to the skin of the wearer. This 'Sunscreen' property is of immense importance today when the consumer is aware of the harmful effects of sun emission and global warming.

In traditional methods of dyeing with natural dyes, practically no or mild chemical reactions are involved. During my various visits to the regions, where artisan are still practicing ancient methods of dyeing with natural matter, it was observed that the dyers were self reliant as far as raw material for dyeing was concerned. Most of the processes make use of material locally available, mostly as a waste or a household by-product.

During my recent visit to Orissa, an eastern Indian state, to research on the dyeing process with Aal (*Morinda citrifolia*) on cotton yarns, it was found that the artisan make very cautious use of all resources, including water. The yarns were prepared for dyeing with castor oil, cow-dung and ash obtained from the kitchen hearth. Disposal of effluent was also taken care of. After dye extraction, the sludge is either composted or burnt as fuel. Complete environmentally safe discharge is possible by rural artisan and industry with low capital investment.

Natural Dyed textiles absorb light from all parts of the visible spectrum, apart from the main visible color, as perceived by us as blue or red or any other. This is due to the intrinsic property of the main coloring component. The naturally dyed material appears restful and soothing to the eyes. This property is a boon to the designers as it gives flexibility to place textiles of different hues side by side without causing clash or variation and hence create harmony in the color scheme. Hues are mellow with a predominance of natural tones. Very bright hues are slightly difficult to obtain with natural dyes. Naturally dyed Persian carpets are amongst the highly valued textiles in the world. A term 'abrash' is used to describe the shade variation of the same color due to hand dyed batches of yarns in a single carpet. This quality of irregularity is held in high esteem, as it is a sign of genuine hand-craftsman ship and is aesthetically appealing.



*Collection of Natural Dyed Scarves by Ms. Sarita Ganeriwala; Karomi Collection 2008*

In case of natural dyes, same dyes are used to color cellulosic, animal and some of the synthetic fibers. If proper dyeing process is used for dyeing with natural dyes, wash and light fastness ratings of dyed samples are good to excellent and is comparable with synthetic dyes. (Henriques.M A Bosco, 2005)



*Cotton & Silk yarns dyed with same Natural dyes*

India-Canada Environment Facility (ICEF) funded a project titled 'Promotion of Natural dyes in textile industries for environmental improvement and sustainable livelihood' in

2004. ICEF was set up jointly by India and Canada in 1992 to provide support to programs to undertake environmentally sustainable development and management of land, water and energy resources. The project on natural dyes was aimed towards finding a single dyeing procedure which can be used for all types of yarns, keeping in view the optimum utilization of all resources and disposal of waste in eco friendly manner. Under this project, Self help groups were formulated to collect and prepare dyes from plant matter. The project brought about a positive change in the life style of the women's self help groups, as they were able to earn better by collecting leaves of natural dyes along with their regular collection of firewood from the forest. Gradually the project implementing body initiated the supply of LPG (Liquefied Petroleum Gas) cylinders to replace the firewood, as remuneration. This has led to improvement in the villager's lifestyle and greening of the region due to lowered demand for wood. Three dyeing facilities were set up in India to conduct workshops in order to demonstrate and to promote the usage of natural dyes amongst designers, traditional artisan and design students and the utilization of it's leftover by- products. The project also included systematically planned cultivation of chromaculture and herbal garden to promote the use of products for dyeing and treating the textiles for therapeutic use.

## AYURVA STRA- HEALING WITH NATURE

The ancient Indian scriptural knowledge is found in *Vedas*, made up of the *Rig*, *Yajur*, *Sama* and *Atharva Vedas*, which were handed down from generation to generation over thousands of years of oral tradition. It was around 500 B.C that the sage Adi Shankara recorded this knowledge on palm leaves, along with vast commentaries on the subject and the text was called *Vedanta*. *Rig Veda*, the foundation pillar and oldest of the *Vedas*, contains many references to the Ayurvedic principles, although *Ayurveda* itself was primarily developed from the *Atharva Veda*, the most recent of the *Vedas*. The mainstay of the *ayurvedic* knowledge is found in two great treatises; *Charaka Samhita* and *Sushruta Samhita*, each of which first appeared at the turn of the first millennium



B.C. *Charaka Samhita* focuses on internal mind and body medicine of *Ayurveda*. The knowledge of surgery and the details of its techniques are contained in the *Sushruta Samhita*. (Tiwari.M, 1997). *Ayurveda* is concerned with measures to protect 'ayus' which includes healthy living along with physical, mental, social and spiritual harmony.

*Ayurveda* promotes various methods for regaining and maintaining health with the use of herbs, food, massages, yoga and many more. With people becoming more health conscious the world over, 'Ayurveda' fabrics are gradually becoming popular. *Ayur* is Sanskrit for health, *Veda* means wisdom and *Vastra* is cloth or clothing. *Ayurveda* is the cloth made from organic cotton fabric that has been specially treated with medicinal herbs which not only impart medicinal properties but also beautiful hues to the textiles.

It is now being used extensively for treatment of a broad range of diseases such as diabetes, skin infections like eczema, psoriasis, hypertension, asthma, arthritis, rheumatism etc. It is believed to help restore balance within the body's system and strengthen immune system.

The Handloom Weavers Development Society in Kerala, a southern most state in India has been producing and exporting *ayurveda* for over 5 years now. The society at present is exporting *ayurvedic* textiles to Italy, Germany, UK, USA, Singapore and Malaysia. The effectiveness of these textiles was recently evaluated clinically at the Kerala's Government Ayurveda College, Thiruvananthapuram. In 2006, a study was conducted with 40 selected patients of skin disorders. The patients were admitted in research ward equipped with clothing, bedding, rugs and towels made from *Ayurveda*. The results of the study clearly indicated that the *Ayurveda* had positive effect in augmenting the process of curing diseases. Patients with skin problems like swelling, itching, pain, inflammation, pus formation and ulceration started improving after 14 days in the research ward as compared to the general ward where patients got relief only after 40 days. Similarly, patients suffering from eczema, psoriasis and rheumatism

showed marked improvement in 25 days as compared to the general ward patients who took 42 days. The improvement in the condition of patients suffering from rheumatism and arthritis is especially interesting for the research team as these diseases are not skin disorders and hence it indicates that the *Ayurveda* might have health benefits that extend beyond topical skin problems.

The production of *Ayurveda* involves many steps which are carefully controlled under specific conditions of temperature and humidity. After thorough cleaning of organic cotton, the raw yarn is coated with a natural gum and is then soaked in medicinal dyes prepared by specifically blending 40-60 medicinal herbs and plant extracts which are carefully fused together. The herbs and essences are carefully selected to prepare textiles specific to the disease. For example, Turmeric, neem and sandalwood are used to cure skin related diseases whereas curry leaves and apocynaceae are used for arthritis. These *ayurvedic* herbs are boiled at a particular temperature and the fabrics are dipped for at least four hours and in some cases for the whole day to infuse into the fabric.

Some of the commonly used herbs/ *ayurvedic* extracts which impart medicinal properties as well as color to the textiles are

- *Curcuma domestica*- commonly known as turmeric, it has antiseptic properties and is regularly used for external application on wounds or consumed for internal soothing.
- *Rubia cordifolia* (Madder) - commonly known as *manjistha*, it is anti-inflammatory, antiseptic and is widely used to heal burning wounds. It is also called '*vastra ranjini*' which means color for fabric.
- *Ocimum basilicum* (Basil) - commonly known as Tulsi, the extract is useful for allergic skin as well as for asthma patients. It is widely used in India in herbal teas, medicines for skin care and is also worshipped as a Goddess.

- *Azadirachta* (Neem) – it is one of the anti fungal, anti septic herbs, which is used for skin care. It is also used for pest control and soil management.
- *Santalum album* (Sandalwood) - the oil promotes mental balance, a feeling of peace and tranquility. Its paste is used for headache, eczema and allergic rash.
- *Lawsonia inermis* (Henna) – it is widely used in India to decorate the palms during festivities and celebrations. It is used for conditioning and coloring of hair. Henna leaves have an astringent action and anti-bacterial properties.
- *Terminalia arjuna* – According to the theory of Ayurveda, the *Terminalia arjuna* is most useful for asthma, excessive perspiration or bodily discharges. It is also used as aphrodisiac, energizer or tonic and diuretic.
- *Terminalia chebula* (Myrobolon) – The fruit or flower of *Terminalia chebula* are used very often in Natural dyes as it has rich tannins and gives dull yellow color to the fabrics. It has anti-spasmodic, expectorant, anti-asthmatic, antiviral properties. It is widely used as powder to cure stomach disorders.

The usage of this cloth is based on the principle of touch. The close contact of ayurveda, next to the skin results in enhanced metabolism which leads to elimination of body toxins. The most effective time to wear *ayurveda* clothing is when the body is natural most at rest such as during sleep or meditation because this is when the body is healing and re-establishing balance. That is why *ayurveda* was initially used for sleep wear, bed sheets and meditation clothing. Now a days the herbs treated fabric is made into sarees, dresses and everyday clothing as these have found use not only to cure but also to prevent diseases.

## CONCLUSION

“In this age of mass production when everything must be planned and designed, design has become the most powerful tool with which man shapes his tools and environments

(and, by extension, society and himself). This demands high social and moral responsibility from the designer.”(Victor Papanek, Design for the real world, 1970)

Designing with responsibility, not only towards the customers or workforce but also with environment impact in mind has become imperative.

There is a need to build awareness about the problems and the challenges to the environment and to provide an opportunity to young designers to exhibit their solutions to the problem. As an academician in the field of fashion and design education, it is very essential for us to inculcate the knowledge of relationship between design decisions and environmental issues amongst the design students. Shift to sustainable green design should not be taken as a sub set of mainstay design, but as a mandatory and integral component of the design process - as essential as function, aesthetics and production.

There is an increasing awareness of the factors associated with synthesis, processing and use of Natural dyes. It has led to worldwide interest in dyeing with natural dyes. Craft based approach towards usage of Natural dyes and *Ayurvedic* herbs could play an important role in providing information about ingredients and processes that might then be adapted for large scale industry oriented operations. In India, usually traditional methods are still being used for dyeing with Natural dyes which has ensured more original and economic production of small quantities of textiles and has become the USP of the craft. Many young fashion & textile designers are taking initiative to cater to the niche market by making conscious decision to use environment friendly material and social responsibility in textiles and clothing production.

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