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Ayurvastra: A miracle mediherbal cloth

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ABSTRACT

Ayurveda is an ancient medical treatise, summarizing the art of healing and prolonging life and is practiced in India for more than 5,000 years. It is regarded as an alternative form of medicine. Now the same ayurveda is brought into *Ayurvastra*, the medical dress. This is the article on *Ayurvastra* which is the cloth made from organic cotton fabric that has been specially treated with medicinal herbs to impart not only medicinal properties but also beautiful hues to the textiles. Its production does not add up to environment pollution. It is now being used extensively for treatment of wide range of diseases such as diabetes, skin infections like eczema, body acne, hypertension, asthma, arthritis, rheumatism, etc. With people becoming more health conscious all over the world, '*Ayurvastra*' fabrics have great scope in times to come. *Ayurvastra* not only reinforces the importance of sustaining the planet for future generations but also considers the well being of current generations using age old practices. *Ayurvastra* can play effective role in revival and elevation of the market for eco-friendly fabrics. Thus, it may be taken as emerging or new area of entrepreneurship and job opportunity for young people at one hand and on the other contribute towards offering economic stability to nation. [Medicinal Plants 2015; 7(1) : 00-00]

Keywords : *Ayurvastra*, treatment of disease, environment, sustainable, herbs, herbal dyeing

INTRODUCTION

Ayurveda works by balancing the three *doshas* (*Tridosha*) i.e., *Vata*, *Pitta* and *Kapha*, which govern the internal and external health of the body. *Ayurvastra* is a branch of this ancient form of medicine (Anupama, 2012; Dhingra, 2014; Sharma, 2014). *Ayurvastra* involves an ancient technique of dyeing textiles using medicinal herbs. The concept of *Ayurvastra* was practised in India before the industrialization made impact of the textile industry. Even today, in some parts of South India, ayurvedic herbal dyed clothes are used to carry a new born baby as tradition, which will act as an antibacterial barrier for the child. In ancient

literature too, there is evidence that these cloths were used as a medium for ayurvedic treatment. The skin received the medicinal benefits of these herbs through the contact to clothing, bedding, or coir mats (Patnaik, 2014).

Ayurvastra cloth is totally organic, sustainable and biodegradable. *Ayurvastra* or the ayurvedic medicinal cloth are made of 100 per cent pure organic cotton or silk, wool, jute and coir products that has been prepared on hand loom, processed and dyed by using various ayurvedic herbs to assimilate medicinal qualities into them. Thus, these are free from any chemicals that may release toxins and irritants harmful to users as well as environment (Yadav and Nath, 2010). Also at the end of use, it can be disposed off easily owing to its biodegradable nature. It can be used as ayurvedic treatment for diseases like diabetes, skin infections, hypertension, asthma, arthritis and also for boosting immunity.

Although *Ayurvastra* concept is known since old ages but it was revitalized through a project submitted to the state Government by a Weavers Society in Kerala,

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India. This work was further developed and researched by the Ayurveda University of Kerala, India. Since 1992, the Weavers Society has been putting their efforts towards refining the *Ayurveda* technique to make eco fabrics suitable for modern use and to create different colours by using varied plants/herbs for diverse health benefits. This society is into the export of *Ayurveda* cloth and clothing to the United States of America, Italy, Germany, United Kingdom, Singapore, Taiwan, Malaysia, Jordan and Saudi Arabia. In recent times, Government of India as well as other state governments perceives *Ayurveda* as a way to revive products of handloom sector through value addition and diversification. It has been foreseen as an effort to increase the market for their handloom industries and to create a niche for their eco-friendly handloom fabrics. The *Ayurveda* worldwide has motivated apparel manufacturing companies to start a line of *Ayurveda* products which are also offered over the internet such as *Ayurvedaonline* (Srinivasan, 2010).

Ayurveda - protects environment

Skin conditions such as eczema and psoriasis. Certain fabrics also contain antibacterial and anti-inflammatory properties. The fabric also helps with conditions such as rheumatism, arthritis, blood pressure, diabetes and respiratory conditions, such as asthma (Bucci, 2012; Dhingra, 2014).

The most valuable time to wear *Ayurveda* clothing is when the body is at rest such as during sleep or meditation because this is when the body is re-establishing balance through physiological healing. This makes use of *Ayurveda* for sleep wear, bed sheets, towels, meditation clothes and coir mats a logical solution. Now a days the herb treated fabric is made into saris, dresses and everyday clothing as these have found use not only to cure but also to prevent diseases being capable of restricting growth of pathogens (Rangari *et al.*, 2012).

Years of unrestricted utilization of natural resources and human ignorance about its effects has diminished them and aged our planet. Recent climate change phenomenon and other prevailing environment problems (acid rain, ozone layer depletion, air pollution, global warming and pollution of sea and rivers) are very dangerous. A study found that textile industry is the major consumer of chemicals. A liberal use of harmful chemicals in the textile industry leads to severe health problems to both the workers and consumers. These harmful chemicals come into direct and prolonged contact with our skin causing skin irritations, allergies and even cancer. Some of these

chemicals may even diffuse through our skin into our body, especially when the chemical particles are small enough, from the open sweat pores during sweating. The protective ability of our skin has been reduced substantially due to this chemical exposure. The toxins that enter our body bio-accumulate and have caused harm to our health in the long run. These chemicals are not consumed completely during textile processes and a significant quantity of these is released in effluent streaming that pollute water, air, land and destroy flora and fauna that flourish on them. *Ayurveda* fabrics are manufactured without any chemical process and are thus eco-friendly. Normal fabrics like organically grown cotton, jute, silk, wool, etc. are used to make *Ayurveda* by dyeing them with the desired herbs in a controlled temperature and environment. Organically grown crops improve the fertility of the soil by promoting the development of earthworms and above ground arthropods. Thus, organic fields accommodate a greater variety of plants, animals and microorganisms and uphold biodiversity in the area (Sharma, 2014).

The process of making *Ayurveda* starts with the 100 per cent pure organic fibre and passes through several stages of yarn and fabric manufacturing followed by varied treatments before becoming colorful and ready to wear. No machines are involved in the dyeing process. More importantly, no chemical additives are added to prepare the fibers for spinning and weaving and no chemical finishes are applied to enhance its appearance and serviceability. The roots, flowers, leaves, seeds and barks of around 200 herbs are used to make the dyes. The natural herbs are generally found in very beautiful and distinct shades. *Ayurveda* is also becoming very popular for its colour. Every step in the preparation of *vastra* clothing is carefully and precisely controlled to avoid contamination by harmful components present in environment. Most of the herbs used in *ayurveda* are procured locally or regionally where they are grown organically and are extracted and applied by age old safe ancient methodology. This has further served the tradition of natural dyeing in India.

Ayurveda - mode of action

Conventional western medicine and traditional eastern medicine recognize the skin as being the body's largest organ. The skin functions as a protective barrier but also as a medium for outside substances to enter the body. In the same way that the skin may absorb environmental toxins and chemicals from conventional clothing, it has the ability to absorb volatile oils released from herbs used as natural dyes. Ayurveda identifies seven unique layers of the skin where each

layer has a distinct function. Starting from the outermost layer, the seven layers defined by ayurveda are *Avabhasini*, *Lohita*, *Shweta*, *Tamra*, *Vedini*, *Rohini* and *Mamsadhara* (Dash, 1981).

The fourth layer, *Tamra*, supports the immune system and performs the function of acting as a fence. Skin infections reflect an imbalance in this layer. Clothing considered as 'second skin' to wearer can play a significant role in the overall health of our skin. The usage of *Ayurveda* cloth is based on the principle of touch. The close contact of *Ayurveda*, next to the skin enhances body metabolism which leads to effective elimination of body toxins. The herb-infused and herb-dyed organic fabrics act as healing agents after the healing content being absorbed through the skin. Each fabric is infused with specific herb that can help treat

Ayurveda - manufacturing process

Processing refers to the series of operations performed in making of a product. During making of *Ayurveda*, around 200 herbs have been reported to be used for developing various effects and colors in cloth. Each color is produced from a preparation that typically contains one or more pre-dominant herbs (like turmeric in our turmeric clothing) along with 40 or more others, that are specifically blended and carefully prepared medicinal herbs from plants' flowers, roots, barks, etc. Different processes are followed depending on whether raw woven fabric or yarn is being dyed. For handloom, the process starts with the cotton yarn and goes through a process named de-sizing (to remove loose particles, debris, etc.). The common processes used in manufacturing of *Ayurveda* are as follows:

(A) Bleaching

The selected fabric or yarn is first bleached using a preparation based in cow urine. Cows pasture naturally and also feed on 3 different types of medicinal grass. Many ayurvedic doctors consider cow's urine to be highly beneficial in balancing an individual's "doshas" or basic constituents of an individual's physiology and psychology, strengthening the immune systems and as an elixir in giving life (Rangari *et al.*, 2012). The fabric or yarn is also exposed to direct sunlight as part of the process.

(B) Gumming

To make the colours bright and fast a number, proprietary gumming process is used before dyeing that includes plants like Lodhra (*Symplocos racemosa*), Kenduka (*Diospyros ebenum*), and fruit extracts of Haritaki

(*Terminalia chebula*) etc. Each color/dye requires its unique blend of over 40 herbs/plants for gumming as well as synergizing the health/wellness benefits.

(C) Medication (Dyeing)

The organic cotton yarn or fabric is then medicated in a carefully controlled mixture of herbal medicine preparations called *Kashayas* (meaning concoctions) depending upon the health/wellness benefits required. The word medication is used instead of dyeing because the medicinal plants/herbs themselves give natural color to fabrics. The temperature of the concoctions, the duration and number of the medicinal soaks, the blend of herbs and the equipment are carefully used in a controlled manner. *Ayurveda* clothes can be produced in all kinds of hues of red, yellow, green, blue, orange, brown, ivory and black. The following Table 1 shows that the colours produced by different herbs are (Baid, 2014; Jain, 2010; Kumar, 2014).

By combination of blue, red and yellow colours, various other colours are obtained. The medicated/dyed cloth is allowed to cool and repeatedly washed to remove any loose particles and is always dried in shade.

- (A) Finishing : In this type of dyeing, finishing is done by sprinkling pure water on the cloth and then stretching under pressure, using hand rolls, aloe vera, castor oil etc.
- (B) Curing/seasoning : The dyed fabrics then go through a seasoning process of 2 weeks or more before they are ready for use (tailoring).
- (C) Recycling residue : The entire process is organic. It does not pollute the environment like synthetic dye. Solid and liquid waste is separated through the process of filtration and used for farming purposes - as manure and for watering the fields and the waste is used as bio-manure and also to generate bio gas.

Ayurveda - cure for different diseases

Disease is an abnormal condition of the body that cause discomfort or disfunction or disinfest from injury, insofar as the latter is usually instaneously acquired. India possesses about 20,000 species of higher plants and one third of it being endemic and 500 species are categorized to have medicinal value. Because we use medicinal herbs, *Ayurveda* have a lot of therapeutic value. Thus, the fabric has been found very helpful for people suffering from ailments and also for boosting immunity depending upon the herb used to make the dyes. The following Table 2 shows that diseases cured by different herbs (Evaristo, 2008; Lee, 2008; Maiti *et*

Table 1. Colours produced by different herbs

S.No.	Colour	Herbs used
1.	Red	Sandalwood (<i>Santalum album</i>), Safflower (<i>Carthamus tinctorius</i>), Madder Root (<i>Rubia tinctorium</i>)
2.	Blue	Indigo (<i>Indigofera tinctoria</i>), Woad (<i>Isatis tinctoria</i>), Sunt berry (<i>Acacia nilotica</i>), Pivet (<i>Ligustrum vulgare</i>)
3.	Yellow	Pomegranate rind (<i>Punica granatum</i>), Turmeric (<i>Curcuma longa</i>), Marigold (<i>Marigold tagetes</i>), Saffron (<i>crocus sativus</i>), Golden rod (<i>Solidago grandis</i>), Teak (<i>Tectona grandis</i>)
4.	Orange	Safflower (<i>Carthamus tinctorius</i>), Madder Root (<i>Rubia tinctorum</i>), Marigold (<i>Marigold tagetes</i>), Annota (<i>Bixa orellena</i>), Lily (<i>Convallaria majalis</i>)
5.	Green	Pomegranate (<i>Punica granatum</i>), Indigo (<i>Indigofera tinctoria</i>), Neem (<i>Azadirachta indica</i>), Amaltas (<i>Cassia fistula</i>), Turmeric (<i>Curcuma longa</i>)
6.	Brown	Black cutch (<i>Acacia catechu</i>), Henna (<i>Lawsonia Inermis</i>)
7.	Black	Iron Scrap, Jaggery (<i>Saccharum officinarum</i>), Peanut Oil (<i>Arachis hypogaea</i>), Castor oil (<i>Ricinus Communis</i>)

Table 2. Comparison between Herbal and chemical dyeing process (Kumar, 2014)

S.No.	Process	Herbal Dying Process	Chemical Dyeing Process
1.	Bleaching	Cow Dung, Minerals	Hydrogen peroxide (H ₂ O ₂), Sodium hypochlorite (NaOCl), Chlorine (Cl ₂) etc.
2.	Scouring	Sea Salts, Sunlight	Caustic soda (NaOH)
3.	Mercerizing	Minerals, Oils	Caustic soda (NaOH), Acetic acid (CH ₃ COOH)
4.	Dyeing	Medicinal Herbs	Dyes, Soda ash (Na ₂ CO ₃), Caustic soda (NaOH), Sodium chloride (NaCl)/ Glauber salt, Soap etc.
5.	Dye Fixing	Natural Oils	Formaldehyde (HCHO)
6.	Finishing	Rolls, Sugar, Oils	Chemicals
7.	Washing	Rita, Khar, Natural Soaps	Detergent

al., 2014; Patnaik, 2014; Venkatesh, 1976).

Ayurveda - products

Ayurveda clothes are of two kinds: One category is for curing diseases and the other is for wellbeing. First category of cloths which are used for curing diseases i.e. sleep wear, bed sheets towels, meditation clothes and coir mats. Apart from ayurvedic handloom clothes like saris, T-shirts, shirts, trousers, kurtas, dhods, chuddars, nightwear, fashion wear, sportswear and inner wears, there are caps for healing headaches, goosery caps for head balance, cooling caps, hair shining caps, hair strengthening caps, bandages, mask, and so on (Baid, 2014).

Ayurveda - efficacy

Many clinical experiments have been conducted to show the effectiveness of *Ayurveda*. It was found through various trials that such an environment can help those suffering from skin diseases, arthritis, eczema, psoriasis and rheumatism and blood pressure. All these trials showed a “marked improvement” (Krishnan, 2007; Srinivasan, 2010)

1. The Dravyaguna Department (Ayurveda Pharmacology Department) of Government ayurveda College conducted a month-long trial by using bedding, rugs and towels made from *Ayurveda* and they found that it helped the patients who suffered from diseases like eczema,

Table 3. Diseases cured by different herbs

S.No.	Diseases	Main herbs
1.	Arthritis	Curry leaves (<i>Murraya koenigii</i>), Agathi (<i>Sesbania grandiflora</i>) and manjishta (<i>Rubia cordifolia</i>)
2.	Diabetes	Touch-me-not (<i>Mimosa pudica</i>), Methi (<i>Trigonella foenum-graecum</i>), Gurhal (<i>Hibiscus rosa-sinensis</i>), Turmeric (<i>Curcuma longa</i>), Jamun (<i>Syzygium cumini</i>), Mahuva (<i>Madhuca longifolia</i>), Cumon/cumin seeds (<i>Cuminum Cyminum</i>), Champa flower (<i>Magnolia champaca</i>) and Shoe flower (<i>Hibiscus rosa-sinensis</i>)
3.	Skin diseases	Turmeric (<i>Curcuma longa</i>), Korphad (<i>Aloe vera</i>), Brajil wood (<i>Caesalpinia echinata</i>), Neem (<i>Azadirachta indica</i>), Castor (<i>Ricinus Communis</i>), Sandal wood (<i>Santalum album</i>) and Indigo (<i>Indigofera tinctoria</i>), Amla (<i>Emblca officinalis</i>), Henna (<i>Lawsonia inermis</i>)
4.	Hypertension	Basil (<i>Ocimum basilicum</i>), Baheda (<i>Terminalia bellirica</i>), Harad (<i>Terminalia chebula</i>), Methi (<i>Trigonella foenum-graecum</i>), Guar (<i>Cyamopsis tetragonoloba</i>), Indigo (<i>Indigofera tinctoria</i>), Anar (<i>Punica granatum</i>), Safflower (<i>Carthamus tinctorius</i>) and Myrobalan (<i>Terminalia chebula</i>)
5.	Anaemia	Korphad (<i>Aloe vera</i>), Baheda, Myrobalan (<i>Terminalia chebula</i>), Chireta/Chirayata (<i>Swertia chirata</i>), Champa (<i>Magnolia champaca</i>), Punamava (<i>Boerhaavia diffusa</i>), and Turmeric (<i>Curcuma longa</i>)
6.	Asthma	Erandi (<i>Ricinus communis</i>), Basil (<i>Ocimum basilicum</i>), Malabar Nut (<i>Adhatoda Vasica Nees</i>), Vallipala (<i>Tylophora indica</i>), Myrobolon (<i>Terminalia chebula</i>), Arjun (<i>Terminalia arjuna</i>)
7.	Psoriasis	Turmeric (<i>Curcuma longa</i>), Nirgandi (<i>Vitex negundo</i>), Amaltas (<i>Cassia fistula</i>), Cluster fig (<i>Ficus racemosa</i>), Karanj (<i>Pongamia pinnata</i>), Black nightshade (<i>Solanum nigrum</i>)
8.	Sleeplessness	Cuscus/Khus-Khus (<i>Vetiveria Zizanoides</i>)
9.	Headache	Sandal wood (<i>Santalum album</i>)
10.	Rheumatism	Indian Borage (<i>Trichodesma indicum</i>), Ajowan (<i>Trachyspermum ammi</i>), Reetha (<i>Sapindus trifoliatus</i>), Messina Creeper (<i>Ipomoea cairica</i>)
11.	Leprosy	Manjistha (<i>Rubia Cordifolia</i>)
12.	HIV AIDS	Korphad (<i>Aloe vera</i>), Basil (<i>Ocimum basilicum</i>), Indian Mulberry (<i>Morinda pubescens</i>), Turmeric (<i>Curcuma longa</i>), Winter Cherry (<i>Withania somnifera</i>)

psoriasis and rheumatism. According to Dr. Vishwanathan, the former Dean of the Drug Research Department at Ayurveda College, “We treated around 40 people. And the response was remarkably good, especially in cases of arthritis and skin ailments.”

2. A similar study was conducted to test the efficacy of medicated coir mats too. Initiated by the Ministry of Health, the Department of Coir Development, Government of Kerala undertook a six-month clinical trial at the Government Ayurveda College in Thiruvananthapuram on patients suffering from rheumatism, allergy, hypertension, diabetes, psoriasis and other skin ailments. For the study, all clothes, bed linens and mattresses of the patients were dyed in *Ayurveda* herbs and the

walls, floors and ceilings in the patient’s room were lined with *Ayurveda* coir mats so that the patient were surrounded by *Ayurveda* medicated materials. The improvements in the health of patients suffering from rheumatism and arthritis are especially interesting because rheumatism and arthritis are not skin disorders and this indicate that the treatments might have healthy benefits that extend beyond the periphery of skin problems.

3. In an increasingly fast-paced world, the main problem of the French people confront is sleeplessness as a result of high stress or busy work schedule. They came to Balarampuzha in search of a solution. They are now a satisfied lot with specially made dress material and specially made bed-spreads and mattresses in

which Cuscus/Khus-Khus (*Vetiveria Zizanoides*) used as main herb in dyeing solution.

4. A developed country like America, the risk of becoming obese increasing as a result of improved access to food, decreased physical activity, and the consumption of easily available fast foods, and another problem faced by American people is skin diseases due to direct UV rays exposed to the body as a result of high pollution and ozone depletion. They too wanted a solution from Kerala and came to Balaramapuram. They are also satisfied with specially made dress materials by using more than 200 varieties of herbs and plants.

Based upon the successful results of these clinical trials, the Kerala State Government has initiated a more in depth and expanded study into the possible effectiveness of *Ayurveda* in other diseases including some cancers. Now many eyes and ears from different parts of the world are tuned towards Kerala to have a lasting solution for their health problems through never failing ayurveda science.

SWOT analysis of Ayurveda

(A) Strength

Ayurveda act as healing agents, also act as an absorber through skin. Each fabric is infused with specific herbs that can help treat skin conditions. Herbs used in *Ayurveda* are known to cure allergies having anti-microbial, anti-inflammatory properties (Saluja, 2014).

Ayurveda is extra smooth & good for transpiration that helps in improving various diseases. It may help treat a broad range of diseases such as skin infections, diabetes, eczema, psoriasis, hypertension, high blood pressure, asthma and insomnia.

Ayurveda can further be used as energy booster, mood enhancer, and blood purification and cooling.

It is mesmerizing to know that medicinal value of this cloth will be increased if cloth is bleached with cow's urine.

The wide array of unique naturally occurring colors can't be duplicated with synthetic dyes, hence new shades can be developed, the effect of which will not be lost even after constant use. Herbal dyes don't pollute like chemical dyes. Dye effluent during herbal dyeing can irrigate agriculture (used as bio manure and compost), including human food crops and used to generate

biogas.

Some of the environmentally conscious industries engaged in producing herbal textiles, make organically recycled textile paper bags by stitching the leftover organic and herbal dyed fabrics which can counter the growing hazard of plastic bag pollution.

(B) Weakness

Natural fabrics and dyes are poor substitutes for synthetic colors in terms of range and tonal variations.

This cloth is more effective when the body is at rest such as sleeping or relaxation because this is when the body is naturally healing and re-establishing balance.

The process of making *ayurveda* is very complex, manual and time consuming.

It is very important to follow the correct care instructions during washing or dry cleaning the *Ayurveda*. This should be washed separately with bleach free detergent. For machine wash, gentle cycle is recommended. This cloth should be ironed with warm iron; steam iron is preferable (Jain, 2010).

(C) Opportunities

There is increasing demand for *Ayurveda* around the globe due to their affordability. The price of *Ayurveda* is low. For example the average costs for chemical dye Rs. 3500 per kg while the average costs for herbal dye just Rs. 150 per kg. An *Ayurveda* sari is priced above Rs. 300 than silk sari going up to Rs. 15000 (1 US\$ \cong 65 INR).

The spread of *Ayurveda* into other cultures and regions of the world express the growing interest in more traditional and natural healthcare systems that are based upon restoring balance and health through natural methods rather than through Western medicines.

Globally, as many countries have been enforcing a ban on textiles that have been coloured using chemical dyes, this had been a body blow to the handloom industry. At the same time, textiles dyed using natural vegetable dyes, especially medicinal plants, have been commanding a huge market due to their obvious advantages.

Bulk production can be a possible through innovative techniques. Capacity of dyeing evenly in length of over thousand meters of same shade

through innovative controlled machine reduces the requirement of Sun, running water etc. which is a must in any such natural process.

It can be expected that vision of spreading this unique technology and thereby opening up a new area of entrepreneurship, job orientation and economical stability will be welcomed by the society as a whole.

A strong *Ayurveda* market will help secure the livelihoods of local Indian 'farmers, weavers, and tribes'. *Ayurveda* production also encourages cultivation and conservation of medicinal plant biodiversity. It plays important role for women empowerment organization and advocate for the poor.

(D) Threats

Due to lack of availability of precise technical knowledge on the extracting and dyeing technique, it has not commercially succeeded like synthetic dyes.

Some people claim that there is a side effect on children as a high level of formaldehyde. But till date, no such complain has been registered.

CONCLUSION

Ayurveda, life sustaining, eco friendly clothing is another feather in the ayurveda's cap. *Ayurveda* concept is based on traditional dyeing method followed in India. Like Khadi, India is also one of the largest producer and exporter of eco-friendly fabrics. Indian organic textiles are considered best in the international market. *Ayurveda* cloths are truly chemical-free, naturally dyed apparel featuring organic cotton and colors made from medicinally rich botanicals and herbs from India. It is the doctor of future because allopathic medicine treats the symptoms whereas *Ayurveda* underlying causes. The concept of dyes that are natural and improve the wearer's health is thrilling. It is time for the Indian Government and textile industries to encourage and give vital encouragement to support this precious heritage of India. Thus, Ayurvedic textiles direct us to a new way of living a natural, disease-free and healthy life.

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