

A Study on Medicinal Properties of Ayurvedic Herbs and its Usage in Textile Industry

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Abstract: Ayurveda herbs and spices play a vital part in a holistic approach to health and well-being. Ayurveda is a traditional medicinal drug gadget from India that specializes in selling well being of frame, thoughts, and spirit. The holistic approach combines lifestyle changes, weight loss program, and exercising. Ayurveda herbs and spices play a crucial function in the basic gadget of Ayurveda medicine. Fans of Ayurveda kingdom that the medicinal drugs offer protection from disorder, assist with intellectual health, and useful resource digestion. This article explores some Ayurveda herbs and spices that assist make up the medicine, its various properties and its usage in textile industry. The Ayurveda herbs and spices have a few assisting proof that shows they may assist with certain factors of a person's health. Ayurveda practitioners had been the use of flowers, diet, workout, and way of life to treat diverse conditions for extra than 3000 years, and they bear in mind it a holistic, whole-body recuperation device. Research into the effectiveness of Ayurveda medicine is ongoing, and specialists need in addition medical evidence to guide its use in treating many conditions. Herbal textile is a term used to describe fabrics that have been coloured using extracts from different herbs. Chemicals are not utilized in the dyeing process when using herbal extractions. The textile industry is relatively aware of how the textile chemicals employed in its different production processes contribute negatively to environmental degradation.

Keywords: Ayurveda herbs, Medicinal herbs, Herbal textile, Medicinal Properties and Textile Industry

1. Introduction

The Indian subcontinent is a substantial repository of medicinal vegetation which may be used in traditional medical remedies. The opportunity drug treatments within the conventional structures are derived from herbs, minerals, and organic depend, at the same time as for the education of herbal tablets best medicinal flora are used. Use of flora as a supply of drugs has been an historic exercise and is an essential component of the fitness care gadget in India. In India, approximately 70 percentage of rural population relies upon on the conventional Ayurveda tool of medication. Most healers/practitioners of the conventional structures of medication prepare formulations thru their very personal recipes and dispense to the sufferers. In the Western nations, approximately forty in keeping with cent of humans are the use of the herbal treatment for the treatment of various illnesses.

India is the most essential producer of medicinal flowers. There are currently about 250,000 registered medical practitioners of the Ayurveda system, in comparison to

about 700,000 of the modern-day treatment. In India, round 20,000 medicinal plant life have been recorded; however, conventional practitioners use simplest 7,000–7,500 plant life for curing exceptional illnesses. The share of use of flowers inside the specific Indian structures of drugs is Ayurveda 2000, Siddha 1300, Unani 1000, Homeopathy 800, Tibetan 500, contemporary two hundred, and those 4500. In India, round 25,000 effective plant-based formulations are used in traditional and people treatment.

The ancient Indian Vedic medical system of Ayurveda is where the idea of herbal textiles originated. A branch of Ayurveda is called Ayurveda. Ayur means health, veda means wisdom, and vastrame means garment in Sanskrit. Ayurveda is constructed of organic cotton fabric that has been specially infused with medicinal herbs and oils. Diabetes, skin infections, psoriasis, hypertension, asthma, arthritis, rheumatism, high blood pressure, eczema, and even some forms of cancer have all been treated with ayurveda for a long time.

1) Bacopa Monnieri



Volume 12 Issue 5, May 2023

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a) Common Properties

Bacopa, or *Bacopa monnieri*, is a high - quality rejuvenating herb historically used to aid the brain and apprehensive gadget. This small, creeping perennial plant is considered one of two effective herbs regularly called brahmi and has been used for hundreds of years to sell reminiscence, intelligence, and attention. Considered a nootropic, bacopa advantages the bodily characteristic of the mind and nervous system, at the same time as also promoting intellectual clarity, consciousness, and emotional equanimity.

b) Medicinal properties

Enables in lowering infection, consists of effective anti - oxidants that protects cells from harm, prevents hypertension and tension, helps lowering blood stress levels, own anti - cancerous properties, facilitates in keeping blood sugar degrees in diabetic patients, slows down growing old, facilitates in stopping and treating Alzheimer, the leaves are used for treating snake bites, allows deal with madness and epilepsy.

Mental power and Fortitude - Bacopa has been revered for a while as one of the pinnacle brain tonics in the Ayurveda pharmacopoeia. It's been used for hundreds of years in Ayurveda to bolster memory and mind while helping consciousness and awareness.

A peaceful mind and nervous machine - Balancing and rejuvenating for the apprehensive machine, bacopa can assist

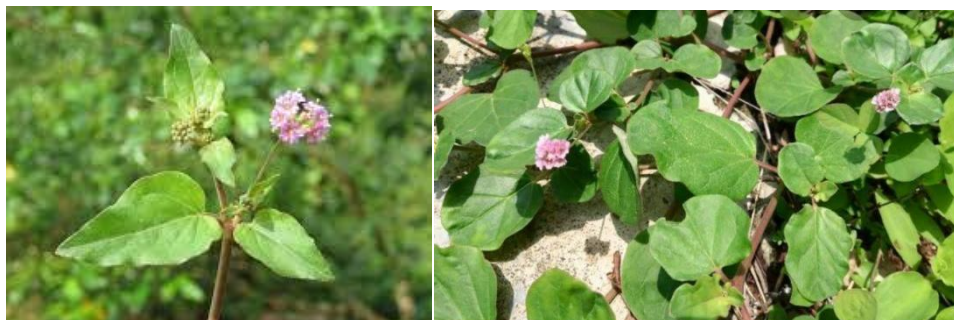
ease occasional anxiety even as supporting cognizance, emotional balance, and an internal kingdom of calm.

Solid power and Sound Sleep - As certainly one of Ayurveda's cherished adapt generic herbs, bacopa can adapt to what the body needs, improving daytime alertness and recognition while lowering stress all through the machine and improving the best of sleep at night time.

Wholesome Blood, Hair, skin, and Joints - Bacopa is energetically cooling (which we'll talk in extra detail underneath), which means that it may promote comfortable joint motion, healthy blood, lustrous hair, and a clear complexion.

c) Textile Industry usage:

- Bioaugmentation to reclaim soil fertility from textile effluent toxicity in relation to chromium toxicity - bacopa monnieri [1]
- A sustainable approach to the degradation and detoxification of textile industry wastewater for environmental safety - bacopa monnieri [2]
- An overview on eco - friendly remediation of toxic organic contaminants from textile dyeing industry wastewater - bacopa monnieri [3]

2) Boerhavia Diffusa**a) Common Properties**

Boerhaavia diffusa is an herb discovered in Ayurveda and other traditional medicines. Traditionally, Boerhaavia diffusa has been used for its anti - diabetic and diuretic properties. In extraordinary regions of the arena, Boerhaavia diffusa has also been used for ache remedy, anti - infection, and treating indigestion. Boerhaavia diffusa is a tropical crawling root plant, with bioactive compounds in each the leaves and roots. Boerhaavia diffusa also has anti - oxidant properties. [4]

b) Medicinal properties**Anti bacterial activity:**

B. diffusa leaves have robust antibacterial interest towards numerous Gram - bad and Gram - superb bacteria which is probably because of the phytochemicals gift inside the leaves. Ethanol extract showed inhibitory an effect on gram - positive bacteria like *S. aureus*, *B. subtilis*, *S. faecalis*, *M. luteus* and all gram - terrible micro - organism decided on for the existing study. Methanol extract showed inhibitory effect against all gram - superb bacteria decided on for the

existing have a look at except *M. luteus* and gram - terrible micro - organism like *k. pneumoniae*, *P. vulgaris*, *S. marcescens* and *S. flexneri* the antibacterial activity of the various extracts of the stem bark of *Prosopis cineraria* (Linn.) Druce, became evaluated via the agar well diffusion technique. [5]

Anti - nociceptive activity:

Within the acetic acid - induced abdominal writhing in mice, pre - remedy of the animals with naloxone (five mg/kg, i. p.) significantly reversed the analgesic impact of morphine and juice but now not that of decoction. It's far reported that the active anti - nociceptive precept of *B. diffusa* is gift particularly inside the juice of sparkling leaves and has a vast anti - nociceptive impact whilst assessed in those fashions. [5]

Anti - inflammatory activity:

Ethanol extract of leaves at dose of 400mg/kg exhibited most effect with 30. four, 32.2, 33.9 and 32% with carrageenin, serotonin, histamine and dextran brought about rat paw edema fashions, respectively. Ethanol extract of

stem bark additionally exhibited COX - 1 and IC50 value of 100ng/ml proving the drug use inside the remedy of anti - inflammatory condition. Interest became assessed using extract of latex of plant by using the use of a carragenan caused anti - inflammatory version. [5]

Textile Industry usage:

Inexperienced synthesis and characterization of silver nanoparticles using *Boerhaavia diffusa* plant extract and

their anti - bacterial activity - inexperienced synthesis of silver nanoparticles changed into executed the usage of *Boerhaavia diffusa* plant extract as a decreasing agent. The biosynthesized AgNPs were characterized by means of SEM - EDAX, XRD, TEM, UV-Vis, and FTIR spectroscopy techniques. [6]. Size dependent antimicrobial activity of *Boerhaavia diffusa* leaf mediated silver nanoparticles. [7]

3) *Capparis Decidua*



a) Common Properties:

The plant is historically used to therapy toothache, arthritis, bronchial asthma, cough, infection, intermittent fevers, malaria, rheumatism, and swelling. It's also believed to possess laxative, astringent and vermifuge properties. it has been stated in Ayurveda that the bark has an acrid, sharp, hot taste; analgesic, diaphoretic, alexeteric, laxative, in dropsy floor, [8] anthelmintic; good in asthma, ulcers and boils, vomiting, piles and all inflammations. [9]

b) Medicinal properties:

The culmination of *C. decidua* (green berries) are utilized in food preparations like pickles because of the perception that it has anti - diabetic movement. Inside the traditional system of drugs, the bark has been shown to be useful within the remedy of coughs, asthma and inflammation; roots used in fever and buds inside the treatment of boils. In Unani, leaves act as appetizer, allows in cardiac issues, culmination utilized in biliousness; Shoots at the side of shoots of *Peganum* herbal used as anti - fertility drug; floor stem and leaves used in alveolar is and pyorrhoea; Root bark is used as anthelmintic and purgative; timber coal utilized in muscular injuries. In Sudan, *C. decidua* is used in swellings, jaundice and contamination of joints. [10]

Barks, leaves and roots of *C. decidua* had been claimed to alleviate type of illnesses which include toothache, cough, allergies, intermittent fever and rheumatism (Dhar et al., 1972). The powdered fruit of *C. decidua* is used in anti - diabetic formulations (Yadav et al., 1997a, b), while the bark of its leafless shrub is used for the remedy of allergies, cough, inflammation and acute ache (Ahmad et al., 1992).

c) Textile Industry usage:

- Antifungal hobby of Selenium nanoparticles extracted from *capparis decidua* fruit against *candida albicans* - Plant extract was organized from *Capparis decidua* fruit powder makes tremendous control drug which changed into accomplished in parallel. [11]
- Inexperienced Synthesis of Flower - shaped Copper Oxide and Nickel Oxide Nanoparticles through *Capparis decidua* Leaf Extract for Synergic Adsorption - Photo catalytic Degradation of insecticides. [12]
- Microwave - assisted synthesis of Ag/ZnO nanoparticles the use of *Averrhoa carambola* fruit extract because the decreasing agent and their utility in cotton fabrics with antibacterial and UV - safety residences. [13]

4) *Cyanthillium Cinereum*



a) Common properties

Cyanthillium cinereum leaves have analgesic, antipyretic outcomes [14]. Paste of stem/bark is used to heal cuts, while plant life are traditionally used to treat conjunctivitis [15], arthritis [16] and rheumatism [17]. Root infusion is used as an antidote to scorpion sting and snake venom [15]. The various vegetation used for dye extraction are labeled as medicinal and some of these have lately been shown to possess first - rate antimicrobial, anticancer and various large sports. Cyanthillium cinereum (Poovamkurunilla) is one such plant which has been historically acknowledged for its medicinal residences. Cyanthillium cinereum, commonly referred to as little ironweed, is a common annual weed (Asteraceae) with a huge variety of geographical distribution. [18]

b) Medicinal properties

A decoction of the whole plant is employed to sell perspiration inside the treatment of fevers. It's far seen as an awesome treatment for bladder spasms and strangury. The juice of the plant is used to treat piles. A paste made from the plant is used as a poultice on cuts, wounds and skin illnesses.

The leaves and younger stems are abortifacient, blood cleaner and diuretic. A decoction is used to deal with kidney issues, swellings, infection, decrease abdominal pains and menstrual pains; also to expel the placenta and as an abortifacient. It's far taken into consideration a stronger

abortifacient and higher remedy for menstrual pains when C. cinereum is Decocted with Justicia secunda. An infusion of the leaves, mixed with Stachytarpheta jamaicensis, is used for treating albuminuria; sprains. A poultice of the leaves is carried out to the brow in the treatment of headaches.

The foundation is used in treating dropsy and scorpion stings. The juice of the foundation is used inside the treatment of haemorrhoids, diarrhoea and stomach disorders. In a few areas the root is valued as an anthelmintic. A paste of the foundation is applied externally to boils.

c) Textile Industry usage

Bio - sorption of Methylene Blue Dye using herbal Bio - sorbents made from Weeds - The reason of this work is to utilize veggies that, despite the fact that extensively found in nature, there are few programs. The weeds used right here, Cyanthillium cinereum (L.) H. Rob (CCLHR) and Paspalum maritimum (PMT) determined inside the Amazon region of Belem kingdom of Para - Brazil, make contributions to the trouble of water contamination by using the elimination of the methylene blue dye via the bio - sorption procedure, taking gain of other substances for monetary viability and processing. The influences of parameters inclusive of, bio - sorbent dose, touch time, and initial concentration of dye were examined. [19]

5) Hemigraphis Colorata:**a) Common properties**

The plant has many formulations, but only a few of them are mentioned. The juice of the leaves is taken without delay to open wounds to prevent bleeding [20]. In people, it is used orally as a drug to treat anemia. Traditionally, the leaves are used to treat gallstones, heavy menstruation, and as a contraceptive [21, 22]. In Java, the leaves are used to treat bloody dysentery and hemorrhoids. It is widely used as a diuretic. The whole plant H. Colorata is used for diabetes mellitus [23].

b) Medicinal properties**Anti - oxidant activity:**

The antioxidant capacity of Hemigraphis colorata leaves in vitro was studied using a hobby that reduces electricity and scavenges DPPH radicals. Phenolic compounds are strong hydrogen donors and are precise antioxidants. The decrease in potency of aqueous and alcoholic extracts of Hemigraphis

colorata accelerated with increasing sample numbers. As the popularity of the extract increased, the percentage of radical scavenging activity was much higher [24].

Anti - Elastaseactivity:

Elastase is a series of serine proteases with the ability to cleave key connective tissue proteins. Elastin plays an important role in maintaining the flexibility of body parts and maintaining the elasticity of the skin and lungs. The aqueous and alcoholic extracts of Hemigraphis colorata showed strong inhibition close to porcine pancreatic elastase, and the inhibitory effect would increase significantly with increasing concentration of each extract. Elastase inhibitors are also used as anti - aging and anti - wrinkle agents [24].

Anti - inflammatory activity:

In vitro assay changed into completed through HRBC membrane stabilization technique. The results of

Hemigraphis colorata extracts can be because of the presence of flavonoids, tannins, phenols [24]

Wound healing activity:

The wound contraction and epithelialization have been quicker in *H. colorata* leaf paste implemented mice whilst in comparison to control. Wound contraction improved quicker whilst the leaf paste changed into implemented at the wound in comparison to untreated wounds. Inside the *H. colorata* dealt with wounds, the drug adhered at the wound and avoided the discharges from the wound inside some hours after the application. The efficacy of the leaf education was akin to that of povidoneiodine ointment.

Anti - bacterial activity:

In vitro antibacterial efficacy of the *Hemigraphis colorata* leaves and stem of crude aqueous, acetone, benzene, chloroform, ethanol and petroleum ether extracts had been quantitatively assessed on the idea of area of inhibition. Ethanolic extracts of *H. colorata* shows anti - bacterial outcomes against the okay. Pneumonia. Ethanolic extracts of leaves and stem extract of *H. colorata* display the inhibitory hobby against the bacteria *S. typhi* because of the presence of energetic parts present in the plant. *H. colorata* stem and ethanol extracts of *H. colorata* leaves displayed the inhibition sector in opposition to the microorganism *B. cereus*. Petroleum ether extracts of *H. colorata* provides moderate anti - bacterial hobby towards the pathogen *S. marcescens*.

Anti - diabetic activity:

The hypoglycemic and anti - diabetic homes of *H. colorata* turned into recognized for the primary time using Wistar rats and Swiss albino mice the usage of glucose tolerance check. The n - hexane ethanol extracts of the whole plant had been located to lower the blood glucose ranges in glucose fed rats. The presence of steroids & coumarins inside the plant extract is liable for the hypoglycemic and anti - diabetic results.

Miscellaneous activity:

Hemigraphis colorata became identified as one of the ornamentals which can do away with harmful risky organic compounds to preserve the first - rate of indoor air, due to the fact risky indoor pollution from paints, odorants, cleansing dealers and so on. Can purpose diverse ailments to human beings in the course of exposed to them. Chloramphenicol and Ciproflaxin are antibiotics had been used in antibacterial assays of methanolic extract of *Hemigraphis* to deal with UTI patients.

c) Textile Industry Usage:

- Natural dye extracted from *Hemigraphis colorata* (pink flame) is used as photosensitizer in dye sensitized solar cells in conjunction with TiO₂ Nano particles and its traits are studied. The dye is extracted with minimum chemical method and is used without in addition purification. UV - seen absorption spectroscopy and micro - Raman spectroscopic research indicate the presence of anthocyanin and beta - carotene in the extracted dye sample. Photovoltaic assets of *hemigraphis colorata* is studied and an electricity conversion efficiency of zero.0065% became received. The high

concentration of anthocyanin in the extracted dye pattern is accountable for the photovoltaic property of *hemigraphis colorata*. [25]

- Inexperienced synthesis of silver nanoparticles (Ag NPs) was executed the usage of flower extract of *Hemigraphis colorata* (*H. Colorata*). Synthesized nanoparticles were characterized by way of UV - visible Spectrophotometer (UV - Vis), Fourier remodel Infrared (feet - IR), Scanning Electron Microscope (SEM), and Transmission Electron Microscope (TEM - SAED)., The crystalline nature of the pattern become examined with the aid of an X - ray diffraction observe (XRD). The UV - visible spectrum showed floor plasma resonance (SPR) at 360 nm revealed the formation of nano particles, SEM and TEM exhibited spherical form particles with a median size between 10 - 20 nm. The valuation of the antibacterial and antifungal examine found out its efficiency in killing bacteria and fungi. [26]
- Biosynthesis of AgNp's from methanolic extracts of *H. Colorata* and its wound restoration activity turned into documented. The synthesis of AgNp's became executed by using treating AgNO₃ solution with aqueous extract of *H. colorata*. The manufacturing of AgNp's had been confirmed via a shade trade of the answer from clear to brown coloration. The reduced AgNp's had been characterized through Scanning Electron Microscope (SEM), UV-vis spectroscopy. From UV evaluation top changed into located at 415nm and round shaped AgNp's were observed. The antibacterial pastime and minimal inhibitory concentration (MIC) of the silver nanoparticles had been determined. The consequences suggest that biosynthesized AgNp's from aqueous extracts of *H. colorata* showed a considerable antibacterial interest towards wound pathogens. [27]

6) Rotala Rotundifolia



a) Common Properties

Rotala rotundifolia is utilized in its native range as a medicinal plant. The species is known for its anti - pyretic, detoxication, anti - swelling, and diuresis houses. Extensively utilized in remedy of cirrhosis, gonorrhea, menstrual cramps and piles in China. [28]

b) Medicinal Properties:

Rotala rotundifolia can be used correctly for bioremediation purposes. It has the capability to successfully remove nitrogen and phosphorus in eutrophic waters, assisting to easy the body of water wherein it is growing. Eutrophication is the result of excessive nutrient accumulation in water, and may result from runoff of agricultural land, sewage, and

commercial waste. Those nutrient accumulations can lead to speedy algal growth and, finally, removal of oxygen and the dying of fish and other aquatic organisms. Developing flowers like *Rotala* in eutrophic waters can help to offset these negative outcomes.

Inside its native variety of Southeast Asia, southern India and Japan, *Rotala rotundifolia* is typically used for medicinal purposes. The species is understood for its antipyretic residences, which help to reduce fevers. It is able to also assist alleviate swelling and aid in detoxification.



a) Common Properties

Rubia Cordifolia has been used in the treatment of liver fluke, maggots, dysentery, wounds, and intestinal worms in animals. *Rubia Cordifolia* is commonly used as a blood purifier. It has many other therapeutic properties like calcium channel blockading, anti - diabetic, anti - stress, and anti - platelet. It has anticancer activity and is used in the remedy of pores and skin problems. The anthraquinones located in *Rubia Cordifolia* have many biological activities, together with antimicrobial, hepatoprotective, antifungal, immune modulatory, hypotensive, analgesic, antimalarial, antioxidant antileukemic, and mutagenic. [29]

b) Medicinal Properties

- The cardio protective advantage of *Rubia Cordifolia* is probable to be because of the synergistic impact of all of the bioactive additives.
- The calcium channel blocking elements of *Rubia Cordifolia* root extract show spasmolytic interest much like that of verapamil. [29]
- The anti - bacterial, antioxidant, sports of *Rubia Cordifolia* are useful for the pores and skin.
- *Rubia Cordifolia* extract inhibits the acne - causing bacteria and is useful in handling external inflammations like ulcers and pores and skin conditions.
- Anthraquinones discovered within the extract display anti - acne activity in opposition to *Staphylococcus epidermises*, *Malassezia furfur*, *Propionibacterium* pimples while in comparison with widespread Clindamycin gel. [29]
- The foundation extract of *Rubia Cordifolia* shows hypoglycemic activity because of the presence of diverse bioactive additives.
- Management of the foundation extract confirmed great hypoglycemic pastime in an animal take a look at. [29]
- The cyclic hexapeptides and Quinone's of *Rubia* showed enormous anticancer pastime in opposition to various proliferating cells.

In China, it has many uses – human beings make use of *Rotala* to treat cirrhosis, gonorrhoea, menstrual cramps, and even piles. It's far broadly assumed that *Rotala rotundifolia* is pollinated with the aid of bugs, but there may be little facts regarding which pollinators this plant attracts. It does not appear to require expert pollinators, but this is uncertain as well. With small, vibrant pink vegetation, it can be reasonably assumed that bees, moths, and butterflies could be at least truly drawn to this plant.

7) Rubia Cordifolia

- The antitumor pastime of cyclic hexapeptide became similar to that of deoxy - bouvardin and much less than that of vincristine in opposition to leukemia cellular lines. [29]
- *Rubia Cordifolia* has shown effectiveness in wound healing in experimental models.
- The anti - proliferative activity of *Rubia Cordifolia* extract is beneficial for the control of psoriasis.
- The ethanolic root extract of *Rubia Cordifolia* has widespread anti - proliferative activity. [29]
- *Rubia Cordifolia* extract has shown hepatoprotective (preventing liver damage) activity in many animal trials.
- Rubiadin, a major component of *Rubia Cordifolia* root extract, also showed potent hepatoprotective action against liver damage in a rat model. [29]

c) Textile Industry usage

- *Rubia Cordifolia* is a flowering plant within the identical own family as coffee. The plant's roots include an organic compound known as Alizarin that offers its pink color to a cloth dye. Best for herbal dyeing of fabric, coloring soaps and tub products.
- *Rubia cordifolia* (Tamin, neighborhood name) produces anthraquinone reddish orange dyes in roots, stem and leaves, which has been used for dyeing textiles due to the fact that historic times. Commercial sonicator dyeing with *Rubia* showed that pretreatment with biomordant, *Eurya acuminata* DC var *euprista* Karth. (Theaceae own family) suggests excellent fastness houses for dyed cotton using dry powder as 10% of the burden of the fabric is most excellent. Use of bio mordant replaces metallic mordant making herbal dyeing eco - green. [30]
- Within the gift examine, anthraquinone colorants were extracted from powdered *Rubia cordifolia* roots and implemented on wool fiber. *Acacia catechu* is used as a bio mordant, a substitute to metal mordant, for wool dyeing, and the impact on color characteristics and fastness homes turned into assessed. The floor morphology of dyed wool fiber became investigated by

using scanning electron microscopy (SEM) for any modifications on fiber after dyeing. [31]

- The highlights of the observe are twofold: herbal dyeing by using enzyme changing metallic mordant and room temperature dyeing, that's a very new idea. Findings Experiments showed that enzymatic treatment can provide right coloration strength to silk fabric the use of Rubia as a dye source and has appropriate capability for industrial dyeing. [32]

2. Conclusion

There has been accelerated global interest in conventional remedy. Efforts to reveal and modify traditional herbal medicinal drug are underway. Ayurveda, the conventional Indian medicine, remains the maximum historic but dwelling traditions. Although India has been successful in selling its treatments with extra studies and technological know - how - based totally technique, it nevertheless wishes more good sized research and evidence base. This evaluate offers an overview of the Ayurveda device of medicine and its role in transitional medication to be able to use Ayurveda herbs in fabric finishing and other procedures to increase greater fabric products for environmental and skin pleasant textile materials. This also promotes in development of health friendly textile products.

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