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# To analyze the dyeing properties of Thespesia Populnea flower and Eichhornia Crassipes flower on polyester fabric

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***Abstract:*** *The Malvaceae family includes Thespesia populnea, otherwise known as Portia Tree, Eden Apple, Pacific Rosewood or Indian Tulip Tree. It was found on coasts all over the world. It is a small, arborescent tree or shrub. Thespesia populnea flowers methanol extract with high antibacterial activity of flavonoids , alkaloids, tannins, and anthroquion glycosides, phenolic antioxidants steroids. Methanol extracts of the floral buds have demonstrated antifungal activity. The ethanol extracts from the flowers displayed antihepatotoxic activity. The flowers emit a water-soluble, yellowish colour. Eichhornia Crassipes is a freely floating annual aquatic plant originating in tropical southern America, also known as water hyacinth. Introduced as an ornamental plant in India in 1896, it is considered the world's most alarming aquatic weed. Also the plant has delicate lilac flowers which can be used to create dye. An interaction that occurs between two or more entities of agents, factors or substances generating an effect greater than the amount of their dual effects on Indi. It is antagonistic to the contrary. It had a synergistic impact on the item and they all started playing harder and working even more effectively together. In this study the extraction of two flowers selected was mixed to obtain effective properties. By combining the extraction of water hyacinth flowers with the extraction of Portia flowers we can get another new colour and increased values of the properties presented.*

***Key Words:*** *Thespesia Populnea flower, Eichhornia Crassipes flower, Extraction dyes, Synergistic Effects, polyester fabric.*

## I. INTRODUCTION:

### 1.1. ThespesiaPopulnea Flower

**Figure 1: Thespesia Populnea Flower**

The Malvaceae family includes the Thespesia populnea, otherwise known as Portia Tree, Eden Apple, Pacific Rosewood, or Indian Tulip Tree. It was found on coasts all over the world. It is a small, arborescent tree or shrub. Thespesiapopulnea flowers methanol extract with high antibacterial activity of flavonoids , alkaloids, tannins, and anthroquion glycosides, phenolic antioxidants steroids. Methanol extracts of the floral buds have demonstrated antifungal activity. The ethanol extracts from the flowers displayed antihepatotoxic activity. The flowers emit a water-soluble, yellowish colour. It is a small tree or shrub that reaches a height of about 10 m at maturity and a trunk diameter of up to 60 cm. It is growing rapidly and its bole is short, and sometimes crooked. The leaves are small, bluish-green and narrowly heart-shaped. The flowers are yellow, bell-shaped, and occur by themselves. The Fruits are rounded capsules. The root is venomous. Plants that have been fully established are highly tolerant of drought, strong winds and saline conditions. Such characteristics make it apt for coastal erosion control. Young leaves , flowers, and buds of flowers may be eaten raw or cooked. The fruits are eaten and then stored. Unripe fruits are eaten as vegetables, raw or

fried. Methanol extracts from the flower buds have shown anti-fungal activity. Extracts of ethanol from the flower exhibited anti-hepatotoxic activity. The flowers produce a yellowish, water-soluble colour. The Bark is a source of tannin. It also yields a good thread for the cordage, fishing lines, coffee bags, and caulking ships. Seed oil may be used in lamps. Wood, berries, seeds and all the leaves that produce coloring. Gums are often produced as fruits , seeds, and bark. The leaves are utilized as food wrappers. Wood is highly valued for light construction, flooring moulds, musical instruments, utensils, vessel bodies, boat building, oil etc.

### 1.1.1. Medicinal Use of Thespesia Populnea Flower:

Portia tree is often used in traditional medicine, where bark, root, leaves, flowers and fruits are handled for a range of ailments. A variety of conditions such as pleurisy, cholera, colic, fevers, herpes, urinary tract problems, abdominal swelling, hair lice, swollen testicles, rheumatism, coughs, asthma, inflammation are all used in traditional medicine. The leaves of the tree have been made into a paste and applied as a bandage to the inflammation. The oil that the leaves and castor oil produce is applied to the areas of pain and inflammation. The milky secretion of the fruits is associated with skin diseases. The bark paste is applied externally to leucoderma and other skin infections. Decoction prepared by the bark is internally administered for toxic conditions, ascites and inflammations. The roots 'decoction' is a good body tonic.

### 1.2. Eichhornia Crassipes Flower

**Figure 2:** Eichhornia Crassipes Flower

Eichhornia crassipes is a free floating perennial aquatic plant native to tropical South America and is also known as water hyacinth. It is considered the world's most troublesome aquatic weed, introduced as an ornamental plant in India in 1896. It has complex root structure and rapid growth rate resulting in dense weed mats interlocking on water surface. The weed grows best in warm water rich in macronutrients, and most of our bodies of water are in this state. In this way it affects water transport, fish production, hydroelectric projects, irrigation, water potability, etc. Water hyacinths have three flower morphs and are called "tristylous." The flower morphs are named for the length of their pistil: long, medium and short. Tristylous species, however, are restricted to South America 's native lowland water hyacinth range; the M-morph prevails at the introduced range, the L-morph occurs occasionally and the S-morph is completely absent. This regional distribution of floral morphs suggests that the founding events played a prominent role in the species' worldwide spread. Extensive research is now being carried out to exploit these weeds. Phytoremedy is used for extracting heavy metals from water. The farm was used as animal feed, fertiliser, handicrafts manufacturing, paper boards, mushroom substrates and solid state. Both sections of the herb are applicated. Also the plant has delicate lilac flowers which can be used to create dye.

### 1.2.1.Medicinal Use of Eichhornia Crassipes Flower:

This plant has lovely lilac flowers which can be used for dye extraction. Isolated anthocyanin from the flora. The light purple flower of the water hyacinth contains only one glycoside of a delphinidine. Depending on their pH, anthocyacin (water soluble vacuolar pigmets) can appear red, violet, blue or black. The antioxidant activity contained in anthocyanin, the anti-inflammatory , anti-viralandanti-cancer impact. In herbal medicine a variety of disorders (including high blood pressure, colds, and urinary tract injections) have been treated with substances rich in anthocyanin for a long time. Recent research indicates that anthocyanins can also help recognise significant health conditions, including cancer and disease. Though Hyacinth isn't known for its hair care benefits, it provides the shampoos and conditioners with the incredible scent of a fresh flower.

### 1.3. Synergistic Effects:

An interaction occurring between two or more entities of agents, causes, or substances generating an effect greater than the amount of their dual effects on Indi. It is antagonistic to the contrary. It had a synergistic impact on the

item and they all started playing harder and working even more effectively together. Synergistic effects are nonlinear combined effects of two active ingredients with identical or linked outcomes from their various activities, or active ingredients with concurrent or supplementary activities. For example, vitamin E is an antioxidant, and vitamin C may help recycle oxidised vitamin E into active vitamin E, thus allowing for a synergistic effect between the two. The history of drug combinations can be traced back to HuangdiNeijing in 1900 years. Drug formulations have currently been commonly used for treating disease in biomedical research and clinical practise. Traditional Chinese Medicines (TCM) and well-established AIDS, cancer, and infectious disease therapies are vivid examples of this. TCM blends various compounds to improve therapeutic efficacy, thus reducing toxicity and side effects. A combination of at least three active antiretroviral medicines known as the AIDS cocktail not only slows AIDS development, helps repair and preserve the immune system, and prevents risks, but also helps to avoid drug resistanceCurrent cancer care also depends heavily on combinations of such drugs as anthrax cyclines, platinum compounds, and taxanes. These remarkable performance results thoroughly demonstrate the advantages of drug combinations.

With that mortality rates of immune-compromised patients affected by invasive fungal infections and evolving drug resistance, new therapeutic strategies and successful antifungal drugs are urgently needed with new mechanisms of action. Thus, in-depth analyses of known effective and ineffective combinations of drugs would provide a better understanding of the trends of synergistic combinations of drugs and, at the same time, promote the creation of new combinations. Synergistic combinations of drugs are a promising technique and aim to boost selectivity which is therapeutically important.

### 1.4. Polyester Fabric:

**Figure 3:Polyester Fabric**

Polyester is a synthetic fibre, formed by the chemical action of alcoholic acid from wood, oil, water and air. A mixture of molecules makes a large product in this reaction, with a structural repeat that maintains its shape throughout its length, hard to stain. Blankets, sheets, bed spreads, curtains, mattress ticking and table linen, polyester and polyester mixtures are often used for home furniture to increase absorption and minimise the energy from static polyester. Even used in pillows, comforters, bedspreads, quilted clothing, other friends, jackets in winter, etc.

## 2. METHODOLOGY:

### 2.1. Extraction of dyes from *Thespesia Populnea* and *Eichhornia Crassipes:*

The flowers Thespesia Populnea and Eichhornia Crassipes were collected and washed with distilled water. They were shadow dried for 3 weeks and grinded into fine powders. The fine powders were collected and stored in sterile containers. The bioactive compounds were extracts using soxhlet apparatus. About 100ml of solvent water was used for 20gm of powder. Soxhlet extraction was carried out for 30mins. The extracts were collected and stored.

**Figure 4: Thespesia Populnea** **Figure 5: Eichhornia Crassipes flowers**

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**Figure 6: Flower Powder** **Figure 7:Soxhlet Extraction** **Figure 8:Extracted Dye**

**2.2. Materials Required:**

| | | |
|---|---|---|
| Fabric | – | Polyester |
| Extracted solution | – | 100ml |
| M:L:R | – | 1:5 |
| Drying Temp. | – | 60ºC -70$^0$C |
| Time | – | 30 minutes |
| Curing Temp. | – | 60ºC -70$^0$C |

3. **RESULT:**

**3.1. Finishing of Extracts on Polyester Fabrics:**

The samples from the fabric were used as a cross-linking agent with the extracts collected using citric acid separately. The extracts are added by dip and dry method to the polyester fabric. The finished materials were taken and dried for 5 min at 100ºC-120ºC, and healed for 3 min at 180ºC. In this analysis, the selected two flowers Thespesia Populnea and Eichhornia Crassipes extraction were mixed in order to obtain effective properties(Synergistic Effect) By mixing the flowers Thespesia Populnea and Eichhornia Crassipes extraction, we can obtain another new color and increased values of the properties presented.


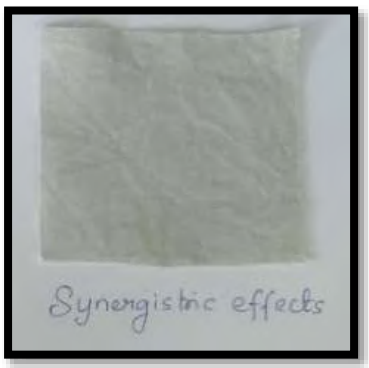


**Figure 9: Dye Bath** **Figure 10:Dyed Fabric**

**4. CONCLUSION:**

The color extracted from above two flowers on the fabrics gives very good color. The main advantages are that very few extracted dyes give more color. This finished color fabric exhibits special properties such as antibacterial , antifungal and also antioxidant. Properties of dyeing have been analyzed. The color fastness test shows that further studies can be done well to average by changing the mordents to give different shades and colors. In this synergistic effect the main advantage is that the properties were more effective than usual.

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