iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** IX **Month of publication:** September 2020

DOI: https://doi.org/10.22214/ijraset.2020.31326

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IX Sep 2020- Available at www.ijraset.com

Ethonal Extraction of Thespesia Populnea Flower and Eichhornia Crassipes Flower on Polyester Fabric

R. Priyanka[1], Dr. M. Jayakumari[2]
[1]*Research Scholar,* [2]*Assistant Professor, Department of Textiles and Apparel Design, Bharathiar University, Coimbatore, Tamil Nadu, India.*

Abstract: ***The Malvaceae family includes Thespesia populnea, otherwise known as the Portia Tree, Eden Apple, Pacific Rosewood, or Indian Tulip Tree. It was located at the coasts all over the world. It is a small, arborescent tree or shrub. Methanol extract from Thespesia populnea flowers with high antibacterial activity of flavonoids , alkaloids, tannins, and anthroquion glycosides, phenolic antioxidant steroids. Methanol extracts from the flower buds have demonstrated antimicrobial activity. The ethanol extracts from the flowers were exhibiting antihepatotoxic activity. The flowers emit a water-soluble, yellowish pigment. Eichhornia Crassipes is a freely floating, annual aquatic plant native to southern tropical America, also known as water hyacinth. It is considered the worlds most alarming of aquatic weeds, introduced in India in 1896 as an ornamental herb. The plant also has delicate lilac flowers that can be used to create dye. An effect that occurs between two or more agent entities, variables or substances that generate an effect greater than the amount of their dual effects of 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.***

Keywords: Thespesia Populnea flower, Eichhornia Crassipes flower, Synergistic Effects, Ethanol extracted dyes, polyester fabric.

I. INTRODUCTION

A. *Thespesia Populnea Flower*



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 located along the coasts all over the world. It's 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 from the floral buds have demonstrated antifungal activity. The ethanol extracts from the flowers were exhibiting antihepatotoxic activity. The flowers emit a water-soluble, yellowish pigmentIt is a tiny tree or shrub which reaches a height of about 10 m and a trunk diameter of up to 60 cm at maturity. 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.

©IJRASET: All Rights are Reserved

The source is dangerous. The fully developed plants are highly tolerant of drought, strong winds, and saline conditions. Such characteristics make it fit for coastal erosion management. Young leaves , flowers and buds of flowers may be eaten crude or roasted. The fruits are eaten up and processed. Unripe fruits are consumed as fresh, raw, or fried. Methanol extracts from the flower buds have demonstrated anti-fungal activity. Ethanol extracts from the flowers have demonstrated anti-hepatotoxic activity. The flowers emit yellowish colour which is water-soluble. The bark has become a source of tannin. It also yields a strong thread for cordage, fishing lines, coffee bags and caulking boat. A seed oil may be used in lamps. Wood, fruit, seeds, and all leaves that produce colouring. Gums are also produced of fruits , seeds, and bark. The leaves are to be used as food wrappers. Wood is highly valued for light construction, flooring moulds, musical instruments, utensils, vessel frames, boat building, oil, etc.

1) *Medicinal Use of Thespesia Populnea Flower:* Portia tree is commonly used in herbal medicine, where bark, root, leaves, bulbs, and fruits manage a variety of ailments. A variety of diseases such as pleurisy, cholera, colic, fevers, tuberculosis, urinary tract disorders, abdominal swelling, hair lice, swollen testicles, rheumatism, cough , asthma, inflammation are all used in conventional medicine. The leaves of the tree were converted into a paste and applied as a bandage to the inflammation. The oil that leaves and castor oil produce is added to the areas of pain and inflammation. The milky secretion of the fruit is associated with the skin diseases. The Bark Paste is applied externally to leucoderma and other skin infections. The bark prepared decoction is treated internally for harmful conditions, ascites, and inflammations. Decoction of the roots is a good tonic for the body.

B. Eichhornia Crassipes Flower



Eichhornia Crassipes Flower

Eichhornia crassipes is a free floating, annual aquatic plant native to tropical South America, also known as water hyacinths. It is known to be the world's most alarming aquatic weed, introduced as an ornamental plant in India in 1896. It has a complex root structure and a rapid rate of growth that results in thick interlocking weed mats on the water surface. The weed grows best in macronutrient-rich warm water, and most of our water bodies are in this state. Therefore it affects water transport, fish production, hydroelectric projects, irrigation , water potability, etc.

Water hyacinths are called "tristylous," and they have three morphs of bloom. 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 rarely, and the S-morph is entirely absent. This regional distribution of floral morphs suggests that founding activities played a prominent role in the species' worldwide spread. Extensive research is now underway to exploit these weeds. Phytoremediation is used in water extracting heavy metals. The farm was used as feed for animals, fertilizer, handicraft manufacturing, paperboards, mushroom substrates, and solid condition. Every part of the weed has applications. The plant also has delicate lilac flowers which can be used to make colour.

1) *Medicinal Use of Eichhornia Crassipes Flower:* This plant has gorgeous lilac flowers that can be used to extract dye. Isolated from the flower by anthocyanin. The pale purple flower of the water hyacinth contains only one delphinidine glycoside. Depending on their PH, anthocyacin (water soluble vacuolar pigms) may appear red, violet, blue or black. The antioxidant activity found in anthocyanin, the anti-inflammatory , anti-viral and anti-cancer effects. A number of conditions (including high blood pressure, colds, and urinary tract injections) in herbal medicine have long been treated with substances rich in anthocyanin. Recent research suggests that anthocyanins can help identify major health problems, including disease and cancer, too. Although Hyacinth is not known for its benefits in hair care, it provides the shampoos and conditioners with that incredible fragrance of a fresh flower.

©IJRASET: All Rights are Reserved

C. Synergistic Effects

An interaction that occurs between two or more entities of agents, factors or substances that create an effect greater than the amount of their dual effects in Indi. It's antagonism to the contrary. It had a synergistic impact on the item and they all started to play harder and work even more effectively together. Synergistic effects are non-linear combined effects of two active ingredients with identical or linked results from their respective 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, allowing for a synergistic effect between the two.

HuangdiNeijing can trace the history of drug combinations back to 1900 years. Drug formulations have been commonly used today for treating disease in biomedical research and clinical practice. Traditional Chinese Medicines (TCM) and well-established AIDS, cancer and infectious disease therapies are vivid examples of this. TCM blends multiple compounds to improve therapeutic efficacy while reducing both 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 prevent drug resistance. Current 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 increased mortality rates of immune compromised patients affected by invasive fungal infections and evolving drug resistance, new therapeutic strategies and successful antifungal drugs with new mechanisms of action are urgently needed. Thus, in-depth analyses of known active and ineffective drug combinations will contribute to a greater understanding of the dynamics of synergistic drug combinations and promote the creation of new drug combinations at the same time. Synergistic combinations of drugs are a promising technique and aim to boost selectivity appropriate for therapy.

D. Polyester Fabric



Polyester Fabric

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

II. METHODOLOGY

A. Extraction of dyes from Thespesia Populnea and Eichhornia Crassipes

Gathered and washed with distilled water the flowers Thespesia Populnea and Eichhornia Crassipes. For 3 weeks they had been dried in shadow and grinded into fine powders. They gathered the fine powders and placed them in sterile containers. The bioactive compounds used to be extracted using soxhlet instruments. For 20gm of powder approximately 100ml solvent Ethanol was used. Extraction of Soxhlet took 30mins. They extracted the extracts and preserved them.



Dried Thespesia Populnea and Eichhornia Crassipes flowers

©IJRASET: All Rights are Reserved



Flower Powder Soxhlet Extraction Ethanol Extracted Dye

B. Materials Required

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

III. RESULT

A. Finishing of Methanol Extracts on Polyester Fabrics

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



Thespesia Populnea and Eichhornia Crassipes Ethanol Extracted Dyed Fabric

IV. CONCLUSION

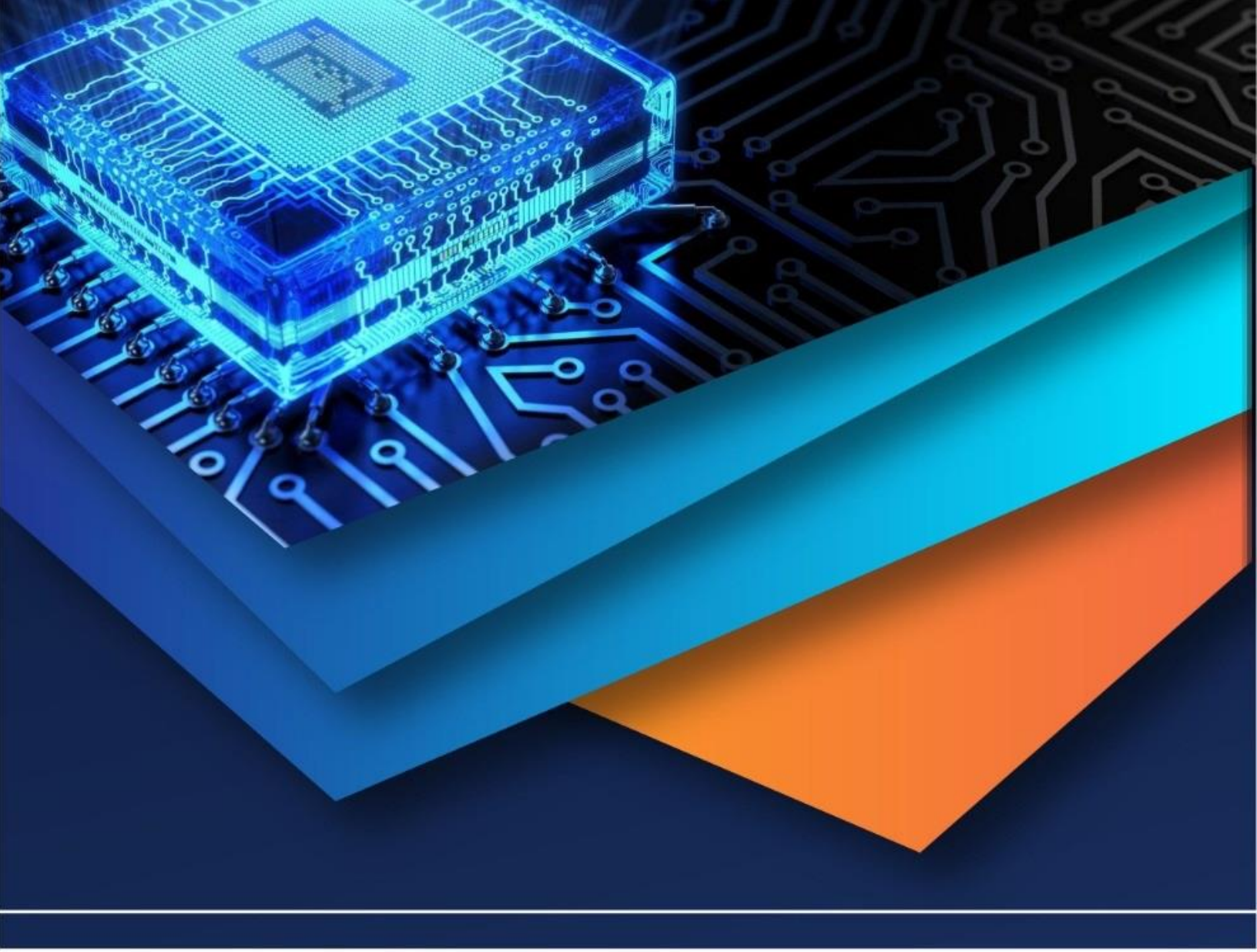
The colour on the fabrics derived from the two flowers above provides very strong colour. The key benefits are that very few extracted colours offer more colour. This finished colour fabric has unique properties such as antibacterial , antifungal and antioxidant products. Dyeing products have been analysed. The colour rapidity test shows that by changing the mordents to give various shades and colours, more tests can be performed well to average. The key benefit of that synergistic effect is that the properties were more powerful than normal.

©IJRASET: All Rights are Reserved

REFERENCES

[1] RTO Quattrocchi (19 April 2016). CRC World Dictionary of Medicinal and Poisonous Plants. CRC Press. p. 1524. ISBN 978-1-4822-5064-0. Named after Johann Albrecht Friedrich Eichhorn, [...] a Prussian minister of education and public welfare, court advisor
[2] "A Troublesome "Water Weed"". Popular Science Monthly: 429. January 1898. Retrieved 13 May 2013.
[3] Jump up to:[a b] J. Todd, B. Josephson, The design of living technologies for waste treatment / Ecological Engineering 6 (1996) 109-136
[4] Water Hyacinth For Nutrient Removal, Orange County Water Conservation Department Orlando, Florida, http://www.apms.org/japm/vol06/v6p27.pdf |accessdate=31 July 2013
[5] Upadhyay, Alka R.; B. D. Tripathi (2007). "Principle and Process of Biofiltration of Cd, Cr, Co, Ni &Pb from Tropical Opencast Coalmine Effluent". Water, Air, & Soil Pollution. Springer. 180 (1–4): 213–223. doi:10.1007/s11270-006-9264-1. Retrieved 11 November2007.
[6] "Thespesiapopulnea". Germplasm Resources Information Network (GRIN). Agricultural Research Service (ARS), United States Department of Agriculture (USDA). Retrieved 2009-11-17.
[7] Chinta SK and Rajesh Kumar singh. Processing Problems of Polyester And Its Remedies. International Journal of Engineering Research & Technology 2012; 1 (7):1-19.
[8] Yule, Henry, Sir. (1903). "PORTIA". In Crooke, William (ed.). The Hobson-Jobson Anglo-Indian dictionary. London. p. 727. ISBN 978-1870836111. In S. India the common name of the Thespesiapopulnea, Lam. (N.O. Malvaceae), a favourite ornamental tree, thriving best near the sea. The word is a corruption of Tamil Puarassu, 'Flower-king; [puvarasu, from pu, 'flower,' arasu, 'peepul tree'].
[9] "Thespesiapopulnea". Natural Resources Conservation ServicePLANTS Database. USDA. Retrieved 9 December 2015.
[10] Oudhia, P., 2007. Thespesiapopulnea (L.) Sol. ex Corrêa. [Internet] Record from PROTA4U. Louppe, D., Oteng-Amoako, A.A. & Brink, M. (Editors). PROTA (Plant Resources of Tropical Africa / Ressourcesvégétales de l'Afriquetropicale), Wageningen, Netherlands
[11] Chou TC (2006) Theoretical basis, experimental design, and computerized simulation of synergism and antagonism in drug combination studies. Pharmacol Rev 58: 621–681.
[12] Chou TC (2008) Preclinical versus clinical drug combination studies. Leuk Lymphoma 49: 2059–2080.
[13] Hama A, Sagen J (2012) Combination Drug Therapy for Pain following Chronic Spinal Cord Injury. Pain Research and Treatment 2012.
[14] Chan E, Tan M, Xin JN, Sudarsanam S, Johnson DE (2010) Interactions between traditional Chinese medicines and Western therapeutics. Current Opinion in Drug Discovery Development 13: 50–65.
[15] Zhu YP, Woerdenbag HJ (1995) Traditional Chinese Herbal Medicine. Pharmacy World Science 17: 103–112.
[16] Lee MS, Johansen L, Zhang YZ, Wilson A, Keegan M, et al. (2007) The novel combination of chlorpromazine and pentamidine exerts synergistic antiproliferative effects through dual mitotic action. Cancer Res 67: 11359–11367.
[17] Kelly RJ, Draper D, Chen CC, Robey RW, Figg WD, et al. (2011) A pharmacodynamic study of docetaxel in combination with the P-glycoprotein antagonist tariquidar (XR9576) in patients with lung, ovarian, and cervical cancer. Clin Cancer Res 17: 569–580.
[18] Molina JR, Adjei AA, Jett JR (2006) Advances in chemotherapy of non-small cell lung cancer. Chest 130: 1211–1219.
[19] vonMinckwitz G (2007) Docetaxel/anthracycline combinations for breast cancer treatment. Expert OpinPharmacother 8: 485–495.
[20] Liu Y, Hu B, Fu C, Chen X (2010) DCDB: drug combination database. Bioinformatics 26: 587–588.
[21] Biavatti MW (2009) Synergy: an old wisdom, a new paradigm for pharmacotherapy. Brazilian Journal of Pharmaceutical Sciences 45: 371–378.

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)