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## Therapeutic efficacy of dye yielding medicinal plants: inspired approaches from traditional knowledge of India

India is not only regarded as one of the “mega biodiversity” countries but also the source for traditional knowledge system. India is home to 4 of the world’s 34 biodiversity hotspots. The wealth of resources offers both, exciting opportunities of judiciously using them as well as challenges in conserving them. Genetic resources, especially, plant genetic resources have offered an unbridled wealth of products to mankind. In fact, it is hardly surprising to note that, we depend upon a myriad diversity of products from natural resources including dyes, cosmetics, nutraceutical, medicines and a score of industrial products based on natural resources. Since time immemorial plants are used for curing various diseases for man and animals. Even today, in rural region of India, where modern medicine is inaccessible, medicine based on folk plant is often used for treating human and livestock. For therapeutic approach, Indigenous traditional knowledge on medicinal plants serves as a selection prototype. This knowledge has been developed through trial and error and deliberate experimentation. The search for new chemicals should thus be a priority in current and future efforts toward sustainable conservation and rational utilization of biodiversity.

Natural dyes, dyestuff and dyeing are as old as textiles themselves. Many natural dyestuff and stains are obtained mainly from plants. 2000 species of plants owe to secrete pigments. In the modern era, only about 150 plants are utilized to compete with synthetic dyes. Traditional knowledge on dye yielding plants can disclose an elegant strategy for novel drug discovery. Pigments has been utilized in medicinal therapeutics like curcumin, brazilein, bixin, morindone, crocin has potent anti-oxidant, anti-microbial and anti-cancer activity. Melanoma is one of the aggressive skin cancer with high mortality rate which is caused due to hereditary and modern life style. Hyperpigmentation disorders are initial onset of melanoma, if it’s not properly controlled it prevails into malignant melanoma. Hyperpigmentation is a state where there is uncontrolled melanin synthesis caused by over expression of tyrosinase activity. Hence tyrosinase inhibitors are of much importance in regulating melanin synthesis. Commercial synthetic tyrosinase drugs to treat melanoma are prevalent however they cause adverse side effects like mutation, DNA damage and lethal effects. Hence natural chemopreventive agents are investigated to study the molecular mechanism in cell regulation. Dye yielding medicinal plants has been traditionally used and believed to improve complexion and skin disorders in India. However scientific validation has not been carried out so far for many of the metabolites. Here we discuss on unexplored bioactive molecules from dye yielding plants on anti-tyrosinase and anti-melanoma activity on B16F0 melanoma cell lines.

## Biography

Ramamoorthy Siva is currently working as a Professor, at School of Bio Sciences and Technology, VIT University, India. Dr. Siva is an IUCN species commission member for medicinal Plants. He has received his undergraduate and postgraduate degree in Plant Science from Madurai Kamaraj University, India. He has carried out his Ph.D. in “*Plant Genetic diversity*” from Bharathidasan University, India. He did his postdoctoral research at Ben Gurion University (Israel) and Gyeongsang National University (South Korea). His fields of interests are bioprospecting and biodiversity of natural dyes. More than 15 years, he has carried out extensive research on plant dyes and pigments. He is the recipient of prestigious MASHAV fellowship from Ministry of Foreign Affairs, Israel at the Institute of Applied Research, Ben Gurion University of the Negev, Israel (2004). Dr. Siva is the recipient of ‘Young scientist’ project under Fast track scheme, supported by Department of Science and Technology, India. He is involving popularising science in India by conducting lecture workshop on various biological aspects with the support of Science Academies, India since, 2009. Dr. Siva is successful to obtain various research grants in India and has published many papers in reputed journals with high impact like Nature Scientific Report, PloS One, Macromolecule, Gene etc. Dr. Siva nominated as Fellow of Linnean Society (FLS), London in 2013 and Elected as a Fellow of Royal Society of Biology (UK) in 2015. He is the Associate Editor of the Journal “Natural Products and Bioprospecting” published by Springer.

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