



Biotech Consortium India Limited

TECHNOLOGY AVAILABLE FOR TRANSFER

Food grade dye from *Butea Monosperma* (Lam.) Kuntze (Palash)

UMET NEED AND OPPORTUNITY

Humans are heavily influenced by color, as color additives are added to enhance appearance, uniformity, improved stability and nutraceutical improvement. Several side effects, e.g., hyper-activity in children, allergenicity, toxicological, and carcinogenicity associated with such materials have led to ban of artificial dyes by various government agencies thereby shifting the manufacturing towards the natural dyes production. There have been several reports that toxicity caused by these dyes cause dermatitis, allergic conjunctivitis, rhinitis, occupational asthma or other allergic reactions. The use of Natural dye has gained popularity due to increased awareness among consumers about the ill effects of artificial dyes and benefits of using natural products for leading a healthy lifestyle. Natural dyes can be from fruits, leaves, petals, seeds, barks, algae and have been actively replacing artificial dyes. The present technology is about production of cost effective and high-yields of natural dye/colourant from flower petals of *Butea Monosperma* (Lam.) Kuntze.

TECHNOLOGY

This technology consists of extraction of dye from petals of *Butea Monosperma* (Lam.) Kuntze flowers without use of any chemical solvents followed by complete characterization of its constituents. The flowers of this plant are well known for its yellow and orange natural dye. In terms of application, the crude flower petals after processing through solvent free approach have tremendous scope to be utilized as natural colorant in diverse range of industries including textile, pharmaceutical, medicinal and food production and processing sector.

UNIQUE SELLING PROPOSITIONS OF DYE

- Made from petals known for its color and does **not** use any **solvents**.
- **Low cost** due to simple method for product recovery.
- Completely **soluble** in water producing rich saffron color, pH ~6.5-7
- Powder form, easy to store, **stable** at room temperature up-to ~. 200 °C, and at variable pH ~4-8.
- Can be used for **diverse applications** including food production and processing, textile & pharmaceutical industries.
- Available as powder, hence, **easy to package and transport**.
- Non- allergic, Non-toxic, Non-Hazardous, **Biodegradable**.



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STAGE OF DEVELOPMENT

- Ready at lab scale.
- In-house Lab validation completed

In-House Validation Data

Detailed Validation data using Ultra Performance Liquid Chromatography (UPLC) for dye constituents and Inductively Coupled Plasma Mass Spectrometry (ICP-MS) for Trace Metal Analysis.

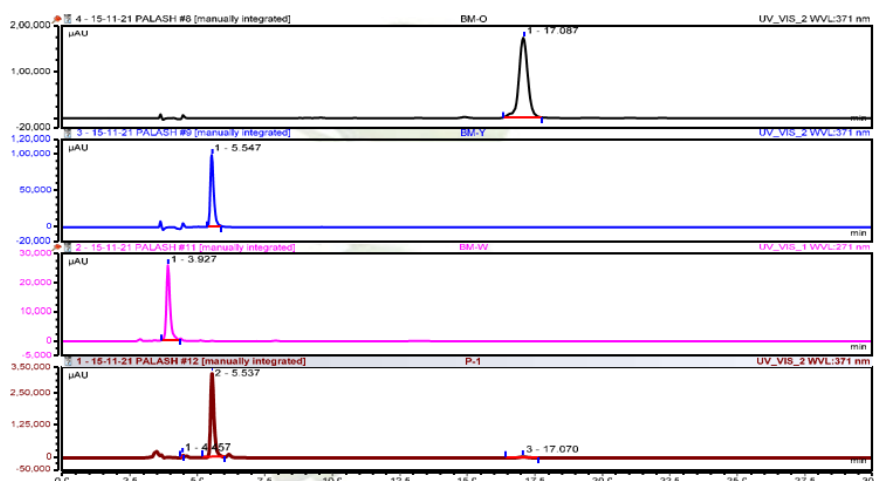


Figure: UPLC analysis for detection and quantification of constituents (BM-O isocoreopsin; BM-Y isobutrin; BM-W: butrin and P-1: extracted dye) in dye powder recovered by lyophilization of *B. monosperma* extract indicates dye of high purity.

Table: Trace Metal Analysis of Dye

SAMPLE NAME	CONCENTRATION OF TRACE METALS									
	Pb (ppb)	RSD (%)	As (ppb)	RSD (%)	Cd (ppb)	RSD (%)	Hg (ppb)	RSD (%)	Na (ppb)	RSD (%)
P1-A	2.5	0.002	0	N/A	<0.000	N/A	3.509	2.5	<0.000	N/A
P1-B	0.3	<0.000	0	N/A	<0.000	N/A	2.807	0.3	<0.000	N/A
P1-C	2.4	<0.000	0	N/A	<0.000	N/A	2.334	2.4	<0.000	N/A
P2-A	3.1	<0.000	0	N/A	<0.000	N/A	1.989	3.1	<0.000	N/A
P2-B	3.7	0.004	0	N/A	<0.000	N/A	1.687	3.7	<0.000	N/A
P2-C	4.5	0.017	0	N/A	<0.000	N/A	1.472	4.5	<0.000	N/A

Table indicating that the dye extracted using the proposed method is free from trace metal contamination



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INTELLECTUAL PROPERTY

Patent Application filed in India

LICENSING OPPORTUNITY

BCIL is looking for a suitable industrial partners for commercialization of Technology for production of Food Grade Dye from *Butea Monosperma* (Lam.) Kuntze.

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