

Application of Vetiver grass extraction for manufacturing **ECO TEXTILE**



Syed Samsun Nabi
Founder - Sphere Edge Enterprise
Coordinator India Vetiver Network



Introduction

- One of tropical grass in India also it can grow in wide range of area with any soil condition
- Primarily used for preventing soil erosion by forming a natural embankment and to store water or moisture
- It is used to extract volatile oil for making perfume, soap and toiletries
- Every year huge quantities of the plants are not used as industrial raw materials and are burnt in fields or on the side of road
- Vetiver is renowned for medicinal cum aromatic properties since ancient times. In Ayurveda, several literatures reveal the uses of vetiver and its root.

So why not we use it on textile substrate ???

Botanical Identity

- Vetiver grass (*Chrysopogon zizanioides*)
- It extends up to 2.0 m high under cultivation
- It is a perennial grass, bunchgrass of the *Poaceae* family, native to India.
- In western and northern India, it is commonly recognized as **khus**.
- The stems are tall and the leaves are long, thin, and rather rigid.
- The flowers are **brownish-purple**.
- Vetiver form horizontally spreading, mat-like root systems.
- The root system of vetiver is finely structured and very strong.



Vetiver oil

- The essential oil is extracted by steam distillation from the sliced, dried and soaked roots and rootlets.
- One of the earthiest essential oils - use as a wonderful anti-stress oil and a strengthener when the body is debilitated.
- Possible Uses - **Acne, arthritis, cuts, depression, exhaustion, insomnia, muscular aches, oily skin, rheumatism, sores, stress.**



Extraction

Vetiver contains many chemical compounds such as khusinol, epiglobulol, spathulenol, khusimol, khusol, vetivones, khusimone etc that are responsible for its behaviour.



Extracted vetiver powder

Antimicrobial activity	82% and 70% against E. coli (gram negative) and S. aureas (gram positive)
Antioxidant activity	78% antioxidant activity through DPPH assay
UV protectivity	During analysis of uv spectrometry of vetiver extract we observed sharp pick in UVC and UVB range so it will be a prominent effect for further application

Vetiver has a prominence which can be act as a finishing agents to produce **sustainable eco-friendly textile products** on an industrial scale.

Plan of work

- Analysis and collection of vetiver materials and textile substrate
- Extraction of secondary metabolites from vetiver extract
- Analysis of the secondary metabolites and separate techniques (purification)
- Wash fastness, light fastness improvement analysis
- Comparison of the results with the synthetic chemical applied fabric
- Scale-up industrial trials and final sustainable product preparation

Textile Application with multi functional properties

- Antimicrobial properties
- Antioxidant properties
- UV protecting properties (UV-A &UV-B)
- Flame retardancy properties
- Cooling effect

