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ENVIRONMENTAL SUSTAINABILITY THROUGH AN ECO-FRIENDLY DYEING SYSTEM.

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The various processes used in the textile processing industry contribute its major portion to the environmental pollution. The discharge of highly coloured waste is not only aesthetically displeasing, but it also interferes with the transmission of light and upsets the biological processes which may then cause the direct destruction of aquatic life present in the receiving stream. A small amount of dye in water (10-50mg/L) is highly visible and reduces light penetration in water systems, thus causing a negative effect on photosynthesis. Escalating costs of effluent treatments due to increasingly stringent governmental regulations pose a major economic problem for the textile industry. The most effective means to curb these costs is waste minimization at the source by optimizing application processes. This itself is achieved by using some carefully chosen heterocyclic disperse dyes which were synthesized in our laboratory. Some novel 2-aminothiophenes were prepared from cyanoacetates and a range of 1,3-dicarbonyl compounds such as, o-acetoacetotoluidide, 4-chloroacetoacetanilide, and o-acetoacetanilide using the Karl-Gewald one-pot technique. The 2-aminothiophenes are the major precursors for a number of dyestuff syntheses. The strategically located cyano, methylester, ethylester groups in the 3-position of the thiophene moiety was intended to confer a range of desirable properties on disperse dyes produced from the amines. Subsequently the application protocol enables alkali after-treatment of the disperse dyed polyester materials rather than reduction clearing. The numerous advantages of this novel method in savings from water usage, chemicals and materials and consequent benefits on environmental sustainability are highlighted in this paper.

Biography

Dr. Adedokun has his PhD at the Ahmadu Bello University, Zaria, Nigeria. He was also a research scholar at the Wilson College of Textiles, at the North Carolina State University, Raleigh, North Carolina, USA. He is currently a lecturer/researcher at the Federal Polytechnic, Kaura-Namoda, Nigeria. He has published a number of journals and attended relevant conferences worldwide. His current research work is on 'A new and sustainable approach at combating environmental pollution from textile/leather effluents in Nigeria's growing Industries'.

Project for the production of yeast and yeast extracts from whey.

Giuseppe Marchionni

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The whey is pasteurized at a temperature of 80 ° C for 5 minutes. The pasteurized product is placed in an aerobic fermenter in which *Kluyveromyces marxianus*, a lactic yeast, grows using lactose. Fermentation takes place at a temperature of 30 ° C and pH 5.0. The consumption rate of the lactose substrate is as follows:

6.0 kg of lactose per hour/cubic meter of fermenter.

The conversion yields are:

kg of dry yeast per kg of lactose used kg 0.50 (yield 50%)

Since whey has 5.0% lactose (intended as an average value), there is the following production potential:

Volume of fermented whey per cubic meter of fermenter per hour:mc 0.12

The fermented broth is centrifuged then the 30% dry yeast cream is separated. The cream is dried using a spray dryer to obtain the yeast flour. As an alternative to the production of yeast flour, the cream can be subjected to "enzymatic autolysis": in this process, the yeast proteins hydrolyze to form amino acids.

The hydrolyzate product is centrifuged to separate:

- amino acid solution;
- solid yeast cell walls.

Some critical phases of the process have been identified and overcome with adequate technology, particularly:

- The stability of YEAST EXTRACT "over time.
- The transfer of oxygen during fermentation: yeast has a high oxygen demand for which a bioreactor is required which induces a high oxygen / liquid broth transport coefficient (K_{la}).

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- The stability of the fermentation medium in terms of yield, contamination and growth rate.

Conclusions

The described technology allows:

1. To use a poor material to produce high value added yeast and yeast extracts.
2. The production of yeast extracts currently in the world takes place from *saccharomyces*; in this process yeast extract is produced from lactic yeasts with equivalent nutritional and flavor characteristics.
3. The demand for yeast extract in the world is growing sharply as it is also used as a substitute for glutamate, which has been declared carcinogenic.

Biography

Giuseppe Marchionni is a Master's Degree in Industrial Chemistry with over 30 years of experience in the biotechnology industry, in the management of civil and industrial wastewater treatment plants. Author of 4 industrial patents, responsible for research projects in the agri-food industry, and he is also collaborating as a researcher with national Universities and research institutes in projects and researches on the development of alternative energy sources technologies.

A Chemical and Ecological Assessment into Elemental Loading from Ford Crossings in Ashdown Forest, Sussex, United Kingdom

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Numerous studies have identified the issue of road surface runoff as a source of contamination into waterways, but the impact of vehicular wash-off is less well understood. Ford crossings provide pathways for vehicle-derived contaminants emanating from both road surface runoff and vehicular wash-off into a river system. Twyford Lane Ford (Ford 1) and Birchgrove Lane Ford (Ford 2), located ca. 600m apart on a tributary of the River Ouse in Sussex (UK), were the focus of this study. Biomonitoring and chemical assessments of water and sediments have been undertaken to determine any detrimental impacts, such as a lack in biodiversity, resulting from the ford crossings. Sediment concentrations of chromium (Cr³⁺), lead (Pb) and zinc (Zn) were generally elevated at Ford 1, attenuating at sampling points between the fords to then peak at Ford 2. Soil organic matter (SOM) and sediment particle size were seen to have an influence on elemental concentrations. In general, an increase in elemental concentrations was associated with a higher percentage of fine-grained sediments ($\leq 63 \mu\text{m}$). Elevated concentrations of Zn and magnesium (Mg) were identified within water samples taken during a precipitation event following a prolonged dry period. The biomonitoring results found reduced BMWP scores at positions close to the ford crossings, and in proximity to the roadside. Sensitive Ephemeroptera were largely absent at sampling points closest to the fords, which is likely to be associated with elevated Zn (Fig. 1). The results suggest that careful consideration should be applied when selecting crossing points over sensitive waters.

Biography

Phillip is a senior consultant at OHES Environmental Limited with 7 years' experience in environmental science and ecology. He is a Chartered Scientist with the Institution of Environmental Sciences and working toward Chartered Environmentalist. Presently, Phillip is preparing to undertake his second research paper, which will focus of bryophytes as markers for water contamination. His first paper was published in Science of the Total Environment – Vol 738.