J Biotechnol Biomater 2012, 2:6
http://dx.doi.org/10.4172/2155-952X.S1.020

OMICS Group Conferences
Accelerating Scientific Discovery

3rd World Congress on
Biotechnology

September 13-15, 2012 Hyderabad International Convention Centre, Hyderabad, India

Synthesis and activation of immobilized beads by natural dye extracts

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Immobilization technique is used for preservation of enzymes. Here we are using different colors of natural dye in this technique. Our major emphasis would be to create beads of different colors which will act as different carriers for essential enzymes. The need for using colourful dye is because when we need to preserve more than one enzyme then it is helpful in identification of that which enzyme is to be preserved and in which color. Here we used natural dye because most of the chemical dyes are carcinogenic in nature and may alter the nature of preserved enzyme. For this different plant products like mint leaf, rose petal, beat root and Carrot are used for the extraction of dye. In this research studies, we have identified, extracted, characterized, optimized and standardized the natural dyes from plant and microbial sources and we did a comparative study between natural dyes and artificial dyes with respect to different solvent systems like petroleum ether, diethyl ether, acetone, chloroform, ethanol and water systems. The extraction methodologies, characterization, MIC (minimum inhibitory concentration), and solubility studies will be discussed. These immobilization studies will help us to use this application in a variety of fields like in wine stabilization, in modifying the shelf life of food and other natural products which degrade quickly and are difficult to preserve under natural conditions. Here sodium Alginate beads are being used so that there is good number of beads formation and that will help for the proper entrapment of the essential enzymes required for an important reaction in Bio-systems.

Keywords: characterization, MIC, immobilization, Dye, extraction, Sodium Alginate, beads.

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Production of biodiesel from unconventional feedstocks

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Due to the depleting reserves of fossil fuel and uncertainty in their availability as well as the environmental problems associated with them, considerable attention has been given to biodiesel production as an alternative to petro-diesel. However, as the biodiesel is produced from vegetable oils there is a concern that biodiesel feedstock may compete with food supply in the long-term. Hence, the recent focus is to find tree borne oil seeds (TBOS) that produce non-edible oils as the feedstock for biodiesel production. Production of biodiesel from non-edible oils like Jatropha, Karanja etc. has been well documented. In order to meet biodiesel demand, biodiesel production from newer sources of non-edible oils is need of the hour. In coastal area of Karnataka, large numbers of trees are available yielding non-edible oil having no/less application. Of these some TBOS have been evaluated and it has been found that Scleropyrum pentandrum (Naikkuli), Calophyllum inophyllum (Sura Honne), Hevea brasiliensis (Rubber), which bear seeds rich in oil. Oil was extracted using Soxhlet apparatus with hexane as solvent. Batch experiments were conducted to produce biodiesel from extracted oil. Methanol with NaOH as catalyst was used for reaction at 60-650C under magnetic stirring for 60 min. Major properties of the biodiesel such as density, viscosity, flash point, acid value, copper corrosion test were measured. Experimental analysis showed that these oils have great potential to be used as feedstock for biodiesel production. During investigation three tree species namely Terminalia bellirica (Shanti Kayi), Vateria indica (Dhoopa) and Mimusops elengi (Renjevu) are found to contain less than 20% oil and concluded that they are not feasible for biodiesel production.

Keywords: Biodiesel, Tree borne oil seeds (TBOS), FFA, Soxhlet extractor.

Biography

Santhosh Poojary is presently studying in 8th Sem B.E. Biotechnology in Nitte Mahalinga Adyanthaya Memorial Institute Of Technology along with doing research work funded by Karnataka State Biofuel Development Board. He is an active member of The Institute of Engineers India (IEI).

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