



Isolation and identification of recent strains to reinforce the assembly of biopolymers from marine sample in Karan Kura River, Tamil Nadu

Kalaivani R and Sukumaran V

Research, Department of Biotechnology, Bharathiar University, India

Abstract

Marine bacterium have several undeveloped potential for novel product with a large variability in structure and biological activity. Polyhydroxy butyrate's are perishable thermo polyesters that are synthesized by several bacterium underneath stress conditions they're rumored to supply biopolymers like rumored butyrate (PHB), which may be created living thing as carbon and energy reserves. During this gift study, 5 PHB manufacturing microorganism colonies were isolated from the marine soil collected from the village Karan Kura River, Thanjavur district. But just one microorganism colony is chosen among others supported most PHB yield (0.701g/L). Bacteria from this colony was characterized by morphological, organic chemistry and improvement and known as *Saccharococcus thermophilus*. The most hydrogen ion concentration yield was recorded underneath the dry weight basis with completely different agro industrial wastes because the sole carbon supply at pH seven and temperature 50°C for 72h. Among the carbon sources and chemical element used, syrup and ammonium ion sulfate yield additional PHB yield severally. However, acridine orange stained cells showed the presence of enormous quantities of granules within the cell protoplasm once viewed underneath fluorescent magnifier. The extracted chemical compound was compared with the quality PHB and was confirmed to be PHB victimization FTIR analysis.

Keywords

Poly- β -hydroxy butyrate, PHB, Molasses, FTIR

INTRODUCTION

Expansion of plastic production and consumption has a big impact each visibly and invisibly on the setting and society. Improper disposal of plastics has vulnerable natural setting worldwide since very long time ago. Standard organic compound plastics are recalcitrant to microbial degradation. Excessive molecular size can be in the main accountable for the resistance of those chemicals to biodegradation and their persistence in soil for an extended time. These non-degradable organic compound plastics accumulate in setting at a rate of twenty five million tones each year. To beat this drawback, the assembly and applications of eco-friendly product like bio-plastics becomes inevitable. Decades are invested with an intensive analysis to develop perishable polymers as a substitute for organic compound based mostly polymers thanks to their eco-friendly nature. Polyhydroxy alkanets (PHA) are polyesters of varied R-hydroxy alkanets and are thought-about as an honest different amongst different perishable polymers developed, thanks to their biodegradability, biocompatibility, use of renewable resources as material, plastic and elastomeric material properties the same as organic compound based mostly polymers. PHA's are accumulated as living thing inclusion bodies by several gram-positive and gram-negative bacterium to levels as high as ninetieth of Leclanche cell weight once carbon supply is in excess however different nutrient offer (O, P, N and S) are in limiting condition. As being perishable and biocompatible, an oversized variety of PHA's and its copolymers are exploited as bio plastics, medicine applications like drug delivery tissue engineering and in food packaging etc. varied researchers have isolated the promising micro-organisms from completely different setting like municipal waste sludge, marine microbial mats and marine environments. It's more and more being complete that the utilization of lasting polymers for impermanent applications isn't entirely even,

particularly once accrued concern exists regarding the preservation of finite resources. Therefore, the ways to upgrade and to optimize the PHA production victimization largely obtainable carbon sources are chosen as analysis goal. Meanwhile, the assembly of PHA are going to be increased considerably. As marine setting could be a prolific resource for the isolation of less exploited microorganisms, marine soil has been chosen as a sample. That the gift study aimed to isolate PHB manufacturing bacterium from marine environmental samples, screening of high PHB producers from the isolated bacterium, improvement of cultural parameters for optimum PHB yields and Use of cheaper agro industrial substrates as a carbon sources for production of PHB.

MATERIALS AND ways

Soil sample was collected from the village, Karan kuru, Sethbavachatram Taluk, Thanjavur District – state. Soil sample was collected from the sampler.

The collected sediment samples were initial air dried at temperature, then crushed employing a ceramic ware mortar and pestle so sieved for any analysis. The hydrogen ion concentration of the suspension was scan victimization hydrogen ion concentration meter (Systronics, India), to search out out the soil hydrogen ion concentration. Electrical physical phenomenon of soil was firm within the filtrate of the water extract victimization physical phenomenon Bridge and Cat action capability (CEC) of the soil was firm by victimization one N ammonium ion acetate answer. The reagents used for the analysis were AR grade and double water was used for preparation of solutions. The analysed Physico-chemical parameters portrayed in Table.1 were ascertained by customary ways.

Conclusion

The organic synthesis is one in all the foremost role of analysis in science, from plastics to medication it participates within the enhancements of everybody life [23]. So, biopolymers created by completely different microorganisms are becoming much importance each in agriculture, social science and health sciences. Among the biopolymers that are industrially necessary are bio-plastics. As they'll be created from renewable resources, that are reusable [24] there's a requirement to optimize the conditions for top production of biopolymers. During this gift study, the soil of Karan Kura River, close to Sethbachatram placed in geographical area of Thanjavur District are investigated to isolate and identify new strains so as to reinforce the assembly of PHB.

Email: kalaivanir@gmail.com