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Polyhydroxybutyrate As A Biopolymer

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I. INTRODUCTION

This project is about the use of biopolymer (PHB) as an alternative form in place of non-biodegradable plastic, many types of research have been done on this polymer which shows it sharesa similar application as that of conventional plastic and also are biodegradable and biocompatible. As synthetic polymers are cheap and inexpensive but are non-biodegradable and release toxicity that is hazardous for biomass so there is a need to switch on another alternative to reduce the dependence on conventional polymers.

In recent years, the increasing population that resulted in urbanization and industrialization has led to a surge in petroleum-based plastics consumption. Due to its cheap availability and durability, there has been a great demand in every field. The continuous increase in the use of petrochemical plastic is the cause of various environmental pollution as it is non-biodegradable and take thousandof years to break down so produce toxins if it is disposed of in soil and water, even if they burnt that will increase the CO2 concentration in the atmosphere.

There has been neededfor a biopolymer that can compete and reduce the dependency on hazardous plastics. Researchers have been looking for an alternative that would be eco-friendly and sustainable in nature as well as meet the current demand. Polyhydroxybutyrate (PHB) being biocompatible as well as biodegradable can be a better option to switch petroleum-based plastic as it possesses similar physical properties to that of propylene.

PHB is a biopolymer that is a member of the PHA family.PHA are of three types based on the number of monomers present*(Madison and Huisman 1999)*; the short-chain length consists of 3-5 units of carbon, medium chain length consists of 6-14 units of carbon, and the long-chain length consists of more than 15 units of carbon atoms*(Anderson and Dawes 1990)*. The nature of PHB is brittle and crystalline as well as high melting and degradation point due to the presence of double bond that leads to the chemical variation and contrast structure*(Colin et al, 2012)*.To improve its properties we have to blend it with other natural plasticizers such as (glycerol, soybean oil, triethyl citrate, salicylic ester) to reduce its brittleness and improve lowering temperature

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