EDIBLE BIO-PLASTIC AS A VALUABLE REPLACEMENT FOR PETRO PLASTIC

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ABSTRACT

Looking at the current scenario, finding an alternative to plastic must be a priority. The valorization of Red algae can create an alternate opportunity to produce new valuable bioplastic. Plastics are said to be creating a harmful effects to human life, marine life and creating one of the major factor causing plastic pollution. In order to tackle this problem we came up with a solution of making a environmentally sustainable, natural polysaccharide edible bioplastics, which will be affecting the living organism in any of the manner. In this study, the extract obtained from the sea weed Carrangheena is used to produce a promising alternative to solve this problem. Sea weed and sea weed derived products are been used as a key ingredients in making biodegradable plastic. The process is carried in a solution of Potassium Hydroxide at 100^0C, there is no environmental concern associated by taking use of organic or dangerous chemicals. To remove excess bleach and odour from the red algae it is dipped into the solution containing Sodium thiosulphate and Ascorbic acid. Finally the finely obtained red algae powder have to dissolved with starch, glycerine and water at 180^0C for 30 minutes and need to spread evenly.

Keywords-: Bioplastic, Carrangheena, plastic pollution, polysaccharide.

INTRODUCTION

Now-a-days in our daily lives plastic being a very crucial product. Usage of plastic is more and more from household uses to healthcare industries as plastic is widely used for food packaging, drinking straws, cosmetic packaging etc. however plastic bring a lot of problems to the environment, there are about 8.3 billion tons plastic has been produced and about 9-10% of plastic have been recycled throughout the year and rest portion of plastics still exists now.

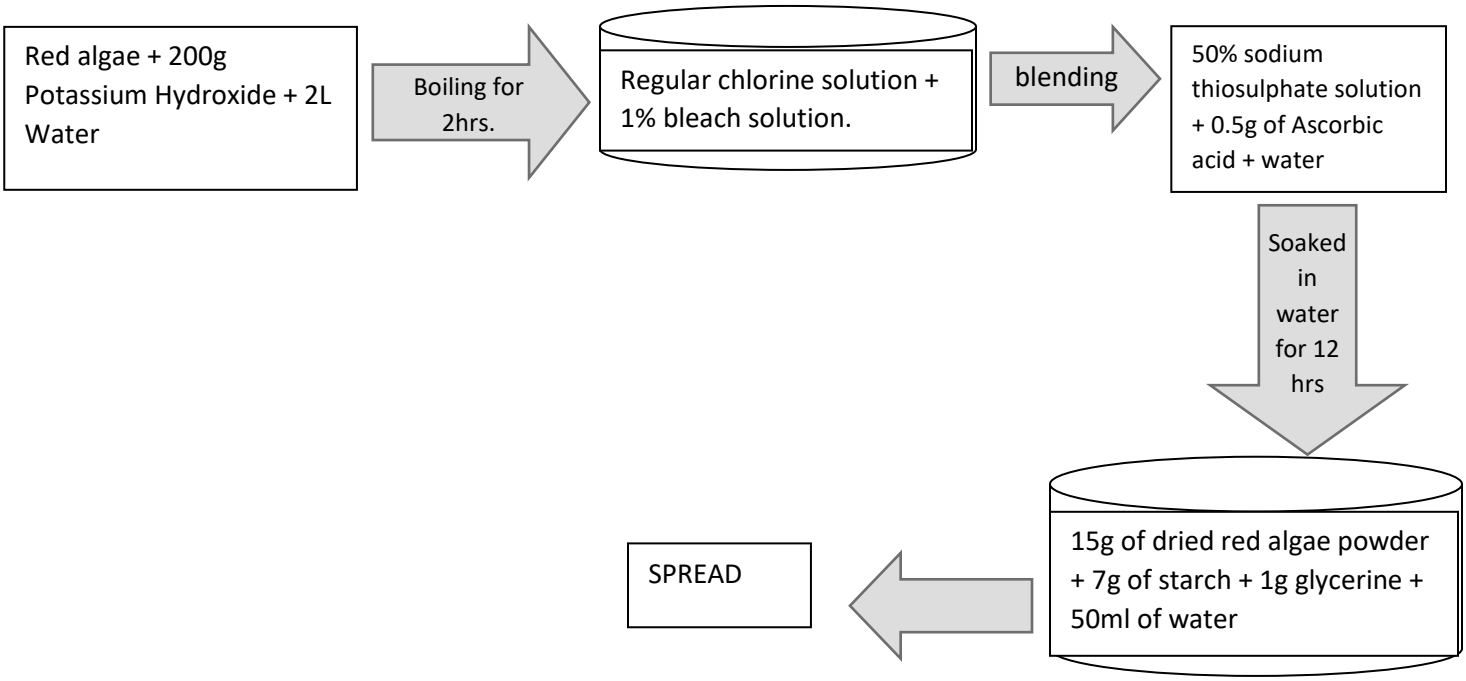
To overcome this problem some initiative have been taken to replace petro plastics into bioplastics that are made from red algae. Red algae which is a natural polysaccharide, environmentally sustainable, ecofriendly, cost effective, bio degradable and also edible. Bioplastic can be disintegrated in warm water and by natural way it takes around 25-30 days to decompose. In the bioplastic ‘polyhydroxy alkanoate’ (PHA) are present which is completely safe to marine life and will not cause any environmental problem. By the use of bio plastics not

only it is useful for food packaging but also products lie glass and bottles can be made. With the production of bioplastic it can be very helpful in reducing the petro plastic production. Also it have an advantageous that it can be consumed directly without any side effects as it's nutricious to human being.

MOTIVATION

Globally more than 15-16 trillion pounds of plastic have been manufactured and 15 billion pounds of plastic flows into the ocean per year. In this context bio plastic being an alternative can help the environment and also the marine life. As bio plastics are derived completely from sea weed extract so there is no factor which can create a negative impact to the society. As it can replace single use plastic at an higher extent. As bioplastic is more efficient, useful compared to the petro plastic. Bioplastic is environmentally sustainable, biodegradable compostable and also cost effective. Manufacturing bioplastics can make a huge increase in economical growth of that country.

METHODOLOGY



SOCIAL IMPACT

Bioplastics are considered to positively impact society due to the many advantages they have over petro plastics. They have the potential to reduce carbon emissions. The CO2 /Kg emission for a petro polymer has been estimated to be in the range of 2.5-3.0, whereas biopolymers have

been pegged to be in the range 1.0-2.5. Besides, bioplastics derived from agricultural waste and algae will have little to no impact on the food supply. The manufacture of these also consumes less energy and has the potential to reduce fossil consumption. Recycling them would also result in comparatively less pollution. Bioplastics have also been shown to be a better option in terms of health and sustainability.

MARKET

- It is an alternative to all other petro plastics where its utilization can be in the field of food and packaging industries, pharmaceutical industries, textile industries etc.
- The survey shows that bioplastic have similar properties like petro plastics. Owing to the increasing demand from numerous authorities, agencies are now focusing more on to implement bioplastic rather than the usage of non-renewable and single-use products.
- With the increasing demand for packaging material across the globe, bioplastic is served as the best packaging material both in term of rigid packaging and flexible packaging.
- Besides this bioplastic is cheaper and utilized for ready to consume product. In manufacturing companies, product have shown a low impact towards the environment and inert towards the packaged materials, it also plays a major role in the life span of food items.