

NOVEL ECO- AEROGEL: REMOVAL OF TOXIC METAL FROM WASTE WATER AND INCREASING LONGETIVITY OF FOOD WITH PINEAPPLE LEAVES

Divya Vinod* and Shivaraju HP

Department of Environmental-Faculty of Natural Sciences, JSS Academy of Higher
Education and Research, Mysuru, 570015, INDIA

*corresponding author email: divyavinod604@gmail.com

ABSTRACT

Increasing urbanization and industrialization is escalating the potential treatment and reuse of wastewater. Eco-friendly treatment techniques are getting attention to sustainable treatment of wastewater using various biomaterials. In order to effective treatment of wastewater, a fiber of pineapple leaves that is one of the agricultural byproducts was used to treatment of wastewater. Pineapple leaves are converted into eco-aerogel by shredding of pineapple leaves then blended into thin fibers along with a continuous stirring of non-toxic chemicals. Then it is subjected to aging followed by freezing and drying to create an eco-aerogel that further undergoes the treatment with activated carbon powder. The results showed that pineapple leaves have the ability to remove toxic metals potentially up to 4 times higher than conventional treatment technique and the aerogel prepared also helps to extend the lifespan of perishable food which will help to decrease huge amount of organic waste and water. Another significance of the eco-friendly aerogel is to increase longetivity of fruits and vegetables preservation including removal of toxic chemicals from wastewater. Further, it would be a good source of income for farmers using pineapple leaves.

Keywords- Activated carbon powder, Eco-aerogels, Pineapple leaves, Non-toxic metals.

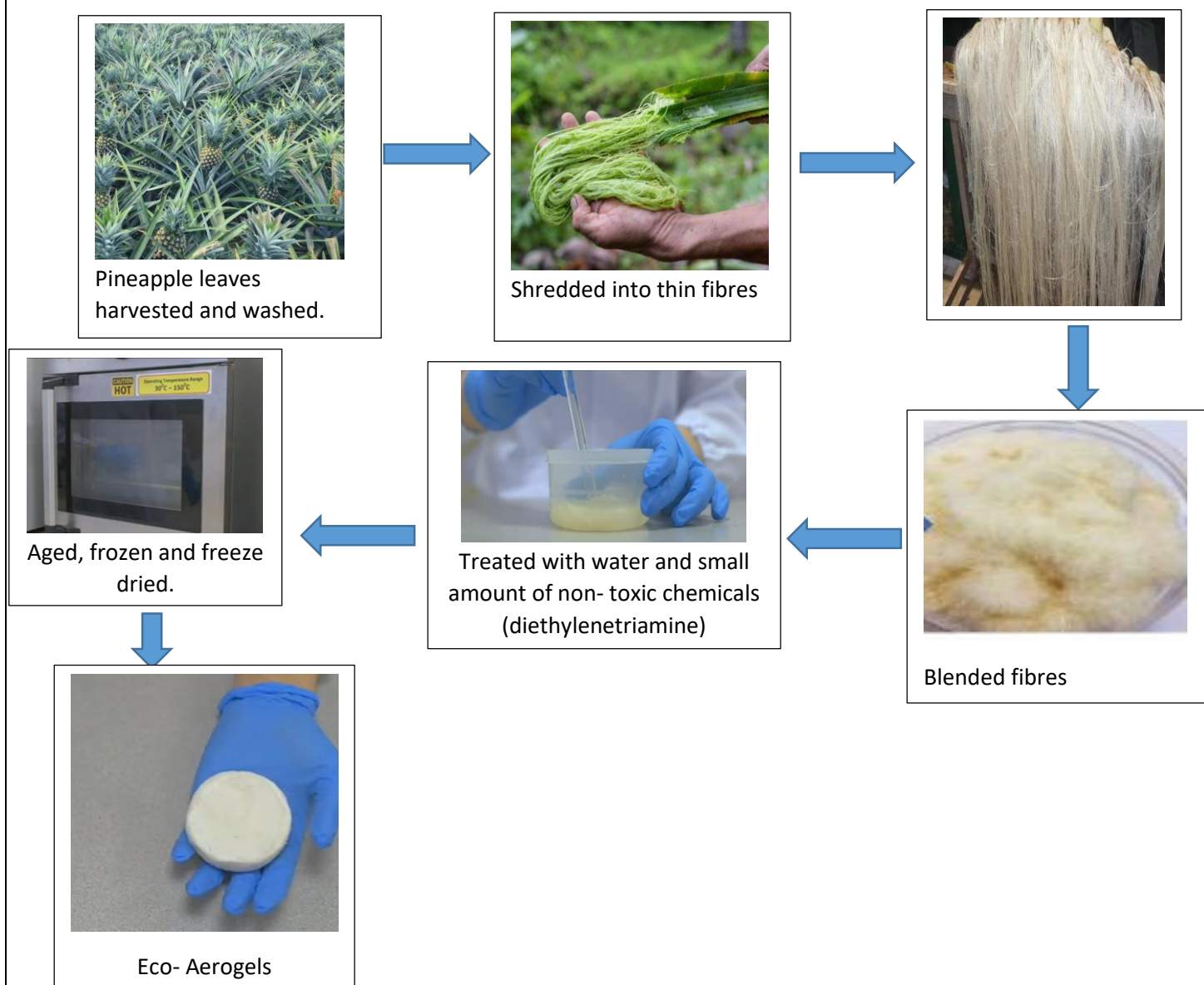
INTRODUCTION

Water and food is very essential of every living organisms in the earth for their survival. In order to conserve them for our future needs its our core responsibility to take an action regarding this matter. In this study we have used pineapple leaves to preserve the fruits and vegetables for their longer life span and also to remove heavy metals from the waste water to meet our future needs. After all the post harvested pineapple is delicious and healthy and also results into a tons of pineapple leaf waste, which would release harmful chemicals when it left rotten or burned can cause greenhouse gases resulting into a serious environmental condition. It can also helpful to farmers as a additional source of income. Pineapples are rich in antioxidants, vitamins and enzymes. This has been observed that enormous quantities of organic products are discarded due to inadequate processing and storage facilities. The use eco-aerogels can be highly significant in every manner and it can be reused, further reducing waste and to improve sustainability. The eco-aerogels are cost effective, environmentally sustainable, they are highly oil absorbing and are effective for heat and sound insulation.

MOTIVATION

As we all are familiar with the environmental effects occurred by releasing various kinds of chemicals. By initiating the eco- aerogels has very crucial role to do with our nature. We can control rotting of vegetables and fruits up to some level. As this eco- aerogels is very cheap in cost, a farmer can adopt this technique to bring some beneficial changes in his business. Its also an efficient way to remove toxic chemicals from wastewater as it four times better than other toxic removing technique. By seeing these many advantages from the eco- aerogel, its our core responsibility to adopt this technique and bring changes in household level as well as in global level.

METHODOLOGY



SOCIAL IMPACT

By adopting eco-aerogels into day to day lives has no negative impact, they are completely environment friendly, are 100% recyclable, it doesn't contain any greenhouse gases or ozone depleting substances, and it will break down with sand and soil. It is processed with completely non-toxic chemicals so it will not create any hazardous to human health. However, other aerogels are processed with chemical containing substances and it can only be disposed of in landfill sites, which is totally a negative impact to our environment.

MARKET

- It has a low cost and high value in market, easy to produce.
- It has an enhanced fruit ripening hormone which triggers the ripening process into an major extent.
- It has stronger mechanical properties and are coated with 100% non-toxic chemical, are more suitable to remove nickel ions in industrial wastewater, compared to other methods.
- The treatment process for treating wastewater is simple and very efficient, simpler and cheaper and does not produce any secondary waste.

| | Name | Branch and Semester | Contact number | Email.ID |
|-------------|--------------|-----------------------|----------------|---------------------------|
| Team leader | Shivaraju HP | Environmental Science | 9902358233 | shivarajuhp@jssuni.edu.in |
| Member 1 | Divya Vinod | MSc. EVS Sem II | 7470872474 | divyavino604@gmail.com |