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PREPARATION OF BIODEGRADABLE PLATES FROM SUGARCANE BAGASSE

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Abstract - Saccharum officinarum is a natural result that remains as dry, stringy deposits. It is likewise being thought of as an option in contrast to wood in the creation of endlessly paper items. In numerous tropical & subtropical nations like India, China, Colombia, Iran, Thail&, & Argentina, Bagasse is normally utilized rather than wood in the development of mash, paper & board. This replacement produces mash with actual properties that are appropriate for printing & journal paper, tissue items, boxes, & newspapers. It can likewise be utilized for making sheets looking like compressed wood or molecule board, realized called bagasse sheets & Xanita sheets. These are broadly utilized in the creation of partitions & furniture. Waste sugarcane is dried in sunlight & Bagasse is extracted from it & purified using various chemical & mechanical techniques. Natural gum, that is all purpose flour has been used as binding agent. Shaping the biodegradable plate has been done from press moulding machine. Various properties such as moisture content, E. coli, Coliform, Salmonella. Yeast & Mould are tested from Analytical & environmental lab. So, from the synthesis, it concludes that the biodegradable plate manufactured from Saccharum officinarum plant are cheaper, as raw materials are easily available.

***Key Words*:** sugarcane bagasse, biodegradeable, lasers, templates, journals

1.INTRODUCTION

Sugarcane, or sugarcane, is a type of tall perennial grass (often half-seeded) used to make sugar. The plant has strong, connected, filamentous stems rich in sucrose, which tire collected on peduncles 2 6 meter tall. The sugarcane family Poaceae is a financially important family, includes com, wheat, rice, sorghum, & many aromatic crops. It is found in the warm & clear tropical regions. The facility was also developed specifically for biofuel production in.

Distributed in tropical regions, sugarcane is the world's most cultivated crop, growing to 1.9B tons by 2019-20, with Brazil accounting for 40% of the world's overall production. Sugar cane accounts for 79% of the world's sugar supply. About Seventy of available sugar is made from Saccharum officinarum & its derivatives. All types of sugar cane can be mixed, & the most important commercial variety is the mixed return variety.

Some factories extract sucrose (edible sugar) from sugar cane. Consumed pure in c&y stores, to fortify beverages, as an additive in dilemmas & temperance, as a topping to enhance cakes & pastries, in food industry as raw aged milk for making ethanol. Substances obtained by aging sugar include Pallanum, Rum & Cachaça. In some areas, people utilize sugarcane for producing pens, screens & covers. The flower heads of Saccharum edule (duruka) are ate as they are, steamed, fried in Southeast Asia, or prepared in various ways in some island & chains in Indonesia & maritime countries such as Fiji.

Sugarcane is an ancient product of the Austronesians & Papuans. It was brought to Polynesia, Melanesia & Madagascar by ancient Austronesian sailors. It was also introduced to South China & India by Austronesian traders between 1200 B.C. & 1000 B.C. The Persians & Greeks experimented with the famous "cane without honey" in India between the 6th & 4th centuries BC. They started a sugarcane farming business & later dispersed it.

2. Experimentation

Material:

GUAR GUM: -

Botanical Name: Cyamopsis tetragonoloba
Synonyms: chicle gum, gum eurphorbium, kino, etc
Common Name: Guar
Family Name: Legumes

Guar gum is gotten from the seeds of the dry season open minded plant Cyamopsis tetragonal, an individual from the Leguminosae family (Whistler; Kay 1979). This hypothesis makes sense of the guar plant's harmless nature. The sensitive species is generally typically connected with India and Pakistan, where it has for some time been used as a wellspring of nourishment for the two people and creatures. As per a review, the gum may be used as a product paper maker's expansion to get non-permanent wet power in sheets, like paper, and the gum could help hydration.

WHEAT FLOUR: -

Botanical Name: Triticum aestivum
Synonyms: cereal, grass, durum, gluten, spelt.
Common Name: Triticum aestivum
Family Name: poaceae

Soil Requirement: Clay soils are the most suitable for growing wheat. Clay and loamy soils can also be used for growing wheat if the drainage system is good and these soils are not acidic or sodic. Also, the wheat field should be free of weeds.

Atmosphere: It grows best in warm temperatures of 70° to 75° F (21° to 24° C), but not too hot. Wheat cultivation required a cool climate and moderate rainfall. The ideal temperature required for the production of this crop in winter is 10°C to 15°C.
Origin: China and India produce maximum wheat production. In India, Uttar Pradesh, Madhya Pradesh, Punjab, Haryana and Rajasthan produce the most tons of wheat each year.

Health Benefits of Wheat Flour: -
•China and India produce the highest grain production. In India, Uttar Pradesh, Madhya Pradesh, Punjab, Haryana and Rajasthan produce most of the tons of wheat per year.
• It is also used to treat constipation, irritability, High level cholesterol, high BP, and type 2 diabetes.

MAIDA FLOUR: -
Botanical Name: Triticum aestivum
Synonyms: cereal, grass, durum, gluten, spelt.
Common Name: Triticum aestivum
Family Name: Poaceae
Origin: Maida is made from the endosperm of wheat grains.

Health Benefits of Maida Flour:
•Refined fatty flour has no nutritional value, but is rich in calories.
•Made from wheat, which is rich in fiber, vitamins, iron, magnesium, phosphorus, manganese and selenium and many other nutrients.

Synthesis: -

Used Sugarcane waste is sundried (Dried in sunlight) so that it becomes completely moisture free. Then to obtain bagasse the sugarcane is reduced in size of about 3-4cm in size to grind it in a grinder. We can use either mixer grinder machine available for household purposes or we can use industrial grinder to reduce the size of sugarcane to powder form or near about 0.5-1mm in length. And we get Dried moisture free Sugarcane Bagasse (SCB).

There were 2 experiments done in this study, two different binding agents were taken into study. One was Guar gum which was prepared traditionally from the Guar seed after drying and powdering them and the other binding agent used was the mixture of Maida and Rice flour.

For the manufacturing process for thew very first case a mixture of powdered Sugarcane Bagasse (SCB) and 1mm long Bagasse was taken as the main synthetizing material and Guar gum was taken as the binding agent with Methanol as solvent. A slight hard slurry mixture was prepared and was kept in moulding dye in mechanical press moulding machine for approximately 10mins-15mins. Let's consider this Case A.

For the next case let it be Case B: the same amount and proportional mixture was taken of Sugarcane Bagasse (SCB) and the binding agent used was Guar gum but this time the solvent used was Distilled water and the time in press was 25-30mins.

Case C- The proportion of SSB was changed and powder was taken less and the 1mm size bagasse powder was taken more and the binding was changed to a mixture of Maida and Rice Flour. Water was taken as solvent. And the prepared mixture was kept in Mechanical press moulding machine for approximately 1Hr. And then dried in sun for 10-12 hours. At natural temperature ranging from 250^0 C – 330^0 C and wind speed was 9 Kmph for the whole day.

3. Result & Discussion

Case A – The Binding agent was not able to bind the material ad withhold it in a shape with methanol as the solvent. Which was observed in the end of study after using various binding agents and solvents.
Case B – The plate wen was removed from the molding machine for drying process, the plate was in its desired shape but it was not strong enough to withhold its shape and deformed as soon as removed from the machine.
Case C – It was the best result obtained in the study. The plated was of 3-4mm in thickness and was strong enough to withhold minimum of 1 kg weight of food in it. It was solid and hard as cardboard material prepared from sawdust.

Tensile strength	Photolysis	Biodegradability
180-290 MPa	Not observed	100 days

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