DEVELOPMENT OF NON WOVEN FABRIC FROM WASTE ARECANUT FIBERS FOR MEDICAL APPLICATIONS

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KEYWORDS:
  Arecanut husk, non woven fabric, antimicrobial finish, needle punching, waste to wealth.

INTRODUCTION:
  Arecanut husk is a waste product and it constitutes to 60-80% of the arecanut fruit by volume. If the husk is not disposed it starts bio degrading and during this process produces a very bad odour. The arecanut husk fibers are predominantly composed of cellulose and varying proportions of hemicellulose, lignin, pectin and protopectin. Microbes that selectively remove lignin without loss of appreciable amounts of cellulose and fiber strength properties are extremely attractive for the biosoftening of arecanut fiber. Once the softer husk is extracted it becomes very easy for processing and production. The fibers are then processed to non woven fabric and given antimicrobial finishes for medical application.

OBJECTIVES:

1. To utilize the waste arecanut fibers to produce nonwoven fabrics (widely available in bulk quantity and cheaper, inexpensive, low cost on raw material).
2. To produce nonwoven fabrics using either needle-punching or any other suitable technique to suit the end use requirements.
3. To apply suitable antimicrobial finishes to fabrics for medical applications and to protect the fabric from various biological activities.
4. To utilize the fabric for medical products such as baby diapers, sanitary napkins, wet and dry wipes, face masks, wound dressing and other surgical purpose.

METHODOLOGY:

Step 1- Collection and extraction of fine (softer) fibers, from waste arecanut husk.

Step 2- Preparation of fibers or surface treatment (processing of fibers with suitable preparatory processes, wetting, softening, scouring, and bleaching)

Step 3-Testing of extracted and processed fibers for some properties.

Step 4-Blending arecanut fibers and jute fibers (50/50)

Step 5-Manufacturing of non-woven fabrics using needle punching technique.
Step 6 - Finishing of fabric by using various performance and protective finishing agents.

Step 7 - Testing of finished fabrics.

**RESULTS AND CONCLUSION:**

Finally a non woven fabric is being produced by soften arecanut fibers and used for medical purpose.

Arecanut husk is a waste product which produces a foul odor when bio degraded and in a country like India which is a lead producer of arecanut it is a big problem to manage such large quantity of waste. Our project has a very bright scope of using the waste and converting it into a useful product. The resulting end products will also be cheaper than those present in the market currently.

**SCOPE FOR FUTURE WORK:**

**APPLICATION:**

Once a non woven fabric is made it could be used for a number of purpose, from wipes to advanced usages like face masks. We are concentration on medical field so we will be using the fabric for the following usages:

1. Baby Diapers
2. Sanitary Napkins
3. Dry and wet Wipes
4. Face mask
5. Wound dressings
6. Other surgical applications.