THE CHARACTERIZATION AND PROPERTIES OF FIBER FROM NYPA FRUTICAN WURMB

Achariya Maungpanil[1, a*] , Suthasanee Boonyobhas[2, a] , Sakorn Chonsakorn[3, a] and Rattanaphol Mongkholrattanasit[4, b]

[a]*Faculty of Home Economics Technology,*
Rajamangala University of Technology Thanyaburi 39 Mool, Rangsit-Nakornayok Road, Klong Hok, Klongluang, Pathumthani 12110
[b]*Department of Textile Chemistry Technology, Faculty of Industrial Textiles and Fashion Design*
Rajamangala University of Technology Phra Nakhon 517, Nakhonsawan Road, Kwang Suan Chitladda, Dusit Distrct, Bangkok, 10300
pungyen@hotmail.co.th[1], s_boonyobhas@yahoo.co.th[2], csakorn@hotmail.com[3]
rattanaphol.m@rmutp.ac.th[4]

Abstract: The Characterization and properties of fibers from Nypa fruticans Wurmb to study of physical properties of the fiber. The process of scouring and the fiber non scouring to characterize the different types of fibers, The results found that 2 type of fiber through a process of scouring was reported the strength of fibers was 18.3 N and the extension of fibers was 51.5 %, Compared to the fiber through a non scouring process. The cross section is not smooth and the long section is line straight and have a scratched by the length of the fibers.

Keywords: Characterization and properties, Nypa Fruticans Wurmb, Scouring , Natural Fiber, Cellulose fiber.

1. Introduction

At present, the textile industry more competitive. The various manufacturers have used various strategies used in the production as To reduce production costs.To shorten production time. User-friendly natural materials and Including the use of nano-technology_In order to attract the attention of consumers. Most popular manufacturer of natural fiber used in manufacturing. The research of the various fiber types. and includes inventive and invented a special type of fiber used in textile production.To meet the needs of producers and consumers. As The Development of Fancy from Banana and Cotton Fiber Blend [1] Feasibility Study in an Industrial Production of pineapple/cotton Fiber Blended Yarn [2] The Feasibility Study of Developing Silk Fibers Utilizing In Producing Bullet Proof Vests [3] etc. It is evident that the natural resources that surround them can be useful. Nypa palm is crops up in a palm forest of Thailand and other tropical countries of the world and species quickly. The plant is a useful and important to the daily lives of people living along the river. And introduced of the other parts of the many benefits. As Leaves introduced into the liver from the roof. Fruitball to made desserts. Moreover, apart from the head to a charcoal fire for cooking. [4] A survey of the various tours. The researchers have found a whip to ward off mosquitoes product of district of Village Paknaam Samut Prakan province is made of the shaft *Nypa palm* it features a single fiber. There are approximately 70 - 90 cm. a handle to hold. The fiber strength thick and durable isn't easily broken. The researchers have idea is to bring the fiber to be spun into yarn. The fibers to studying the physical properties of the fibers. and the characteristics and physical properties of the fiber through scouring and fibers have not been scouring process. To compare the properties of both fibers. and the fibers were spun from cotton to produce a mixed yarn.

2. Experimental

In this experiment. Experiment with all three stages. A separation of the fibers of district of Village Paknaam Samut Prakan province ,Scouring and the characteristics and physical properties of the fiber. The experimental procedure is as follows.

2.1 Materials and equipment.

The materials used in the experiment was a fiber from shaft Nypa Palm. The estuary of district of Village Paknaam Samut Prakan province. The equipment used in the experiment was a big knife, large, wood-tipped length of 1.5 meters, rods, aluminum, length 40 cm, comb nail for carding fiber, timber, Water bath, Turner, Big Burger 1000. ml, and scales with the brand Scout Pro.

2.2 Chemicals

Chemicals used in this experiment were wetting agent, Sunlight soap from P.K.S. Chemical Co.,Ltd, sodium hydroxide and alum site.

2.3 A separation of the fibers of district of Village Paknaam Samut Prakan province

The process of separation of the fiber. Beginning of the large pointed stick to dig out of the shaft Nypa Palm of a clump of trees. The base of the stem is placed into the timber to a point of extraction. Then use a knife to trim off the shaft Nypa Palm. Then, the soaking water, alum, about 5 minutes to clear the dirt. Then use a knife to cut the outer sheath to shaft out his head to the side of the head. Aluminium bars, beat rod the head of the entire stem. The fibers are then removed from the wood fiber in full. Then use a nail brush to get enough fiber, fiber to fiber in more detail then soaked in alum water for about 30 minutes to clean the fibers. Then dried in the sun.

2.4 Scouring

The fiber obtain from the intersection through scouring , which contains the Soap sunlight 4 g / liter , Wetting agent 1 g / l , sodium hydroxide sites (NaOH) 1.5 g /. liter and 1 liter of water, the ratio will be the fiber 150 g .The first step of water boiling water bath at 95 ° C and then put all ingredients in a water bath when the mixture dissolved. To the fiber. It takes about an hour in boiling water in the fiber to fiber, it's reversible so that the fibers thoroughly boiled. After the end of cooking time, the fiber was washed thoroughly and then dried in the sun.

2.5 The physical properties of the fiber.

The physical possessions of the fibers use from the shaft Nypa Palm through the scouring and fibers have not been scouring process. To study the physical properties of the fiber. and study the cross-sectional and longitudinal fibers.

2.5.1 To test the strength and elongation of the fiber. using Tensile Strength Tester the test version LR5K, LLOYD standard ASTM D 3822-01 Standard Test Method For Tensile Propreties of Single Textile Fiber. By fiber extracted from the test a oryzae by the specified location testers. Press GO to clear the value to 0 to let the experiment run. The test will be drawn until the fibers break, and then press the stop button to stop working, and then read it on screen.

2.5.2 The tests scanning electron microscopy. The fibers through a process of scouring endoscopic microscope with the MICROSCOUPE (model OLYMPUS BX41) using a standard test of the American Association of Textile Chemists and Colorists (AATCC) Method 20-2002, to find the cross-sectional and longitudinal fibers.

3. Results and Discoussion

This research investigated the nature and properties of fibers from the shaft Nypa Palm. The third step is to test all the results as follows.

3.1 The experiments to separate the fibers from the shaft Nypa Palm of District of Village Paknaam Samut Prakan province the fiber through separation of fiber by means of beat and fibers of the fiber with a comb nails it. The fiber has a length of about 70 - 90 cm. the surface is not smoot and a rough and the fiber is very stiff. Because the fibers are combed with a comb nail carding.

Figure 1 Appearance of the fibers from the shaft Nypa Palm.

3.2 Experimental scouring process fibers from the shaft Nypa Palm of the fibers through a process of scouring , then the fibers are very soft. Not stiff and impurities such as dirt or mud on the surface of the fiber. Because of wetting agent, and Sunlight soap that enhances the softness to the fabric.

Figure 2 The fibers from shaft Nypa Palm scouring process.

3.3 The physical properties of fibers from the shaft Nypa Palm. The fibers through a process of scouring and fiber have not been scouring process. The results are as follows.

3.3.1 To test the strength and elongation of the fiber. using Tensile Strength Tester the test version LR5K, LLOYD standard ASTM D 3822-01 Standard Test Method For Tensile Propreties of Single Textile Fiber

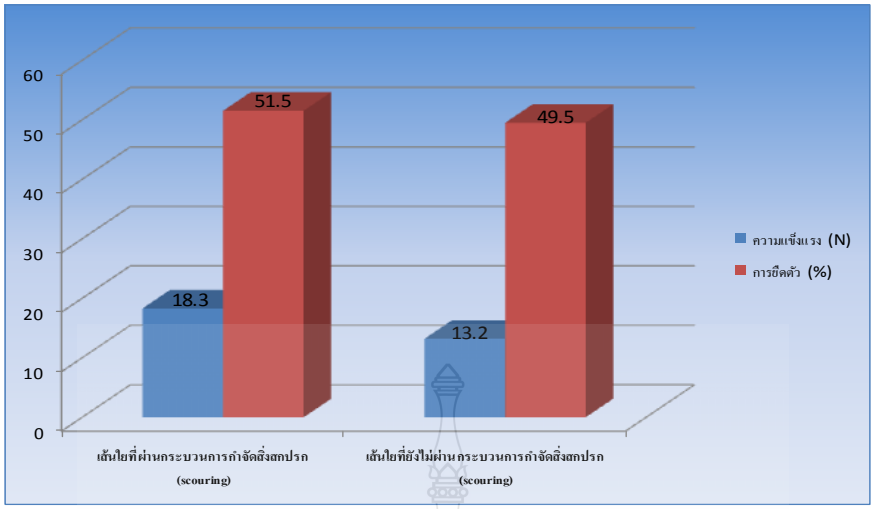

Figure 3 The chart shows a comparing the characteristics and physical properties of fibers from the shaft Nypa Palm of the second kind.

From the Figure 3 indicated that fibers from the shaft Nypa Palm of the scouring with the average physical properties of the test. The average strength of 18.3 N and the elongation was 51.5%, Subordinate by fibers from the shaft Nypa Palm have not been scouring with an average strength equal to 13.2 N and the average elongation was 49.6% .Forasmuch the fibers from the shaft Nypa Palm of the scouring process by boiling an 1 hour and a division of the wetting agent to enhance the smooth fiber.

3.2 The test scanning electron microscopy with the MICROSCOUPE (model OLYMPUS BX41) magnification of the microscope 200 X with a fibers from the shaft Nypa Palm of the scouring process found that the cross section of the fiber is not smooth and the long section is line straight and have a scratched by the length of the fibers.

Figure 4 : The cross section of the fiber

Figure 5 : The long section of the fiber

4. Conclusion

The characteristics and properties of fibers from the shaft Nypa Palm the indicate that fiber through separation of fiber that way rods and fibers different from each other and enough fiber with comb nails carding the fibers have a length of about 70 to 90 cm long fiber. The fibers process of scouring is the physical strength and elongation is best. The average strength of 18.3 N and the elongation of the fiber 51.5%, Compared to the fiber through a non scouring process. The cross section is not smooth and the long section is line straight and have a scratched by the length of the fibers.

5. Acknowledgements

We would likw to thank you Chumporn for fibers from shaft Nypa Palm, P.K.S. Chemical Co.,Ltd, Thailand Textile Institute, Department of Textile Chemistry Technology, Faculty of Industrial Textiles and Fashion Design Rajamangala University of Technology Phra Nakhon, Faculty of Home Economics Technology, Rajamangala University of Technology Thanyaburi for assistance in the implementation the experiments.

6. Referance

[1] Autcha Siripun. **The Development of Fancy from Banana and Cotton Fiber Blend**, Master's
Thesis Department of Home Economics, Faculty of Home Economics Technology Rajamangala
University of Technology Phra Nakhon, 2552.
[2] Sujira Khojimate. **The Feasibility Study of Developing Silk Fibers Utilizing In Producing Bullet**
Proof Vests. Master's Thesis Department of Textile Engineering, Faculty of Engineering Technology,
Rajamangala Institute of Technology, 2552.
[3] Suchada Ujjin, Rungima Chollakup and Wannida Pasukdee. **Physical properties of pineapple/cotton**
blended yarns and fabrics, Thesis of Textile Technology Research Unit,Kasetsart University, 2550.
[4] Noparat Bamroongrugsa. **Nipa Palm : An Economic Crop of Mangroves**.No.1. Bangkok, 2544.