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Evaluation of 100% Eco-Friendly Herbal Coated Sanitary Napkin

Dr. M. Sumithra

Principal Investigator, Rusa 2.0 - Beich Project, Assistant Professor, Department of Textiles and Apparel Design, Bharathiar University, Coimbatore-641 046, Tamilnadu, India
E-mail: sumitad@buc.edu.in

Abstract **- In this study the 100% eco-friendly sanitary napkins made of Cotton fibre, Mercerized Bamboo fibre and natural herbs were used for this study. The Sanitary napkin was prepared and selected herbs were coated on sanitary napkins and evaluated the parameters such as Absorbency Test (ISO 5405-1980) and Leakage test (EAS 96:2008). From this evaluation the result was concluded that no fluid show up in Absorbency test and it is observed that there was no sign of leakage in side or bottom or anywhere found when the barrier sheet was folded in to a cone and place with fluid for 48 hours. It is concluded that features like flexibility, softness, absorbency and comfort were good in Sanitary napkin.**

Keywords: Absorbency Test, Bamboo fibre, Cotton fibre, Eco friendly, Leakage test and Sanitary napkins.

I. INTRODUCTION

Cotton fibres, from cotton plants, typically hold water up to 24–27-fold their own weight (1). The absorbent core which is usually made of cotton in order to improve absorption capacity. Bamboo is extremely resilient and durable as a fibre (2). Because of the presence of, Bamboo Kun,' a natural antimicrobial agent, they have natural antibacterial, Journal of University of Shanghai for Science and Technology ISSN: 1007-6735 Volume 23, Issue 8, August - 2021 Page-164 *Srikavi Anbalagan antifungal, and antistatic qualities. The absorption capacity of bamboo fibre is 3-4 times better than cotton due to the presence of numerous micro gaps and micro holes. Because of these properties, sanitary pads made from bamboo fiber absorb more blood and they are softer and irritant-free (3). Today, in order to protect the environment; the consumers have had a change in their mindset, and have turned towards eco-friendly clothing. Now, many clothing companies offer such eco- friendly clothes due to the increase in demand for Green Fabrics (4).

Herbal remedies are safer than the corresponding pharmaceutical drugs (5). Commercial biodegradable products are not readily available and cost-effective which restricts broad penetration of these products into low- and middle-income communities (6). Thus, an alternative approach is required that will address how commonly available fabrics of biodegradable natural fibres can be used as sanitary pads (7).

Objectives

- To select natural fibre and natural herbs for the sanitary pad.
- To produce 100 % eco –friendly sanitary pad.
- To evaluate the Absorbency Test and Leakage test.

II. MATERIALS AND METHODS

2.1 Materials

Selection of Fibre

Cotton fibre and Mercerized Bamboo fibre is used for this study. Bamboo Cotton fibre has good absorbency and more over bamboo has anti-bacterial character in nature.

Production of 100 % Eco Friendly Sanitary Napkin

The sanitary napkin design is based on the conventional three layered design with top transferable layer, absorbent core and a barrier sheet.

Selection of herbs

Azadirachtaindica, Hibiscus sabdariffa, Saracaasoca and Ocimumtenuiflorum are mixed in equal proportions and sprinkled, 1 grams of garlic and onion is used in absorbent core to protect from pesticides.

2.2 Methods

Evaluation of Absorbency Test (ISO 5405-1980)

According to the test standard ISO 5405-1980, a sample is laid on a flat level and transparent surface, so that the underside of pad can be observed. Fluid is to be dripped, at the rate of 15ml per minute, so that 30 ml of the fluid maintained at a temperature of 27^0C is poured on to the centre of the sanitary pad from a height of approx. 1 to 2 mm. After the napkin has absorbed the full amount of fluid, the standard weight of 1 kg is put above the sample for a minute on the

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portion where the fluid is absorbed. After that the back and sides of the pad are observed for fluid flowing up. The reading is recorded.

Evaluation of Leakage Test (EAS 96:2008-Annex B)

The test was carried out according to EAS 96:2008-Annex B standard. It determines the efficiency of barrier layer. A specimen size of 6.5cm X 6.5cm barrier sheet was cut and folded into a cone and place in a funnel. The funnel filled with test fluid was kept for 48hrs, and then checked for any leakage.

III. RESULTS AND DISCUSSION

Evaluation of Absorbency Test (ISO 5405-1980)

Absorbency of napkin depends more on the core material than the surface layer. Cotton being highly cellulosic, bamboo absorbs moister .No fluid show up (Keep the weight 1kgf force after absorbing 30 ml liquid).

Evaluation of Leakage Test (EAS 96:2008-Annex B)

Barrier layer selected for sanitary pad is tested to determine its ability to prevent leakage. It is observed that there was no sign of leakage in side or bottom or anywhere found when the barrier sheet was folded in to a cone and place with fluid for 48 hours.

IV. CONCLUSION

Though eco-friendly sanitary napkin from cotton fibre and bamboo fibre is highly recommended. Herbal coated disposable sanitary napkins to bio degradable napkins confirm that the sanitary napkins treated with herbs has sufficient properties and are safer to use than the available commercial napkins. This study proved no fluid show up in Absorbency test, no sign of leakage in side or bottom or anywhere found for developing hygienic feminine product which is 100 % eco-friendly herbal napkin.

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