

Safety Evaluation of Biodegradable Sanitary Napkin

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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 Disposable Test, pH value test and Wear study. The evaluated result was concluded that bacteria was absent in disposable test and it is observed the pH value shows that the sanitary napkin was free from acidic and alkali material. Wear study was done for the product and it was concluded that properties like flexibility, softness, absorbency and comfort were good in Sanitary napkin.

KEY WORDS: Bamboo fibre, Cotton fibre, Disposable Test, Eco friendly, pH value test, Sanitary napkins and Wear study.

I. INTRODUCTION

Absorbent materials called sanitary napkin is used to absorb the menstrual discharge. The functional requirement of a feminine sanitary napkin product is to absorb and retain the menstrual fluid so that back tracking of fluid does not happen and at the same time it should be odor free (Anuradha et al, 2017). Sanitary napkins generally comprise multi-layer structure with top sheet, absorbent core and bottom sheet each with specific functions to perform. Direct exposure of the skin to sanitary pads result in the growth of microorganisms and the skin is prone to microbial infestation. Sanitary napkins need to have antimicrobial activity to avoid infections (Voyich et al, 2005)

The present work highlights the effectiveness of cotton and Bamboo fibres to develop eco friendly sanitary napkins using the selected herbs Azadirachta indica, Hibiscus sabdariffa, Saracaasoca and Ocimum tenuiflorum. All parts of medicinally significant plants or herbs are established for potential antimicrobial

constituents. The extract from each part of the plant or herb presented active antimicrobial effectiveness to block the proliferation of the bacteria (Faheem Uddin, 2015). Producing sanitary napkin with the help of natural raw materials which results in user friendly and cost effective product which enables in production of napkins which are biodegradable after usage so that the product can be used by women of all areas during their menstrual cycle without any hassles. (Tharakeswari. S et al, 2021)

This paper focuses on developing Eco-friendly sanitary napkins in terms of disposability test, pH value test and the wear study was taken for the product to reveal the properties like flexibility, softness, absorbency and comfort were good in Sanitary napkin. Selection of sanitary napkin is very much a personal decision based on user preferences and cultural acceptability.

OBJECTIVES

- To select natural fibre and natural herbs for the sanitary pad
- To produce 100 % eco –friendly sanitary pad
- To evaluate the Disposable Test, pH value test and Wear study.

II. MATERIALS AND METHODS

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 antibacterial 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

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

METHODS

Evaluation of Disposability Test

Sanitary napkins should be made from disposable materials. For that, they are put in a container of 15 litres of water and are stirred. Disposable pads get disintegrated when they are subjected to the test.

Test of pH Value

Sanitary napkins should have neutral pH values; they should neither be acidic nor alkaline. For that, they are tested to determine their pH value

Wear Study

The sample napkins were distributed to the 5 people for wear study and the feedback was recorded continuously. The product has an absorbance capacity of 6 to 8 hours and no rashes or foul smell was observed by them and the feedback was collected from the below questions. Name (to be kept confidential) -

Age -

Number of pieces used -

1. How would you rate the product overall
a. Excellent b. very good c. good d. fair-poor
2. What did you like about this product?
3. What did you not like about this product?
4. How would you rate the leakage protection of this product?
a. Excellent b. very good c. good d. fair-poor
5. How would you rate the absorbency of this product?
a. Excellent b. very good c. good d. fair-poor
6. How would you rate the product in contact with your skin?
a. Excellent b. very good c. good d. fair-poor
7. How would you rate overall comfort?
a. Excellent b. very good c. good d. fair-poor
8. How would you rate the product's ability to help control odours?
a. Excellent b. very good c. good d. fair-poor
9. Do you have any additional comments about the product?

III. RESULT AND DISCUSSION

Evaluation of Disposability Test

Disposable, natural cotton fibres presents all natural and herbal presents, Bamboo is natural antimicrobial effects, absence of bacteria.

Test of pH Value

Ph value-6.9, 7.0, 7.1, 6.9, 7.1 and the mean pH value is **6 to 8.5**.

Wear Study

The sample napkins were distributed to the 5 people for wear study and the feedback was recorded continuously. The product has an absorbance capacity of 6 to 8 hours and no rashes or foul smell was observed by them and the feedback was collected as 3 people mentioned an excellent product and soft product, 4 persons mentioned no leakage on top and bottom, very good absorbency, excellent skin contact, very good comfort to use and no odor occurred to the wearer.

IV. CONCLUSION

Cotton possesses inherent properties such as good absorbency which can be beneficial to the absorbent core in combination with Bamboo fibers which results in higher efficacy of the produced sanitary napkins in the evaluation of disposability test and pH value test. The herbal antimicrobial finish using medicinal herbs on sanitary napkin further enhances the other properties like flexibility, softness, absorbency and comfort which was concluded in wear study .Further concluded that the sanitary napkin made up of cotton and bamboo fibers posses desirable properties to be used as feminine hygiene product because of its eco friendliness and biodegradable nature.

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