

Therapeutic Efficacy of Spirulina against Candida in Intimacy Wear

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ABSTRACT

This study aims to create intimate apparel using spirulina extract, which has antibacterial activity against Candida, an inflammatory skin ailment that appears under the breast. The goal is to combat the uncontrolled growth of candida yeasts, known as breast candidiasis.

Keywords: Spirulina extract, Breast Candida, Intimacy wear, Anti-Bacterial.

INTRODUCTION

Candidiasis is a fungal skin disorder characterized by yeast infections beneath the breast. Typically harmless, candida overgrowth can cause infections in humans. Candidiasis can develop anywhere on the body but is most common in warm, moist skin regions, such as under the breasts, where it manifests as a glossy, red rash¹

The skin may split and bleed if the yeast overgrowth gets worse. Itching, burning, and discomfort at the rash site are typical symptoms. Yeast infections beneath the breast can result from the following conditions and other factors: big breasts, tight or inappropriately fitting clothing, infrequent underwear changes, and careless drying of the area under the breast.

Spirulina platensis, an alga with potential benefits such as protein, carbohydrates, and lipids, exhibits excellent antibacterial activity against Staphylococcus aureus and E. coli². When extracted using a methanol solvent, it can be applied to bamboo fabric, preventing candida and promoting overall health.

2. MATERIALS AND METHODS

2.1 SELECTION OF FABRIC:

BAMBOO FABRIC

Bamboo cloth contains antibacterial qualities that allow it to resist numerous washings while minimizing germ development and creating unpleasant Odors. It also kills bacteria that create Odor on human skin, making the person and their clothes smell better. Allergy sufferers will appreciate bamboo fibres³. It is procured from HVM Textiles & Shah JamnadasMadhavji. Material required: 2mtr
Cost of 1 meter: Rs.265, Total cost for 2 meters: Rs.530



Plate.1 Bamboo fabric

2.2 SELECTION OF HERB:

SPIRULINA

A blue-green alga called Spirulina plantensis is commonly found in high-salt tropical or sub-tropical waters. Spirulina has been used to cure several diseases, such as anemia, arthritis, cancer, cardiovascular disease, and diabetes⁴. It is known to generate compounds that have high neuroprotective activity. It exhibits anti-tumor activities in many cancer cells, including breast, colon, pancreatic, liver, prostate, and gastric cancer⁵. It is procured from e-commerce. Quantity required are 100grams and it costs Rs.250.

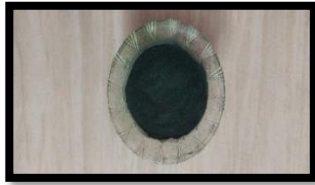


Plate.2 Spirulina powder

2.3 EXTRACTION: METHANOL EXTRACT

Two grams of powdered spirulina were added to the particular Soxhlet cylinders (plate.3). Next, powder and 250 ml of methanol were combined and heated to 60 °C for four hours, or until the mixture turned colourless⁷. After loading the powder into the thimble and lagging the side arm with glass wool, the solvent is heated with an isomantle to start evaporating as it passes through the device and into the condenser before dripping into the reservoir that holds the thimble. The cycle restarts when the solvent level hits the siphon and flows back into the flask. The mixture should become colourless after 4 hours of processing.

This extract reaches the boiling point of 170 °C in the water bath⁶. This procedure uses methanol.

MATERIAL LIQUOR RATIO = weight of the dried substance in (g)/ weight of the water in(l) =2 g/1l. The required material liquor ratio is 2:1.



Plate.3 Soxhlet apparatus

2.4 FINISH ON FABRIC: DIP AND DRY METHOD

The fabric was dipped into extraction solution for 30 minutes. After that the dipped fabric was taken out and dried in the shade⁸. (plate.4)



Plate.4 Dip and Dry

2.5 EVALUATION OF FABRIC: ANTI-BACTERIAL TEST

Qualitative Analysis of the Intimacy Wear:

In order to find the anti-bacterial properties obtained from Spirulina extract, a set of qualitative experiments was carried out with *S.aureus* and *E.coli* (plate.5), and the results are given in Table 1. The result clearly indicates that the spirulina extract has excellent anti-bacterial properties.

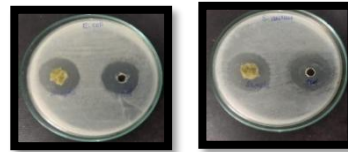


Plate.5 Antibacterial Activity of Extract on (a) *S.aureus* (b) *E.coli*

2.6 DESIGN AND DEVELOPMENT OF PRODUCT

1. Take accurate measurements of the bust, under bust and other relevant areas.
2. Use the measurements to draft the pattern pieces for cups, band, straps and any additional features.
3. Transfer the pattern pieces into fabric and cut them out accurately.
4. Sew the cup pieces together, attach the band, add closures (hooks and eyes or a zipper) and attach the straps.
5. Finish the edges, add elastic needed for support and comfort and embellished.

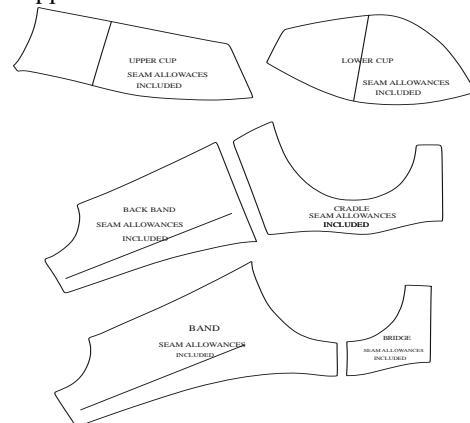


Fig.1 Pattern Making of intimacy wear

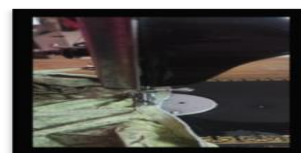


Plate 6. Development of intimacy wear



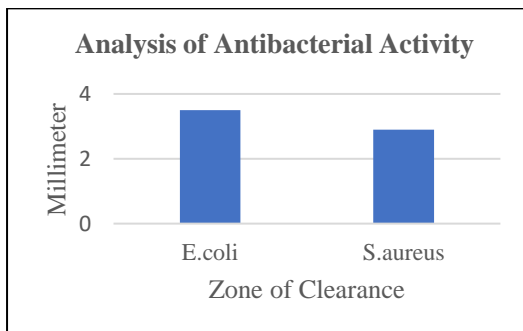
Plate 7. Final Product

3. RESULT AND DISCUSSION

3.1 ANTIBACTERIAL ANALYSIS

Table 1. Qualitative analysis of spirulina extract

Organisms	E.coli	S.aureus
Zone of Clearance	3.5mm	2.9mm



The results found that the extract had antibacterial activity against E. coli and S. aureus. The result shows that the given herbal extract has antimicrobial activity.

FUTURE SCOPE

The future of the herbal bra holds the potential for further technological innovations and advancements in materials and designs. The report may explore developments in sustainable and eco-friendly materials, smart textiles, and advancements in fit technology to improve comfort and support. In 2020, about 2.3 million women were diagnosed with breast cancer worldwide, and 685,000 died⁹. By using this spirulina-infused brassiere, breast-related infections can be reduced.

Certain meats, fats, oils, additives, processed meals, high-sugar content foods, as well as alcoholic and caffeinated beverages, are all discouraged on the candida diet. It is possible to identify early indicators of breast issues by holding breast health awareness campaigns. Many awareness campaigns have shown that women are the ones who identify most breast health issues. As part of early diagnosis and breast health awareness initiatives, health providers should

be ready to inform women about the risk factors, symptoms, and indicators of breast candida.

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ANNEXURE

Therapeutic Efficacy of Spirulina Against Candida In Intimacy Wear- Questionnaire Link:

https://docs.google.com/forms/d/1ef0dS-39Jv1TN5a_GsjDNdUdZbjzbv5w8rfGQRJxfQ/viewform?chromeless=1&edit_request=true