

## DEVELOPMENT OF HEALTH CARE AND HYGIENE WEARS USING AMLA LEAVES

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*Abstract: Amla is superb herbal present. It has a sturdy antibacterial impact. In an acidic nation, I used the padded mangel approach to remedy cotton material with amla juice. The cotton material's antibacterial pastime used to be examined. After conducting exams, i found that the fabric has antibacterial homes. The motive of the take a look at used to be to take a show up to be on the antibacterial pastime of cotton cloth after it had been dealt with amla juice.*

*Key words:* Antimicrobial, Amla leaves, Staphylococcus

### 1. INTRODUCTION

An antimicrobial is a substance that kills or inhibits the growth of bacteria. Antimicrobial fibres are textiles that have been treated with antimicrobial chemicals, either on the surface or within the fibres. Microorganisms thrive in textile materials because of their large surface area and ability to hold moisture. This expansion has a number of negative consequences for both the material and the end user. The proliferation of germs lowers the mechanical strength of the product, stains the fabric, and allows the growth of more harmful microbes. One of the reasons why clothing is bundled in airtight bundles is because of this.

A single nasty microorganism can devastate an entire production. The impact on the health of the end user is even more critical. Odors, sickness, and pollution can all result from unchecked microbial proliferation. Because textiles, especially those made of natural fibres, provide an ideal environment for microbes to thrive, the necessity to maintain and preserve them has become critical.

As a result, these fibres play a critical role in sanitation and medical applications. Where moisture and microorganisms collide, antibacterial textiles are employed. Healthcare, hygiene, medical devices, sportswear, food packaging, storage, thermal and mechanical protection, automotive textile, heating, ventilation, and air conditioning, air filters, and water purification systems are just a few of the applications for the materials. They're utilised to safeguard healthcare workers with functions as well as materials used in the home, such as socks, mattresses, baby diapers, and

blankets. Antimicrobial fibres can be found in various shapes anywhere there are ingredients for microorganisms to feed on. In my research, I attempted to determine the antibacterial properties of cotton cloth treated with amla leaf powder extraction. The fabric has two types of antibacterial finishes. They have anti-fungal and anti-bacterial properties. I applied an antimicrobial treatment on cotton cloth as part of my study.

### 2. AMLA

Amla is scientifically known as

- Phyllanthus emblica.
- It belongs to phyllanthaceae Family



### 3. MATERIALS AND METHODOLOGY

#### AMLA ( PHYLLANTHUS EMBLICA )

Amla plantation is a Uttar Pradesh and some part of Tamil Nadu. 100% dyed cotton fabric was used for the application of antimicrobial finish. Leaves of amla ( Phyllanthus emblica ) were used. Raw materials were collected from around north and south Tamil Nadu region.

The Amla leaves were cleaned, washed and dried under shade. The dried leaves were powdered using grinding.

#### 3.1 METHODS OF EXTRACTION

A total of 30 grams of Amla leaves powder was weighed and taken in a conical flask. Then take an ethanol in the ratio of 1:20 and then put the ethanol mixed solution in the shaker for around 12 hours. Then take the solution and kept in outside atmosphere for proper evaporation and then take the dried ethanol solution in a plate for testing purpose. After testing the dried ethanol solution take it in a conical flask and add some amount of distilled water and then put our organic cotton fabric in that solution and mix it for over 1 – 2 hours in that solution and then give some relaxation time for that mixed fabric.



### 3.2 PADDING MANGLE METHOD

The development of the Antibacterial finish was carried out under laboratory conditions. The following procedures were carried out during the development process. To develop a material coated with antibacterial finish, a suitable base material should be selected. The fabrics can be either woven, knitted or non-woven. The fabric to be coated should be well-sterilised in order to avoid microbial deteriorations. The extracted neem, basil and aloe vera herbal powder was taken in the proportion 1:20. This was mixed in the ratio of 3: 60 with Ethanol. The mixture was centrifuged in the room temperature to get evaporate the ethanol. The clear extract powder is mixed with water in the ratio of 3:60. The clear extract is filtered using filter paper. The filtered solution was preserved in conical flask. Thus the opted concentration level of 1:20 ratio level was taken into account for the coating of antibacterial finish. We use padding mangle method to coat the antibacterial finish. The padding mangle essentially consists of a small trough containing the liquor and a set of squeezing bowls.



Fig 3.2

The material is handed in full width via the liquor in the trough and the extra liquor is eliminated by using passing it via the squeezing bowls; thus, the mangle results impregnation of the liquor and squeezes out extra liquor. Fig 3.2 represents the padding mangle method.

brass or vulcanite: the bowls are organized over a shallow trough with two or three information rollers. Pressure on the bowls is exerted through a machine of weights and compound levers (even although hydraulic stress gadget offers higher and extra even squeezing) due to the fact it is much less difficult and there is no chance of leaking valves and pumps. The fabric enters the trough alongside the information rollers passes via the liquor and is uniformly squeezed between the bowls and is wound on a curler or exceeded without delay for subsequent operations. The passage of material thru the natural answer is time period the and its passage via the squeezing bowls is termed the nip. It is used both to function an vital phase of the ending opera bowls

## 4. RESULT AND

### DISCUSSION

#### Test Method:

To evaluate is placed into sterile petri dishes and allowed to solidify the antibacterial test result, I utilised the AATCC 100 Parallel Streak Test method. Before inoculating, the AATCC 100 is a quick, qualitative test. The ability of an antimicrobial textile to suppress the growth of microbes is measured by the suspension of test microorganisms. Dilution in sterile distilled water can be used to standardise the process. • Using a sterile inoculating loop, one loop full with the sponsor's testing objectives and product end use, depending on the research I used a diluted inoculum suspension to test five different bacteria strains. I used Gram Positive Bacteria in the form of successive streaks, equally spaced apart, and free of *S.aureus*.

#### TEST RESULT:

Anti-bacterial Test Result is evaluated by the photograph of Amla leaves Treated Cotton Fabric. Which is given below

**FOR UNTREATED COTTON FABRIC:**

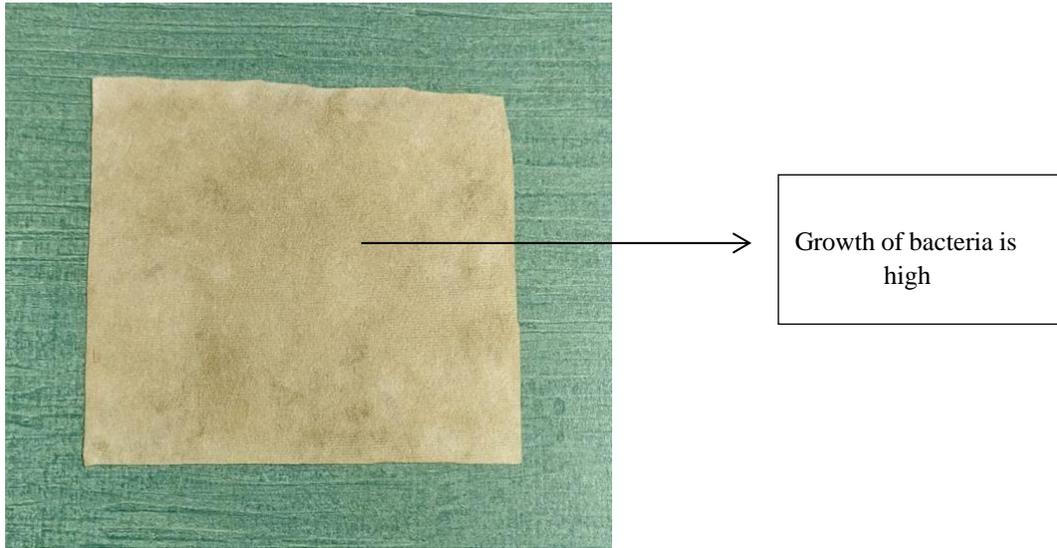


Fig.4 Untreated cotton fabrics

**FOR TREATED COTTON FABRIC:**

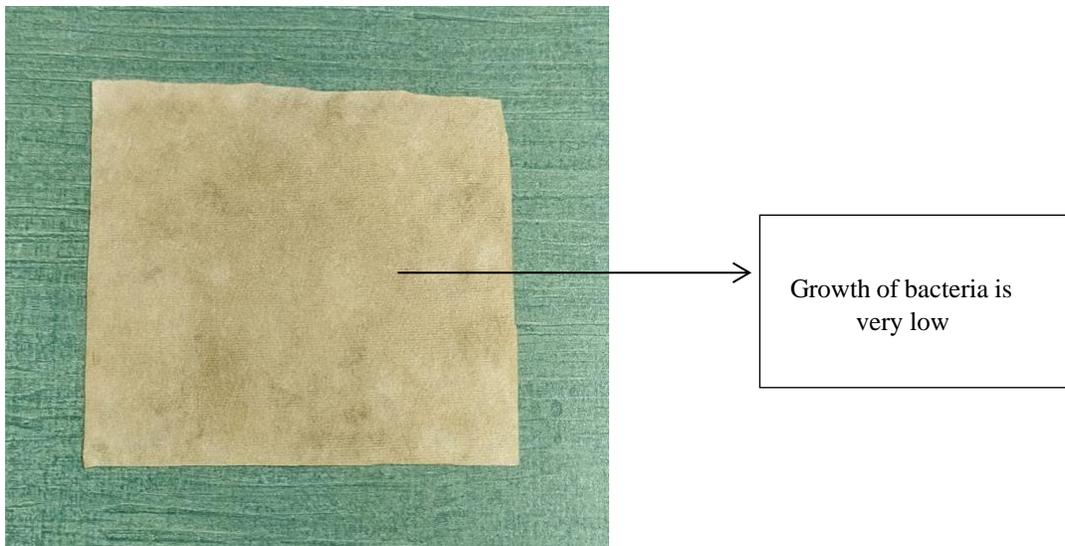
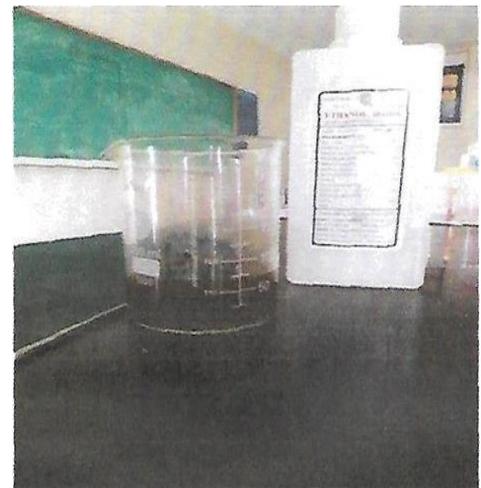
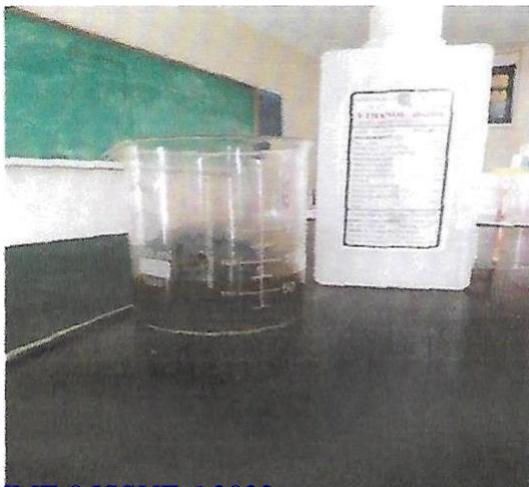


Fig.5 treated cotton fabric

**TEST OBSERVATION:**

In untreated sample, increase of S.aurries was once very high. For this motive untreated scoured & bleached woven material cannot without problems shield from the exercise of S.aurries.

The antibacterial property for alma juice dealt with cloth was once good. Because I noticed that the boom of microorganism in the fabric floor used to be very low. We can say that alma juice dealt with cotton material has a true antibacterial property towards gram nice bacteria.

**TEST SAMPLE:****FACE OF THE FABRIC****BACK OF THE FABRIC**

**CONCLUSION:**

In untreated sample, growth of untreated scoured & bleached woven fabric cannot easily protect from the activity of *S. aureus*. So, it has no antibacterial activity. The anti-bacterial property for amla juice treated fabric was good. Because I saw that the growth of microorganism in the fabric surface was very low.

**REFERENCE :**

- Antimicrobial finish on textiles, Marcel Albert ,Lecturers, Department of Fashion Technology Kumara guru College of Technology, Coimbatore – 6, Technical Textile [8]. Us National library of medicine, Antibacterial activities of *Embllica officinalis* and *Coriandrum sativum* against Gram negative urinary pathogens.
- Antibacterial activity Test of Extracts and fraction of Cassava leaves (*Manihot esculenta* Crantz) against clinical Isolates of staphylococcus epidermidis and propionibacterium acnes causing acne, Joseph Falkinham, 29 Jan 2020
- Antibacterial activities of flavonoida: structure-activity relationship and mechanism, Yixi Xie et al. Curr med Chem.2015.
- : Extraction of eco-friendly natural dyes from mango leaves and their application on silk fabric, Mohammad Gias Uddin, Published: 14 July 2015.
- International Journal of Scientific and Research Publications, Volume 7, Issue 9, September 2017 401 ISSN 2250-3153
- Antimicrobial Finish on Cotton Fabric with Amla Juice Kazi Rahamat Ullah
- Antimicrobial Finish of Cotton Fabric with Neem Extract, Research Gate; By Roli Purwar, Prashnath Mishra, Mangala Joshi, Delhi Technological University, Delhi.
- Medicinal properties of Neem: New Findings, by D.P. Agrawal, Infinity Foundation
- Journal of Medicinal Plants Research Vol. 4(18), pp. 2473-2478, 4 December, 2010 Available online at <http://www.academicjournals.org/JM> [PR](http://www.academicjournals.org/JM) ISSN 1996-0875 ©2010 Academic Journals