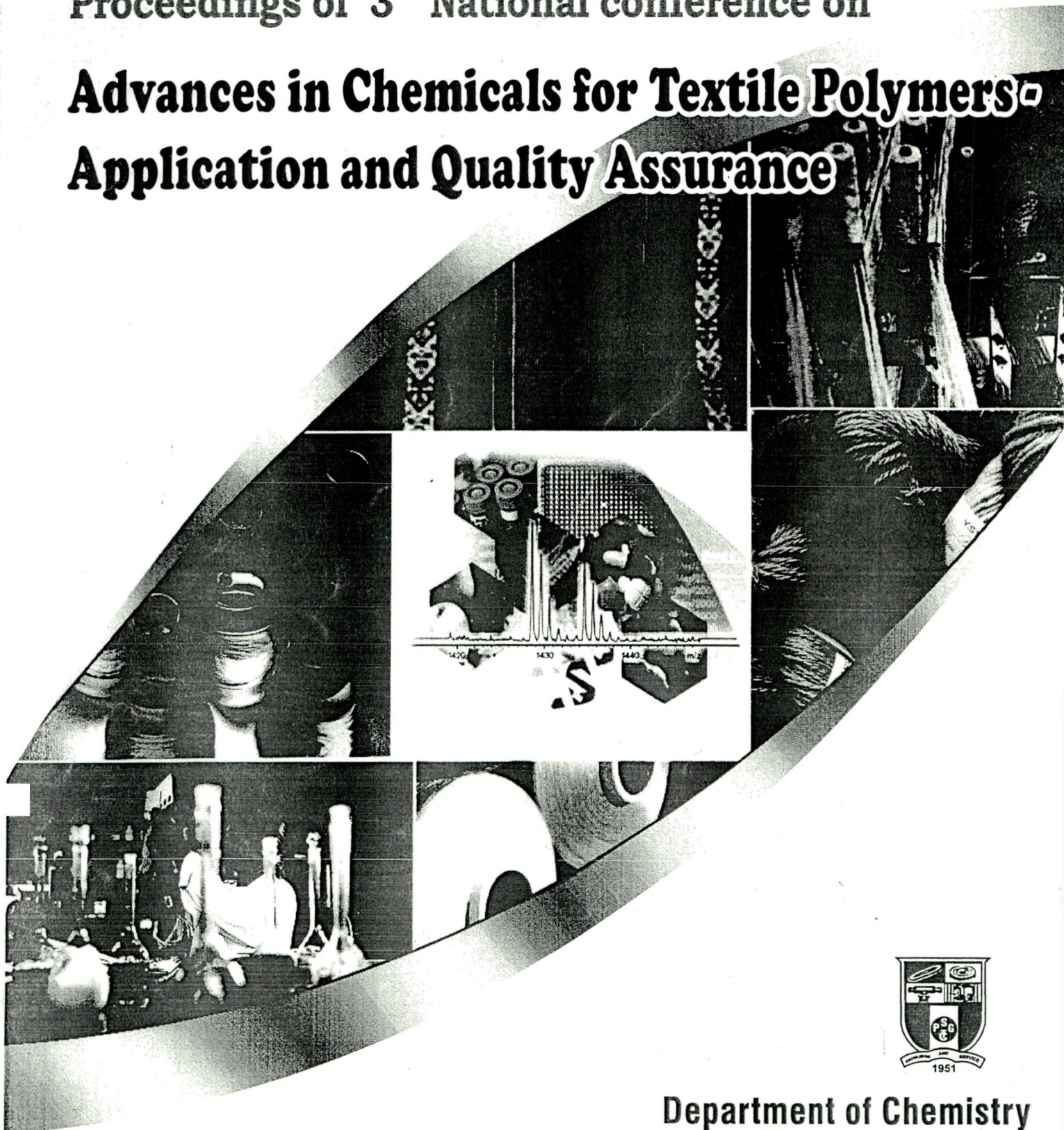


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NATURAL HERBAL EXTRACT FOR MEDICAL TEXTILES

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INTRODUCTION:

Increasing global completion in textiles has created many challenges for textile researchers and industrialists. The rapid growth in technical textiles and their end- uses has generated many opportunities for the application of innovative finishes. The impact of the textile industries on the environment and the consumption of the raw materials and natural resources are becoming prime concerns. Now a days the natural dyes and herbal extracts are used for medical textiles. Bandages and wound dressings are most commonly used because they are more affordable .in order to adapt to environmental insult; Plants produce a vast number of natural products that have antimicrobial and immunomodulating potential.

Natural antimicrobial agents for textile applications:

Among all the natural antimicrobial agents, the plant product comprises the major segment. Healing power of some of the plant materials has been used since ancient times. It is estimated that there are 250,000-500,000 species of plants on earth. A relatively small percentage (1-10%) of these is used as food by both humans and other animal species, possibly, even more than this has medicinal properties. Based on this information the major challenges and the future potential of application of natural products on the textiles have been critically discussed below.

SIGNIFICANT OF HERBS

Herbs are more commonly called plants. They are used because of their qualities such as flavors, scent or some other properties. They are different in their ways and mainly used for cooking and for making herbal products that are used for treating various diseases. Herbs are a significant part of the history of Ayurveda, which is now popularly called alternative medicine. Different herbs are obtained from different parts of a plant. They may come from roots, leaves, barks, seeds or flowers of a plant tulsi leaves, clove oil, onion skin, pulp extract

and some other herbal products show better result against staphylococcus aureus and E-coli bacteria. A recent study has been reported on the application of hiba oil (cypress oil) as an anti microbial agent for textiles. The authors have developed analytical methods for investigating the hiba oil content of the commercially available textiles using thujopsene (the main component of hiba oil) as an index with the help of gas chromatography/mass spectroscopy (GC/MS). The antimicrobial activity of other plant extracts such as pepper (allyl thiocyanate AITC), evening prisome and perilla oil, have also been explored for textiles applications. Some of the other important natural products, such as karanga oil, cashew shell oil, henna or mehndi, and moringa oleifera (drumstick tree), can also be explored on textile substrates for antibacterial property which will have tremendous application in apparels and medical textiles.

MEDICAL TEXTILES:

Medical textiles are an emerging sector of technical textiles industry and its growth is fuelled due to constant improvements in healthcare as well as innovations in the textile field. The use of textile materials for medical and healthcare products can be classified into following main areas

- Barrier material (for infection control)
- Bandaging & pressure garment
- Wound care material
- Hygiene material
- Implantable material (sutures, art. Joints etc)
- Extra Corporal devices like (art. Kidney etc)

REQUIREMENTS OF TEXTILE MATERIAL FOR MEDICAL APPLICATIONS:

- Biocompatible
- Good resistance to alkalis, acids and micro-organisms
- Good dimensional stability
- Elasticity

- Free from contamination or impurities
- Absorption / Repellence
- Air permeability.

RECENT DEVELOPMENT IN MEDICAL TEXTILE:

SURGICAL SUTURES

- Barbed sutures
- Gelatin coated sutures
- CatgutPolymer Composite Suture Dressing materials
- Calcium Alginate Fibers
- Sorbalgon
- Thin film dressing

(e.g.) An antimicrobial suture based on nylon and polypropylene monofilaments is being pursued in the medical textile and also the Bi-directional barbed suture develop less suture slippage in the wound as well as to more evenly distribute the holding forces there by reducing tissue distortion

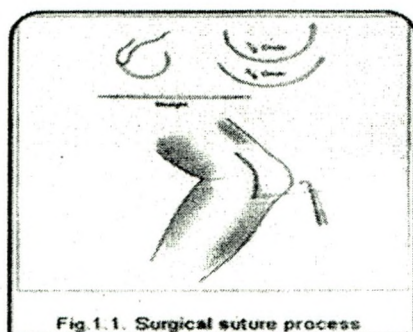


Fig. 1. 1. Surgical suture process

Surgical suture process

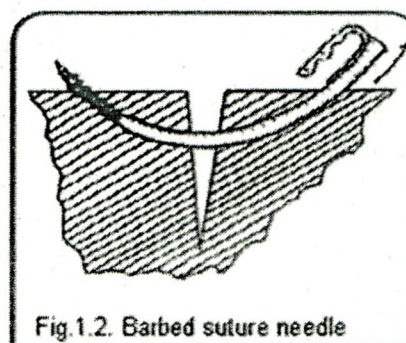


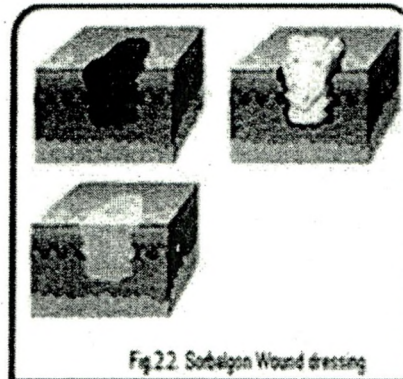
Fig. 1.2. Barbed suture needle

barbed suture needless

SUPER ABSORBABLE POLYMER

- Fibrous materials developed for use in medicine
- Water absorbent Polymer
- Sodium acrylate polymer

- Polyacrylate
- Spider silk



Sorbalgon Wound Dressing

(eg) It is a supple, non-woven dressing made from high quality calcium alginate fiber with excellent gel forming properties. It offers number of practical therapeutic advantages for wound healing.



Thin Film Dressing

An improved thin film dressing with an absorbent border has been developed it absorb body fluid and prevent dressing leakage and wound maceration

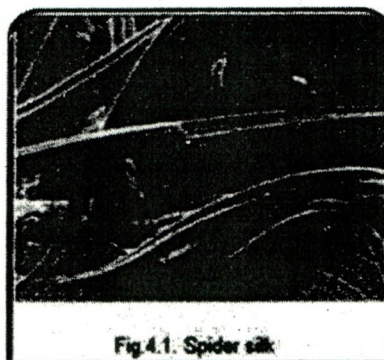


Fig.4.1. Spider silk

Spider Silk

Modified goat milk will contain web protein It is Stronger and more flexible than steel, spider silk offers a lightweight alternative to carbon fibre.

ANTIMICROBIAL TEXTILE

- ACTICOAT dressing
- Antimicrobial Wound Dressing
- Compression bandage

Thus the application of textile in high performance and specialized fields are increasing day by day. There will be an increasing role for medical textile in future. Thus the textile will be used in all extra corporal devices, external or implanted materials, healthcare and hygienic products.

Ayurveda-application of natural herbal extract on fabrics for medical textiles:

Ayurveda or Ayurvedic clothing is yet another gift of Ayurveda to humanity. Ayur means life and Vastra means clothing. This is a traditional and the most influential form of medicine native to India originated from its Vedic traditions. It is popularly practiced in south Asia. It involves treating people with medicinal plants and herbs with bizarre qualities to cure their ailments. Ayurveda is a fabric dyed with natural extracts as prescribed in the ayurvedic texts, using various natural herbs like neem, tulsi, sida, turmeric, and sandalwood. The fabrics are permeated with therapeutic herbs and aromatic oils. They possess medicinal properties, and are good for skin problems, head ache, asthma, and many other ailments

Ayurvastra or medicinal cloth exposes the medicinal herbs to the body through the skin, the body's largest organ. In contact with the clothing, bed sheets, or floor mats dipped in medicinal dyes, the skin absorbs the medicinal qualities of the herbs. Depending on which herbs are used in dyes, medicinal cloths may treat a broad range of medical conditions including skin ailments, diabetic, arthritis, and high blood pressure. The herbal dye are used for common ailments and they are given below

Ailments

Skin infection

Diabetes

Eczema

Psoriasis

Hypertension

High blood pressure

Asthma

Arthritis

Insomnia

Rheumatism

Other Usage

weight loss

immune system booster

energy booster

mood enhancer

over all well-being

blood purification and cooling

digestion

A clinically trial initiated by the ministry of health at the government ayurveda college in thiruvananthapuram, Kerala, suggest that the medicinal cloth does indeed work. for the study, patient suffering from rheumatism, allergies, hypertension, diabetes, psoriasis, and other skin ailments were constantly exposed to ayurvedic herbs for 30 days through **Medicinal Cloth**-bed linen, clothing, and mattresses. Walls, floors, and ceiling in the subjects' room were further lined with medicinal cloth or (ayurvastra) coir mats. According to Dr. Vishvanathan the former dean of the drug research department of ayurvedic college, the response was

“remarkably good,” especially in the case of arthritis and skin ailments where the patient showed a “marked improvement.”

CONCLUSION:

Based on these literature and the studies conducted by the ayurveda college shows a plat form for the researchers to carry out further study. Because our mother earth is flooded with plenty of curable herbs, which would aid in treating some ailments. Textile finishing with herbal extracts is one step ahead for organic life style. It supports the core concept of nature, organic, green and eco-friendly and eliminates the ailments that are common.



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