Antimicrobial Treatment and Fastness Properties of Cotton Fabrics with Punicagranatum, Curcuma Longa and Acorus Calamus

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Abstract: A dressing is a compress applied to a wound to promote healing and Protect the wound from further harm. A dressing is designed to be in direct contact with the wound, as distinguished from a bandage, which is most often used to hold a dressing in place. Many modern dressings are self-adhesive.
Wound dressings are mainly employed to prevent bulk loss of tissue and they are effective against trauma, chronic wounds such as chronic burn wounds, diabetic, decubitus and venous stasis ulcers.

Index terms: Antimicrobial, Pomegranate, Turmeric, Calamus, Wound dressing.

INTRODUCTION

Dressings that create and maintain a moist environment, however, are now considered to provide the optimal conditions for wound healing. Moisture under occlusive dressings not only increases the rate of epithelialization but also promotes healing through moisture itself and the presence initially of a low oxygen tension (promoting the inflammatory phase). Gauze does not exhibit these properties; it may be disruptive to the healing wound as it dries and cause tissue damage when it is removed. It is not now widely used in the United Kingdom.

OBJECTIVE

- To treat the cotton fabric with the extracts of Punicagranatum, curcuma longa, Acorus calamus and to know the result of the antimicrobial treatment in cotton fabric in which the above materials are used as a extracts.
- To produce a antibacterial wound dressing for all age humans protecting from skin diseases.
- To produce a natural antibacterial wound dressings for diabetes patients.

LITERATURE REVIEW

ANTIBACTERIAL FINISH ON TEXTILE PRODUCTS:

Microbes such as bacteria, virus, fungi and yeast are present almost everywhere.The increasing demand for comfortable, aesthetic, durable, functional and safe textile products dictates to develop of new and contemporary techniques of processing and designing textiles. The textile materials are good media for protecting us from microorganism. Among various functional abilities, the antibacterial property is considered to be important with fabrics, which are in direct contact with human body, (Sathinarayanan, 2010).

WOUND DRESSING:

The role of a wound dressing is to provide the optimum conditions for wound healing, whilst protecting the wound from further trauma and invasion by pathogenic microorganisms. It is also important that the dressings can be removed atraumatically, so as to prevent further damage to the wound surface during dressing changes.It is extremely important, therefore, to select an appropriate dressing material for the particular wound, in order to maintain the optimum moisture levels for wound.

COTTON:

Cotton is currently the leading plant fibre crop worldwide and is grown commercially in the temperate and tropical regions of more than 50 countries (Smith1999), with a total coverage of 34 million ha. The cotton seed coat extends into tubular fibre and is spun into yarn. Specific areas of production include countries such as USA, India, China, the Middle East and Australia, where climatic conditions suit the natural growth requirements of

cotton, including periods of hot and dry weather, and where adequate moisture is available, often obtained through irrigation. Among the five major cotton growing countries, China holds the highest productivity level (1,265 kg/ha), followed by USA (985 kg/ha), Uzbekistan (831 kg/ha), Pakistan (599 kg/ha) and India (560 kg/ha) (Table 1.1).

POMEGRANATE PEEL:

Fruits wastes are naturally enriched with vitamins, minerals and other bioactive compounds and are good sources of fiber as well. Compelling evidences justify and designate peels and relative extracts of numerous fruits as nutraceuticals and functional foods. In a present scenario of food insecurity related malnutrition and likelihood of infectious diseases, utilization of these healthier biological ingredients in diets have widely debated.

PROPERTIES OF POMEGRANATE:

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TURMERIC:

Natural plant products have been used throughout human history for various purposes. Having co-evolved with animal life, many of the plants from which these natural products are derived are billions of years old. Tens of thousands of these products are produced as secondary metabolites by higher plants as a natural defense mechanism against disease and infection. Many of these natural products have pharmacological or biological activity that can be exploited in pharmaceutical drug discovery and drug design.

PROPERTIES OF TURMERIC:

Water and fat soluble extracts of turmeric and its curcumin component exhibit strong antioxidant activity, comparable to vitamins C and E. Turmeric's hepatoprotective effect is mainly a result of its antioxidant properties resulting in enhanced cellular resistance to oxidative damage.

ACORUS CALAMUS:

Mother earth has bestowed to the mankind and various plants with healing ability for curing the ailments of human being. This unique feature has been identified since pre historic times. The WHO has also estimated that 80% of the world population meets their primary health care needs through traditional medicine only. Medicinal plants are those plants possessing secondary metabolites and are potential sources of curative drugs with the very long list of chemicals and its curative nature.

MORDANT (ALUM):

A colorless astringent compound which is a hydrated double sulphate of aluminium and potassium, used in solution in dyeing and tanning.

TEST SPECIMEN:

Testing is completed on fabric, typically in warp and weft directions separately. Most buyers' requirements require that the worst of these is assessed and reported. For a solid dyed or printed fabric, differentiation in the two is not seen. However, when a striped placement printed fabric, the staining is often different. It is important to note that a laboratory is expected to report the worst reading and not an average. This is due to the basic fact that laboratory testing is expected to bring out any possible areas of customer complaints. For striped materials, the rubbing direction makes a lot of difference. Mark off if rubbed along the stripe or across it could be very different. Buyers can have very different views of this test so a laboratory should follow all the requirements of the buyer. For example, in a striped fabric, some buyers often require rubbing to be done diagonally across the stripe In the case of yarn, this can be wound around a cardboard or knit into fabric before testing. The specimen size requirement of 140 x 50 mm.

- Washing fastness
- rubbing fastness
- Dry rubbing
- Wet rubbing

BATERIALS:

KLEBSIELLA PNEUMONIA:

Klebsiella pneumonia subsp. pneumonia (Kpp) is a Gram-negative bacterium within the family Enterobacteriaceae found in the environment and the alimentary tract of animals. Members of the Klebsiella genus cause pneumonia and urogenital infections in carnivores and ungulates, mastitis in ruminants and pigs, enterocolitis in rabbits and sporadic septicaemia in a number of species.

STAPHYLOCOCCUS AUREUS:

Staphylococcus aureus infection is a leading cause of staphylococcal bacteremia in adults and children in hospitals in the United Kingdom, and recent reports suggest invasive staphylococci are emerging from the community.

CONCLUSION

In Antibacterial test report it indicates that the treatment of punicagranatum, curcuma longa and acoruscalamus extracts in cotton fabric having the higher opposing of bacteria in which it is used for wound dressing .

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