



# DEVELOPMENT OF HERBAL TREATED TEMPERATURE REDUCTION HEAD CAP USING ALKANET SUPPLEMENTATION OF VETIVER

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## ABSTRACT:

Head cap is the perfect companion for outdoor activities, sports, or simply lounging on a hot day. Bamboo fabric naturally provides UV protection, shielding your head and scalp from harmful sun rays, making it ideal for outdoor activities. The bamboo fabric of the hat has an herbal treatment and reduces temperature. Natural herbs such as vetiver and alkanet were extracted and applied to the cap using a dip-and-dry approach. The capacity of vetiver and alkanet to control temperature led to their selection. Since ancient times, alkanet has been used as a natural dye, which is used to treat scalp-related problems because of its potent antibacterial, anti-inflammatory, and naturally cooling properties. It can reduce body temperature in addition to treating fever. A plant called vetiver has remarkable antibacterial properties. It also cools the body, eases tension, and lowers body temperature. Bamboo textiles are breathable and kind to the environment. The heat temperature reduces while wearing this cap.

**KEY WORDS:** Heat-reducing product, head hat, bamboo fabric, natural herbs, and antimicrobial qualities.

## INTRODUCTION:

Globes are struggling with the heat due to the hot weather. One's body temperature can rise by being outside in extremely hot weather or by spending a lot of time indoors in a hot atmosphere.

Overexposure to the sun can raise body temperature and possibly cause heatstroke, often known as sunstroke. In either case, wearing an excessive number of clothes can also raise the body temperature. Due to the heat, temperatures caused dehydration. Dehydration causes problems with blood pressure, heart rate, and body temperature. Alkanet root not only reduces inflammation and skin infections but also cures burn scars. It is commonly used in face masks and other skin care products to help cure burn scars because of its innate anti-inflammatory properties and cooling effect on the skin.

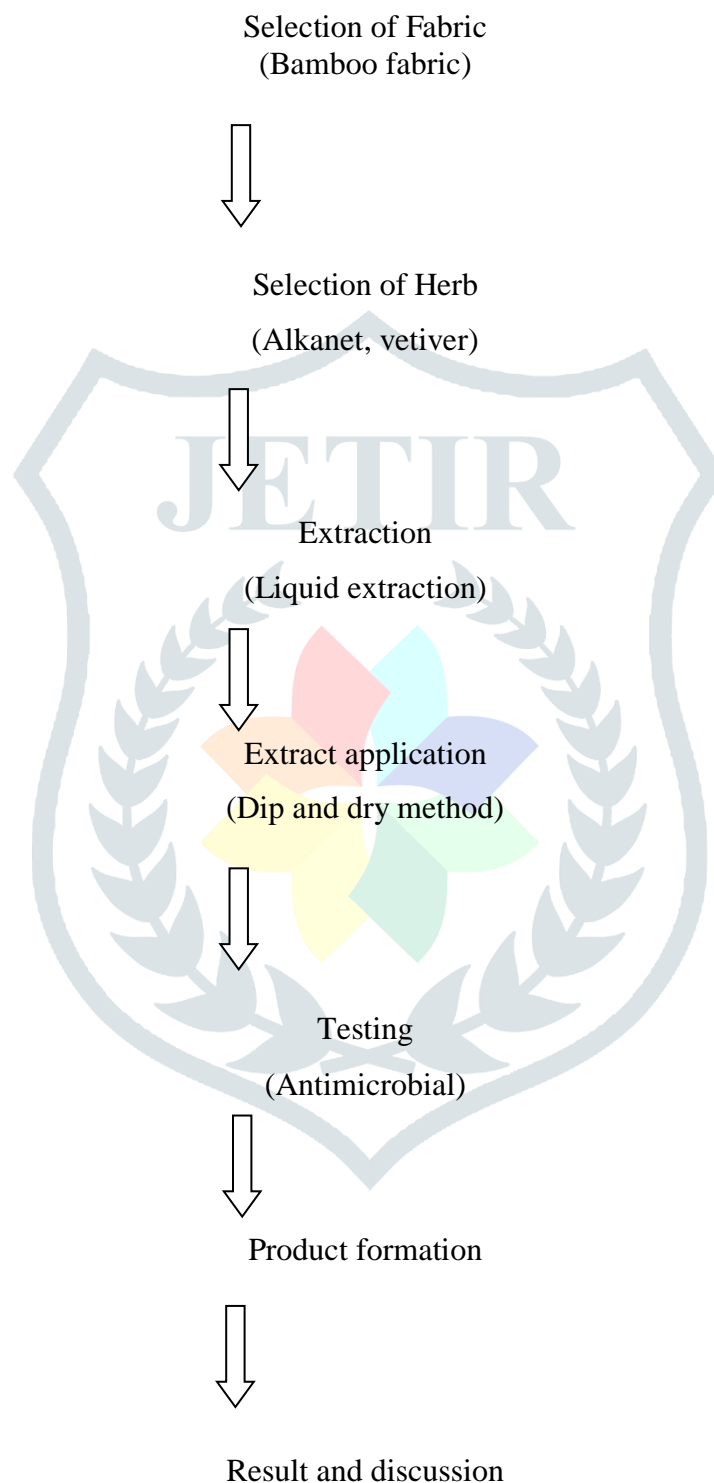
Many people Recognise Vetiver for its ability to soothe and cool. Vetiver also relieves rashes and heat burns. Because of their cooling qualities, vetiver roots are also excellent for staying hydrated. They soothe the body and treat acne and skin irritations. It is also a desired element in cosmetic treatments due to its inherent affinity for the skin. Absorbent for sweat. Compared to most other materials, bamboo wicks away moisture more effectively, keeping babies' skin dry and comfortable all day. Properties that are hypoallergenic, cool, breathable, antibacterial, antifungal, long-lasting, durable, and eco-friendly.

## **OBJECTIVES:**

- To extract the powder of Alkanet and vetiver for its medical and cooling properties.
- To apply the extraction on the bamboo fabric.
- To develop a head cap using Alkanet and Vetiver.
- To test the developed head cap for its anti-microbial properties.

## MATERIALS AND METHODS

### METHODOLOGY



#### Selection of Herb:

##### ALKANET

Alkanet root naturally has anti-inflammatory and cooling properties that draw heat away from the skin, it is now commonly used to treat burn scars. Alkanet root can thus be used as a

sunscreen and a remedy for sunburns. Alkanet root's inherent cooling properties are used to reduce fever. It is bought from commercial store chinniyampalayam, Coimbatore.



PLATE-1

## VETIVER

Vetiver, which significantly lowers the heat, also lowers stress. Further provides the human body with a cooling impact. It helps heal wounds because of its amazing antibacterial qualities. People take Vetiver for pain in the stomach and for issues with nerves and circulation. Sometimes, vetiver is administered topically to treat shock and mental trauma in addition to stress. Insect repellent and lice. It is also applied to burns, stings, and arthritis. It is bought from commercial store chinniyampalayam, Coimbatore.



PLATE-2

## Selection of Material:

Bamboo fiber stands out for being incredibly cool and breathable. The cross-section of bamboo fiber offers far superior ventilation and moisture absorption since it is full of different micro-gaps and micro-holes. These kinds of clothes help people feel incredibly cool and comfortable during the sweltering summer, much like breathing. The fabric is bought from commercial store Jamunadas, Tirupur. Fabric 2 meters, per meter Rs530.



PLATE-3

## Extraction of Natural Herb:

The natural herbs used are *Alkanna tinctoria* and *Chrysopogon zizanioides*. Dry the herbs and grind both herbs to 50g. Extraction was carried out by dissolving 25g of each herbal powder in 500 ml of ethanol. The mixture was kept overnight under shaking conditions. The extract was filtered using filter paper. The filter was collected and evaporated at room temperature. The extract was collected and stored.



PLATE-4



PLATE-5

**Application Method:****DIP AND DRY METHOD:**

The fabrics were dipped in the extraction solution for 30 minutes. And the dipped fabric was taken out and dried in the shade.



PLATE-6

## Construction of Head Cap:

### PATTERN:

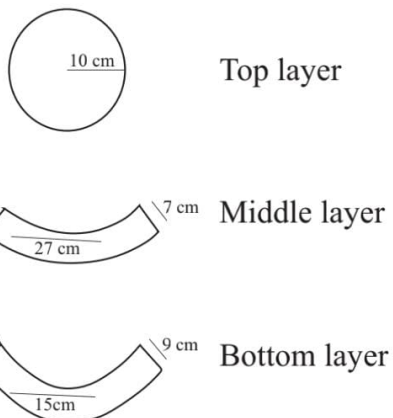


PLATE-7

### SEWING:



PLATE-8

## RESULT AND DISCUSSION

### RESULT:

#### ANTIMICROBIAL TEST:

#### PREPARATION OF THE BACTERIAL INOCULUM

Stock cultures were maintained at 4° C on slopes of nutrient agar and potato dextrose agar. Active culture for experiments were prepared by transferring a loop full of cells from stock cultures to test tubes of 50ml nutrient broth bacterial cultures were incubated with agitation for 24hours and at 37°c on shaking incubator and fungal cultures were incubated at 27°c for 3-5 days. Each suspension of test organism was subsequently stroke out on nutrient agar media and potato dextrose agar. Bacterial cultures then incubated at 37°c for 24 hours and fungal incubated at 27°c for 3-5 days. A single colony was transferred to nutrient agar media slants were incubated at 37°c for 24 hours and potato dextrose slant were incubated at 27°c for 3-5 days. These stock cultures were kept at 4°c. For use in experiments, a loop of each test organism was transferred into 50ml nutrient broth and incubated separately at 37°c for 18-20 hours for bacterial culture.

#### Well Diffusion method

The antibacterial activity and antifungal activity of crude extract extracts was determined by Well Diffusion method (Bauer *et al.*, 1996). MHA plates were prepared by pouring 20ml of molten media into sterile petriplates. After solidification of media, 20-25µl suspension of bacterial inoculums was swabbed uniformly. The sterile paper discs were dipped into required solvents then placed in agar plates. Then 10-50 µl of plant extract was poured into the wells. After that, the plates were incubated at 37°C for 24 hours. Assay was carried into triplicates and control plates were also maintained. Zone of inhibition was measured from the edge of the well to the zone in mm. The tested cell suspension was spread on mullerhintonagar plate and potato dextrose agar. Well were put into the agar medium using sterile forceps. Plant extract were poured on to wells. Then plates were incubated at 37°c for about 24 hours and control was also maintained. Zone of inhibition was measured from the clear zone in mm.

Antibacterial activity was performed by agar diffusion method. Van der Watt *et al.*, 2001. The stock culture of bacteria (*E.coli*, *S.aureus* and *Candida albicans*) were received by inoculating in nutrient broth media and grown at 37 % for 18 hours. The agar plates of the above media were



prepared. Each plate was inoculated with 18 hours old cultures the bacteria were swab in the sterile plates. Placed the extract treated cloth and untreated cloths were placed. All the plates were incubated at 37°C for 24 hours and the diameter of inhibition zone was noted in mm.

Agar well diffusion method has been used to determine the antimicrobial activities and minimum inhibitory concentrations or plant extracts against Gram positive, Gram negative bacteria. The extracts exhibited antibacterial activities against tested microorganisms.

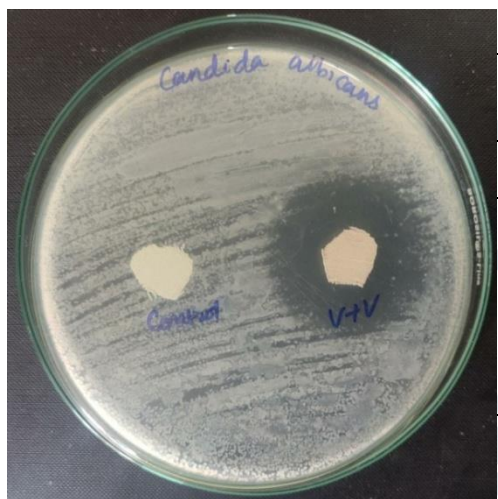


PLATE-9

<i>E.Coli</i>	<i>S.aureus</i> V+V	<i>Candida albicans</i>
1.1 mm	1.5 mm	1.6 mm
1.5 mm	1.5 mm	1.5 mm

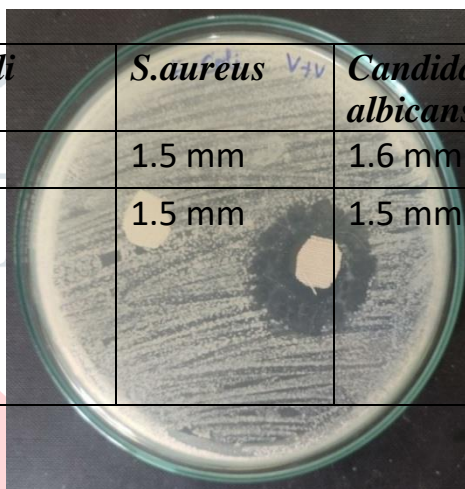


PLATE-10

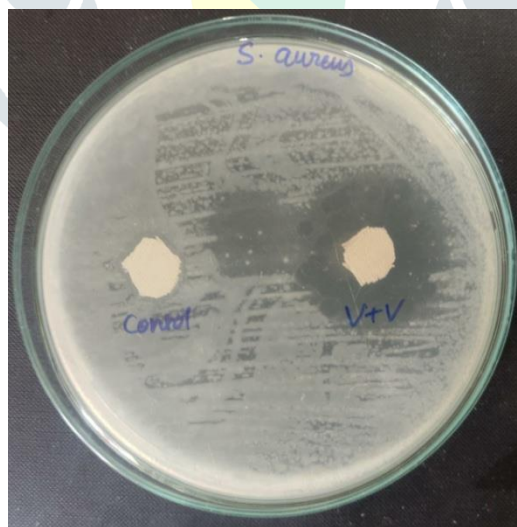


PLATE-11

## Anti-microbial Report:

The above result shows the antimicrobial activity against the *E.Coli* with 1.1 mm, *S.aureus* with 1.5 mm and *Candida albicans* with 1.6 mm. The result shows the given herbal extract is having anti-microbial activity.

## SUMMARY AND CONCLUSION

The purpose of a herbal head cap is to reduce heat and dehydration. Alkanet is known for its cooling properties and can help soothe the scalp, providing a refreshing sensation. Vetiver has natural cooling and calming effects, making it a great choice for reducing heat and promoting relaxation. The combination of alkanet and vetiver could create a synergistic effect, enhancing the cooling and soothing benefits of the head cap. Breathable and lightweight materials are used for the head cap to enhance airflow and maximize the cooling effect. Due to their inherent cooling qualities, alkanet and vetiver are beneficial in hot weather and during physical exercise. Bamboo fabric is well-known for its capacity to wick away moisture, which keeps sweat off the skin and preserves comfort. It also naturally stops bacteria from growing, which lessens odor and encourages hygiene. Compared to synthetic alternatives, the skull cap is more environment friendly because bamboo is a sustainable material.

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# ANNEXURE



HEAD CAP

