



DEVELOPMENT OF ECONOMICAL AND BENEFICIAL ANTILEECH BITE SKIN LOTION

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Abstract : Nowadays, people working in tea estates are often troubled by leech bite. Leeches are segmented parasitic or predatory worm like animals. Major of the leeches are found in freshwater environments in terrestrial areas. *Hirudo medicinalis* is the common species of leech found that sucking blood they release an anesthetic. Hirudin, anti clotting enzyme is secreting into the blood stream so that blood will keep flowing. Even though, Leeches is not a carrier for disease but can cause death in extreme cases. Our present study focuses on the prevention of leech bite by using are cheap and easily available materials so that it could be afforded by tea workers.

Index Terms - Parasite, Leeches, Hirudin, tea workers, anesthetic

I. INTRODUCTION

India is the second largest producer of tea in the world. In this, 25% is contributing by Munnar and Nilgiris tea gardens. One of the major problems faced by the labors is worm infestations. The workers do not have proper connectivity to health centers because they are located in remote areas. A leech has length about 1.25-1.5 cm. [1] In tropical regions, leech bites on the skin are usual. However, serious infections of leech bite injury are uncommon.[2] If the infection occur it cause abnormal effects and may even be fatal. [2,3] Leeches have no ability to self-fertilize as they have both male and female sexual organs together, *Hirudo medicinalis* is the species that bite deeply and cause extensive bleeding from the wound after they are detached. The deep-rooted bleeding after a leech bite is because of the factors in the saliva left in the bite by the leech which contains, hirudin, hyaluronidase, histamine-like vasodilators and calin (a platelet aggregation inhibitor). [4, 5] Leech bites are generally alarming rather than dangerous, though a small percentage of people have severe allergic or anaphylactic reactions and require urgent medical care. It will create symptoms like red spots or an itchy rash all over the body, swelling, dizziness and difficulty in breathing. Our idea is to prevent the leech bite with a lotion and to evaluate the effectiveness the product.

II.MATERIALS AND METHODOLOGY

A. SAMPLE COLLECTION:

The materials used for preparation of antileech bite skin lotion are coconut oil, cheroot leaf, salt, neem oil, aloe vera. Coconut oil is used in order to provide a smooth surface over skin which prevents the leech to stink the human skin. Salt is used because the body of the leeches will be permeable and it loses its anti coagulating substance hirudin thereby will die once if it is prone to salt. Rock salt is more beneficial hence it is used in our product. The cheerot leaves are powdered and used in our product because leeches are highly against its smell. (Fig 1)

B. SURVEY ANALYSIS

We have chosen tea estate workers from the manjolai estate which is our study area and the survey was taken about the leeches and their perspective, expectations on natural products to prevent leech bite (Fig 2)

C. DRYING OF CHEEROOT LEAVES:

Drying is a mass transfer process consisting of the removal of water or another solvent by evaporation from a solid, semi-solid or liquid. This process is often used as a final production step before selling or packaging products. In our product development drying is used to dry the cheroot leaf for the complete removal of moisture content in it so that it can be easily used for powdering. The completely dried cheroot leaves are then grind to powder for further mixing of the product. (Fig 3)

D. MIXING OF RAW MATERIALS:

Mixing is a unit operation that involves manipulation of a heterogeneous physical system with the intent to make it more homogeneous. Powdered cheroot and salt is added to the boiling coconut oil and it is heated for about 20 minutes. This mixture after being dried back to room temperature is grind into fine paste like consistency. Additional fragrance has been given in for of Neem oil, aloe Vera and rose oil. (Fig 4)

E. METHODOLOGY

pH TEST:

pH test is to check whether our product is in acidic or basic in nature.

SOLUBILITY TEST:

The solubility test was performed in order to test the product is miscible or immiscible. The preparation should be soluble in 9 parts of water and chloroform.

NON-IRRITANCY TEST:

The non-irritancy test was performed to analyze the preparation is producing any irritancy effect or not. The preparations were applied on to the surface of the skin.

RATE OF PENETRATION TEST:

The preparation is applied on to the selected area of the skin. After a period of time, the preparation left over was collected and weighed. The initial and final amount of preparation reveals the penetration rate.

ANTIMICROBIAL TEST:

The preparation was poured onto the well in the agar plate contain the organism *E. coli*. The antimicrobial test was used to check the resistance of the product against the organism.

III.RESULT AND DISCUSSION

A. pH TEST:

The pH was checked using the pH paper. It shows pH about 7 which is neutral in condition

B. SOLUBILITY TEST:

One gram of preparation was mixed with water and chloroform. The solubility test result shown that the it the contents are miscible in the liquids. (Fig 5)

C. NON-IRRITANCY TEST:

The selected area of the skin was exposed to the lotion and the identified that no irritation takes place after application. (Fig 6)

D. RATE OF PENETRATION TEST:

The penetration test was used to check the penetration level in the surface of the skin. It was identified that 0.3 g of lotion is penetrated in the surface of the skin.

E. ANTIMICROBIAL TEST:

Anti microbial test was performed and formation of clear zone takes place against the *E.coli*. (Fig 7)

F. DISTRIBUTION OF SAMPLE PRODUCT:

The sample product was distributed to the tea estate workers of Mancholai and the people used the skin lotion which prevented them from leech bites and benefitted out by using this product. (Fig 8)

Figures



Figure 1: Raw materials



Figure 2: Survey analysis area



Figure 3: Drying of cheerroot leaves



Figure 4: Mixing of materials



Figure 5: Solubility test



Figure 6: Non-Irritancy test



Figure 7: Antimicrobial test



Figure 8: Product Distribution

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