**FTIR ANALYSIS OF “*VEERA NEER”***

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Abstract

**Background:** Purified mercuric chloride “*Veeram*” is being used in Siddha system of medicine for curing gastric Ulcer, leprosy, severe *vatha* diseases and venereal diseases, etc. *Veera neer* is used as washing solution for External wounds.

**Objective:** To explore the elemental characterization of “*Veera neer*” prepared as per Siddha literature.

**Methods:** The Functional Group studied through FTIR study. It can be correlated in WHO recommended parameters for confirmed the standardizations in above drug.

**Results:** In FTIR studies should markedly increase the value from 514 to 3429 respectively which is indicated it contains most of them.

**Conclusion:** The result shows the presence of active elements present in *Veera neer*  and its beneficial effects on external wounds.

**Keywords:** Gastric Ulcer, Leprosy, V*atha* diseases, Venereal diseases

# Introduction

In modern aspect, wounds may be washed with water, saline, or Ringer's solution or cleaned with active ingredients, such as hydrogen peroxide, sodium hypochlorite, acetic acid, alcohol, ionized silver preparations, chlorhexidine, polyhexanide/betaine solution, or povidone-iodine--the majority of which are locally toxic and of limited or no proven efficacy in enhancing wound healing. Although the consensus opinion is that these topical cleaning agents should not be routinely used, recent clinical evidence suggests that polyhexanide/betadine may be nontoxic and effective in enhancing wound healing. Further well-designed studies are needed.

In Siddha, *Veeram* (Mercuric chloride) was first used as a therapeutic agent for venereal diseases during the middle of the eighteenth century in western countries. But for many centuries the perchloride of mercury has been used in India for the treatment of various disorders. This is as such quite toxic and it should be used only after purification and detoxification. **“*Veeraneer”***is used as washing solution of external use.

FTIR analysis used to find out active compounds present in “*Veeraneer”* and validate its beneficial effects on external wounds.

# Material and methods

The Natural *Veeram* were purchased from country merchant shop, Nagarcoil. The Department of Gunapadam, Govt. Siddha Medical College, Tirunelveli, Tamil Nadu issued authenticate certificate that the above raw materials were genuine one according to the chemical compounds.

**PURIFICATION OF VEERAM:**

* *Veeram (*Raw)
* Soodan (Camphor)

**METHOD OF PURIFICATION:**

Camphor (1.5 gm) is mixed with tender coconut water (2 medium sizes) and placed in a mud pot. *Veeram* (15 gm) is tied in a cloth and hanged over the pot without touching the solution and the pot is burnt for half an hour.

**PREPERATION OF *VEERANEER*:**

Take 65 mg of purified *Veeram* is powdered and mixed with 240 ml of sterile water as per the reference of Gunapadam thathu jeeva vagupu.

# Results and discussion

**FTIR - Fourier Transform Infra-red Spectroscopy**

FTIR (Fourier Transform Infra-red Spectroscopy) is a sensitive technique particularly for identifying organic chemicals in a whole range of applications although it can also characterise some inorganics. FTIR is an effective analytical instrument for detecting functional groups. FTIR analysis was done at sophisticated analytical instrument facility IITM, Chennai-36.

**FUNCTIONAL GROUP:**

**Table: 2 Functional Group present in *Veeraneer***

|  |  |  |
| --- | --- | --- |
| **Wave number (cm-1)** | **Vibrational modes of sample I in IR region** | **Functional group** |
| 3429 | O-H Stretching | Alcohol |
| 2871 | C-H Stretching | Alkane |
| 2513 | C-H Stretching | Alkyne |
| 1797 | C=O Stretching | Acid Halide |
| 1430 | O-H Bending | Carboxylic Acid |

**ALCOHOL**

Alcohol is a vasodilator - it makes the peripheral blood vessels relax to allow more blood to flow through the skin and tissues. Alcohol is an antiseptic, disinfectant, and antidote.

**ALKANE**

1. Alkanes are saturated hydrocarbons, consisting of carbon and hydrogen atoms.

2. Antimicrobial properties: Alkanes have shown antimicrobial activity against certain bacteria, fungi, and viruses, which can aid in preventing wound infections.

3. Moisturizing and emollient properties: Alkanes can help maintain a moist environment, promoting wound healing and tissue repair.

4. Cell membrane stabilization: Alkanes may help stabilize cell membranes, reducing inflammation and promoting cellular regeneration.

5. Antioxidant properties: Alkanes can neutralize free radicals, reducing oxidative stress and promoting wound healing.

4000.0

3600

3200

2800

2400

2000

1800

1600

1400

1200

1000

800

600

450.0

0.0

5

10

15

20

25

30

35

40

45

50

55

60

65

70

75

80

85

90

95

100.0

cm-1

%T

3429

2871

2513

1797

1430

875

712

514

463

**Figure 1. FTIR Spectra of *VEERANEER***

**ALKYNE**

Alkynes, a type of hydrocarbon, have been explored for their potential in wound healing. Here's a brief overview:

1. Antimicrobial properties: Alkynes have shown antimicrobial activity against certain bacteria, fungi, and viruses, which can aid in preventing wound infections.

2. Antioxidant properties: Alkynes can neutralize free radicals, reducing oxidative stress and promoting wound healing.

3. Inflammation reduction: Alkynes may help reduce inflammation, promoting a conducive environment for wound healing.

4. Cell proliferation and migration: Alkynes may enhance cell proliferation and migration, accelerating wound closure.

**ACID HALIDE**

Aquatic acid halides, such as hypochlorous acid (HOCl), have been explored for their potential in wound healing. Here's a brief overview:

1. Antimicrobial properties: Acid halides exhibit broad-spectrum antimicrobial activity, effective against bacteria, viruses, and fungi, reducing the risk of wound infections.

2. Debridement: Acid halides can help break down and remove dead tissue, promoting a clean wound environment.

3. Inflammation reduction: Acid halides may help reduce inflammation, promoting a conducive environment for wound healing.

4. Oxidative stress reduction: Acid halides can neutralize free radicals, reducing oxidative stress and promoting wound healing.

**CARBOXYLIC ACID**

Carboxylic acids, such as hyaluronic acid, glycolic acid, and lactic acid, have been explored for their potential in wound healing. Here's a brief overview:

1. Moisturizing and humectant properties: Carboxylic acids help maintain a moist environment, promoting wound healing and tissue repair.

2. Antimicrobial properties: Some carboxylic acids exhibit antimicrobial activity, reducing the risk of wound infections.

3. Exfoliation and debridement: Alpha-hydroxy carboxylic acids (AHAs) like glycolic acid help remove dead tissue and promote cell turnover.

4. Collagen synthesis and tissue regeneration: Carboxylic acids may enhance collagen synthesis and tissue regeneration.

**DISCUSSION:**

The instrumental analysis FTIR shows the presence of functional groups through their stretch and bends which responsible for its functional activity. It was to subject for further many studies to validate its efficacy and safety through proper standardization procedure for its potency and efficacy. Thus this drug can be taken to the next level of isolation of the active principles which is responsible for the therapeutic effect.

# Conclusion

According to the result in FTIR analysis of *“Veeraneer”* has effective action on wounds.

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