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# Phytochemical Screening Test for Four Different Medicinal Plants and their Wound Healing Activity by Herbal Formulation

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**ABSTRACT :**The importance of natural herbs increasing day to day daily life for human being. The wound healing materials of four herbs of the polyherbal formulation due to numerous bio active chemical ingredients. *Cleome Gynandra*, *OcimumBasilicum*, *SidaRhomboidia*, *TridaxProcumbens*, are commonly used as a wound healing herbals in traditional culture. Phytochemical screening and IR, NMR data analysis of four different herbal formulations. Preliminary phytochemical screening test has confirmed the Alkaloid, Flavanoids, Steroids, etc., Totally 11 spectral peaks were observed in the IR spectrum. The result of this study carried out by the formulated herbals have a phytochemicals, different functional groups.

**KEYWORDS:**Herbal Formulation, FT-IR spectrum, Medicinal plants, *Cleome Gynandra*, *OcimumBasilicum*, *SidaRhomboidia*, *TridaxProcumbens*, Wound Healing, Phytochemical.

## I. INTRODUCTION

In Indian medicines based on herbal origin has been the basis of treatment of cure for various diseases. More than 80% of the world's population still depends upon traditional medicines for various skin diseases. Wounds are physical injury, it's an opening or breaking of the skin. Wound healing is a complex process that results in the contraction and closure of the wound and restores the skin tissue [1]. Wounds represent a significant burden on the patients and health care professionals worldwide. Current estimates indicate the world wide nearly 6 million peoples suffer from chronic wounds. Wound healing is a normal biological response to the injury sets in to motion a sequence of events. Although wound healing is a familiar process but its underlying biology is very complex and it's still only partially understood [2]. It's involves the highly dynamic integrated series of cellular, physiological, biochemical processes which occur in living organism repair through regeneration is very common in unicellular and the lower metazoan animal groups while it is highly restricted in the higher animals.

Herbal remedies for skin care with antibacterial & antifungal activities are prepared from variety of plant part such as leaves, stem, root, bark or fruit. These medicines are administered topically may be applied in the form of cream, lotion, gel, soap, solvent, extract or ointment and have been established to possess antimicrobial properties [3]. Most skin infections are caused by the fungi, staphylococcus aureus species [4]. In present study discuss about the preliminary phytochemical screening work and FTIR analysis on Wound healing herbal formulation.

## II. MATERIALS AND METHODS

### 2.1 Collection of Medicinal Plants

*Cleome Gynandra*, *OcimumBasilicum*, *SidaRhomboidia*, *TridaxProcumbens*.herbal leaves were collected from Westernghats in Palani hills region Tamilnadu State India. The herbal leaves were dried and grinded in powder form.

## 2.2 Herbal Plants details

<p><i>Cleome Gynandra</i> - Leaves</p> <p>Kingdom- Plantae Family - Cleomaceae Genus - Cleome</p>	<p><i>OcimumBasilicum</i> - Leaves</p> <p>Kingdom- Plantae Family - Lamiaceae Genus - Ocimum</p>
<p><i>SidaRhomboidia</i> – Leaves</p> <p>Kingdom- Plantae Family - Malvaceae Genus - Sida</p>	<p><i>TridaxProcumbens</i> – Leaves</p> <p>Kingdom- Plantae Family - Asteraceae Genus - Tridax</p>

## 2.3 Plant Extraction Method

The *Cleome Gynandra*, *OcimumBasilicum*, *SidaRhomboidia*, *TridaxProcumbens* leaves were dried in sun shadow and its grinded in Powderely. Powdered material of the extract from Methanol in 1:1 ratio. The extraction method is Soaking process. The herbal material has been soaking in 4 days at room temperature. The Colour of extract was greenish blue. Its a pasty nature, like fragrant smell.

## 2.4 Qualitative phytochemical analysis

Preliminary qualitative phytochemical screening was carried out following standard protocols [5-7].

### 2.4.1 Test for reducing sugars

Equal volume of Fehling A and Fehling B reagents were mixed together and 2ml of it was added to crude extract and gently boiled. A brick red precipitate appeared at the bottom of the test tube indicated the presence of reducing sugars.

### 2.4.2 Test for glycoside

4ml of extract solution was dried till 2ml. To it was added 1-ml of ammonium hydroxide and shaken. Appearance of cherish red colour indicates the presence of glycosides.

### 2.4.3 Salkowski's test

Extract was mixed with 2ml of chloroform, then add 2ml of concentrated  $H_2SO_4$  was added carefully and shaken gently. A reddish brown colour indicated the presence of glycosides.

### 2.4.4 Test for phenols and tannins

Extract was mixed with 2ml of 2% solution of  $FeCl_3$ . A blue –green or blue-black indicates presence of polyphenols and tannins.

### 2.4.5 Test for flavonoids

Extract was mixed with 2ml of aqu. NaOH. A yellow orange colour indicates presence of flavonoids.

### 2.4.6 Test for saponins

Extract was mixed with 5ml of distilled water in a test tube and it was shaken vigorously for 30 seconds. The formation of stable foam even after 30 minutes was taken as an indication for the presence of saponins.

### 2.4.7 Test for steroids

Extract was mixed with ml of chloroform and concentrated  $H_2SO_4$  was added sidewise. A red colour produced at the lower chloroform layer indicates presence of steroids.

### 2.4.8 Test for terpinoids

Extract was dissolved in 2ml of chloroform and evaporated to dryness. To this, 2ml of concentrated  $H_2SO_4$  was added; a reddish brown coloration formed at the interface indicated the presence of terpinoids.



### 2.4.9 Test for alkaloids

Extract was mixed with 2ml of 1% HCl and heated gently. Mayer's and Wagner's reagent were then added to the mixture. Turbidity of the resulting precipitate was taken as evidence for the presence of alkaloids.

### 2.5 FT-IR Spectra

FT-IR spectrum of the methanolic extract of herbal formulation was recorded in KBr by sophisticated computer controlled FTIR SHIMADZU affinity-1 spectrometer. The extract of Herbal formulation was scanned at spectral range of 4000-400  $\text{cm}^{-1}$ . It was recorded at VIT University, Vellore.

## III. RESULT AND DISCUSSION

### 3.1 Phytochemical Screening Test

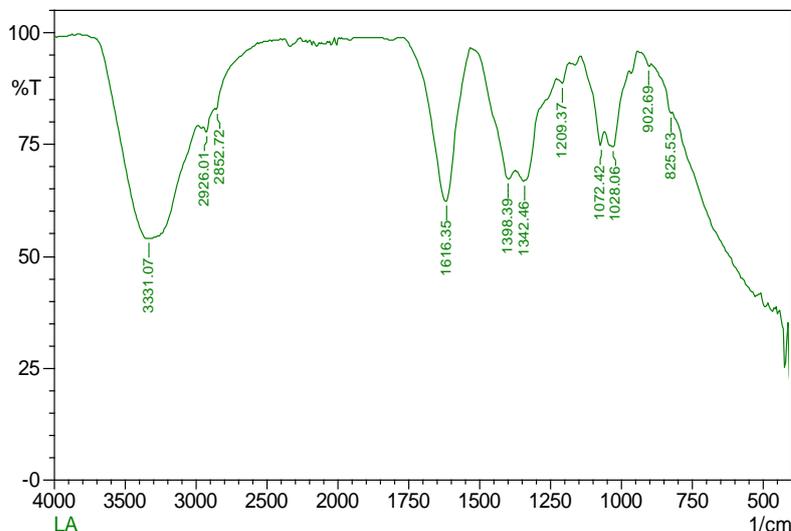
*Cleome Gynandra*, *OcimumBasilicum*, *SidaRhomboidia*, *TridaxProcumbens* leaves are individually extracted. The extracts are analysed to Preliminary phytochemical screening test. The Alkaloids, Terpenoids, Flavanoids, etc., were present in the extract. The preliminary phytochemical screening work was followed by Rahman Gul et al., [8].

**Table 3.1. Preliminary Phytochemical screening on Wound healing herbal Formulation**

Screening Tests	<i>Cleome Gynandra</i>	<i>OcimumBasili cum</i>	<i>SidaRhomboidi a</i>	<i>TridaxProcumb ens</i>
Alkaloids	+	+	+	+
Flavanoids	+	-	+	+
Steroids	+	-	+	-
Carbohydrates	+	+	-	+
Tannins	-	-	+	+
Saponins	-	+	-	-
Glycosides	-	+	+	+
Coumarins	-	+	-	+
Quinones	-	-	-	-

### 3.2 FT-IR Spectral Interpretation of Herbal Formulation

FT-IR Spectrum helped as Investigation of Functional groups. Recently spectroscopy is emerged as one of the major tools for biomedical applications and it's made significant progress in the field of clinical evaluation. FTIR measurement was carried out to identify the possible bio molecules responsible for Wound healing activity using *herbal formulation* extract. This spectrum shows lot of absorption bands [9]. In this wound healing herbal formulation study carry out the various functional groups.



**Figure.3.1. Fourier-transform infrared spectroscopy spectrum of the Methanolic leaf extract of Wound healing herbal formulation.**

The phytochemical analysis of the herbal formulation of the Wound healing herbs were riveting the alkaloids, flavanoids, steroids, carbohydrates, tannins, saponins, glycosides, coumarins, quinones. In overall spectral analysis showing an 11 peaks, like 3331.07, 2926.01, 2852.72, 1616.35, 1398.39, 1209.37, 1072.42, 1028.06, 902.69, 825.63. In this spectral values intimate the functional groups of Phenolic compounds, Aldehydes, Ketones, Ethers, Aromatic compounds, Aromatic Nitro Group, Aliphatic fluoro compounds, Alkyl halides. The above FTIR peaks relatively narrow and in many cases can be associated with vibration of a particular chemical bond (Single functional group) in the molecule [10]. Strong absorption band near 1616.35  $\text{cm}^{-1}$  indicates the presence of chelated C=O, C=C, C-O stretches [11]. The above functional groups turn indicates the presence of flavanoids, Saponins and tannins, carbohydrates also.

**Table 3.2. Fourier-transform infrared spectroscopy frequency range and functional groups present in the ethanolic leaf extract of Wound healing herbal formulation.**

Frequency Range ( $\text{cm}^{-1}$ )	Area (%)	Bonding Stretch	Functional Group
3331.07	53.9392	OH	Phenols(Polymeric hydroxyl group)
2926.01	77.7698	C=O	Aldehydes, Ketones, Ethers
2852.72	82.7029	C-H	Alkanes
1616.35	62.2249	NH	Aromatic compounds(C=N)
1398.39	67.2231	C-O	Aromatic ether
1342.46	66.9020	N-O	Aromatic Nitro Group
1209.37	88.7391	C-O	Alcohols, Esters, Carboxylic acids
1072.42	74.7482	C-N, C-O	Aliphatic amine, Alcohol
1028.06	74.4190	C-F	Aliphatic fluoro compounds
902.69	92.4388	C-O-C	Ether
825.63	82.059	C-Cl	Alkyl halides

**IV. CONCLUSION**

The results of the present study indicated that the methanolic extract of four different medicinal plants have a rich source of phytochemical constituents and exhibit biological properties to the plants studied in the treatment of different ailments. FT-IR spectra were conformed the various functional group present in the wound healing herbal formulation. The compositions almost all the functional groups and chemical constituents present in the methanolic extracts were identified using the preliminary phytochemical screening test and FT-IR spectra. The new compositions are active for wound healing activity. Therefore work has been performed for isolation and identification of the wound healing activity present in the methanolic extract of new composition.



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