



## Formulation & evaluation for herbal gel

Prarthana Kaw & Sajal Verma

School of Pharmacy, Dr. Vishwanath Karad MIT World Peace University, Kothrud, Pune-411038 Maharashtra  
India

Corresponding Author: Chinmay Devidas Deshmukh

**ABSTRACT:** Herbal products are substances found in plants or parts of plants that are used to treat wounds, infections, and illnesses, as well as to enhance health and healing. It is a medication or treatment made from a plant that can be utilized for a variety of objectives. The first known type of healthcare is provided through herbal remedies. Herbal products, botanic products, or phytomedicines are items manufactured from herbs, that are used to preserve health. An herbal supplement is a substance made from plants that are only intended for internal use. Numerous prescription treatments and over-the-counter medications are also created from plant materials, but they are FDA-regulated and only include purified chemicals. Whole plants or plant components may be found in herbal supplements. The whole herb, teas, syrup, essential oils, ointments, salves, rubs, capsules, and tablets that include a ground or powdered form of a raw herb or its dried extract are just a few of the processed and consumed forms of herbs and plants. Alcoholic extracts (tinctures), vinegar (acetic acid extracts), hot water extracts (tisanes), long-term boiled extracts, typically of roots or bark (decoctions), and cold infusions of plants are among the various ways that plants and herbs can be extracted (macerates). The components of a herbal extract or product may differ greatly across batches and producers because there is no standardization in place.

The purpose of the current study is to formulate and evaluate herbal gel containing *Withania somnifera* and flaxseed extract. The prepared gel's physical characteristics, pH, spreadability, viscosity, consistency, and extrudability were examined.

*Withania somnifera*, also known as Ashwagandha in regional accents, is a well-known medicinal plant that has long been used by humans.

The ability of flaxseed extract to create films is advantageous for the process of healing wounds. The current study aimed to develop and evaluate a herbal gel for wound healing containing *Withania somnifera* and flaxseed extract

**Keywords:** Herbal Gel, *Withania Somnifera*, flaxseed extract, herbal products.

Received 06 Nov., 2022; Revised 18 Nov., 2022; Accepted 20 Nov., 2022 © The author(s) 2022.

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### I. INTRODUCTION

Gels are characterized as semi-rigid systems in which the behavior of the dispersing medium is regulated by a three-dimensional network of interlacing particles or solvated macromolecules of the dispersion medium. Because they are non-sticky, consume less energy during formulation, are stable, and have aesthetic value, gels have a higher potential for usage as a vehicle to dispense drugs topically than ointments. The semisolid state is a result of increased viscosity brought on by interlacing and subsequent internal friction.

In comparison to creams and ointments, topical use of gels at pathological sites offers great benefits in a rapid drug release immediately to the site of action, independent of the drug's water solubility.

The topical approach of the drug eliminates the first-pass effects, gastrointestinal discomfort, metabolic breakdown, and greasiness associated with oral drug administration. It is also simpler to remove from the skin. Gel formulations have been suggested as a topical drug delivery strategy to get around these drawbacks. When dispersed in the suitable solvent, gelling agents merge or entangle to generate a multi-colloidal network. This structure prevents fluid from flowing because it traps and permanently disables solvent molecules. The drug's ability to permeate the skin sufficiently deeply to produce the intended therapeutic effects determines the effectiveness of transdermal delivery. The skin serves as a highly effective selective penetration barrier.

*Withania somnifera* (Family: Solanaceae) often known as Ashwagandha in local dialects, is a well-known medicinal plant with a long history of helping people. It is photochemically rich in alkaloids, steroids,

and saponins. In addition to these chemical components, plants also contain withaniol, acylsteryl glucosides, starch, reducing sugar, hantreacotane, ducitol, and a number of amino acids, such as aspartic acid, proline, and tyrosine, among others.

It has exhibited antimicrobial, anti-inflammatory, anti-tumor, anti-stress, neuroprotective, cardioprotective, and anti-diabetic properties in preclinical trials. Recently, this has also been utilized to prevent the continued use of certain psychotropic medicines from leading to the growth of dependence.



**Figure 1 : Plant of Withania Somnifera**

Flaxseed, commonly known as linseed, has been shown to provide several medicinal benefits. Its constituents have demonstrated anti-inflammatory, antioxidant, antiviral, antibacterial, antifungal, and anti-atherosclerosis activities. Consuming flaxseed regularly is safe, because it cures wounds, protects inflamed skin, increases suppleness, and protects the membranes of the urinary and digestive tracts. The ability of flaxseed extract to create films is advantageous for the healing of wounds .



**Figure 2: Flaxseed**

## **II. Material and Methods**

### **Materials**

- Drug: Withania Somnifera and Flax Seed
- Excipient: Water

### **Method**

**Step 1:** First, add 10 gm of flaxseeds to 30 ml of water and heat the mixture at 100°C for 10 minutes. After heating, allow the mixture to cool before filtering out the gel.

**Step 2:** Take an API of 0.5gm and completely mix it in water. After this take 5 ml from the mixed sample and mix it with the formulated gel.

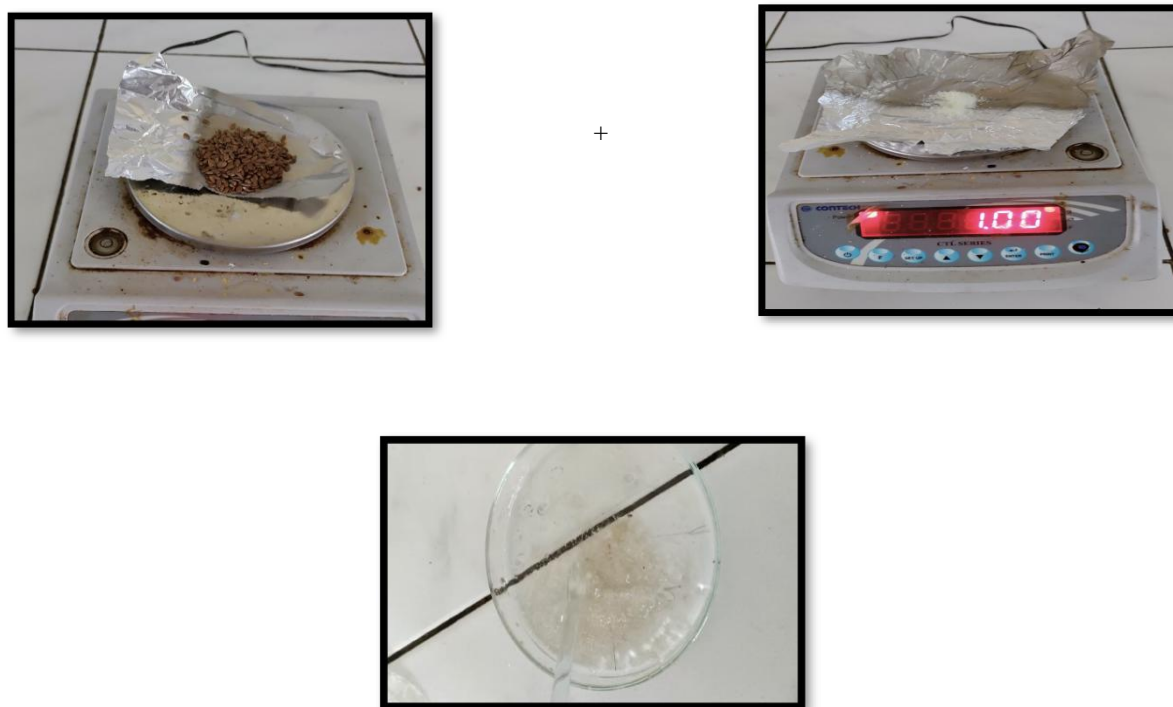


Figure 3: Preparation of Gel

Table 1: Composition of Gel

Sr. no	Ingredient	Quantity
1	Wathania Somnifera	0.5 gm
2	Flax Seed	10 gm
3	Water	30 ml

### III. Experimental

#### Evaluation Parameter of Gel

The formulated gel was evaluated based on its color, texture, homogeneity, consistency and spreadability, texture, extrudability test, and skin irritation test on rats.

**Physical Stability:** In this parameter, we inspected it visually for its color, texture, and homogeneity.

**1.1 Colour of gel** - During the visual examination, the color of the gel was found to be ocre.

**1.2 Texture of gel** - The formulated gel was smooth in its texture.

**1.3 Homogeneity** – The gel formulated was entirely homogeneous. The gel was placed in the container and checked for any foreign aggregate.

**PH measurement** – Using a pH meter, the pH of the formulated gel is determined to be 7.14. Hence, the formulated gel is alkaline.

**Spread ability Test** – A 1 gm sample of gel was placed between 2 glass slides and then an additional weight of 10 gm was applied to the pulley on glass slides for 4 seconds. After the separation of the two slides, the lower glass was taken for measurement of the spreadability test.

The length of spreadability was found to be 40 units.

$$S = M \times L / T$$

In which,

M- Weight tied to the upper slide

L - The length of the glass changed.

T - Total Time Taken.

Hence as per the above formula and values, the spread ability was found to be 100%.

**Consistency of Gel:** The distance (lengthwise) in a container containing cold gel that was maintained horizontally for about half an hour was used to determine consistency. It was discovered that the gel had a slimy consistency.

**Extrudability Test:** The sample was taken from the aluminium collapsible tube with lacquer after being subjected to a 10 g weight.

In 7 seconds, a 5 cm ribbon of gel was propelled.

**Viscosity Test:** Viscosity is defined as a measurement of a fluid's resistance to flow, and while referring to the viscosity of a gel product, we are referring to how thick or thin and self-leveling the consistency is.

**Table 2: Viscosity test of gel product**

Spindle Number	Ratio	RPM	Reading
6	1:25	4	20
6	1:25	2	4
6	1:25	3	3
6	1:20	2	1
6	1:20	4	1.5
6	1:20	10	2
6	1:5	20	5
6	1:5	10	3
6	1:5	4	2
6	1:3	20	9
6	1:3	10	7
<b>6</b>	<b>1:3</b>	<b>4</b>	<b>5.5</b>
6	1:3	2	3
6	1:2	20	7
6	1:2	10	6
6	1:2	4	5
6	1:2	2	2

This was the final gel that was taken into account during formulation because it produced a viscous gel of high quality.

A **1:3** ratio was found to be suitable for the consistency of the herbal

#### IV. Result and Discussion

The goal of the mentioned study was to develop and assess the wound-healing potential of a gel combining *Withania somnifera* and Flax Seed extract. In the present study, attempts were made to formulate and evaluate the herbal burn gel of *Withania somnifera* and flax seeds. The gel was evaluated for its appearance, pH, spreadability, consistency, viscosity, and extrudability studies. The pH range of herbal burn gel was found to be 7.14 therefore, it is alkaline and appropriate for topical application. The length of spreadability was found to be 40 units. 1:3 ratio was found to be suitable as the consistency of an herbal gel.

## V. Conclusion

According to the above research, formulation demonstrated a decent release. Due to the inclusion of *Withania somnifera* and Flax Seed extract, the chosen formulation exhibits favorable results in parameters like pH, skin irritation, as well as other factors.

In conclusion, the formulation and evaluation of the herbal gel worked successfully.

## Acknowledgment

We are grateful that Dr. Vishwanath Karad School of Pharmacy gave us the chance to conduct our research effectively. I want to sincerely thank Professor Dr. C.D.Deshmukh and Dr. A.T. Pawar for their assistance and encouragement throughout the years.

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