



# Formulation and Evaluation of Radish and Carrot Herbal Topical Gel

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## ABSTRACT:

The present investigating aims at development and evaluation of Herbal Gel using natural ingredients which gives therapeutic effect without any side effects. The gel was prepared using carbopol with addition to the natural Radish and Carrot Extract with Methyl paraben and Colouring agents. Then Gel was adjusted to Ph. 7 prepared formulation was evaluated for physical appearance, PH, Spreadability, Viscosity and homogeneity, skin irritation on animal model (rabbit) and antifungal (reduces the fungal infections on skin), antimicrobial activity on human volunteers. ICH guidelines have followed for stability studies. Results reveal that gel showed good appearance, homogeneity and spread ability. Viscosity is ranging between 4200 and 4500 centipoises. All formulation has shown on skin irritation to animals. The prepared gel has successfully reduced fungal infections, Bacterial infection and microbial infection and also gives Glow and Coldness effect on skin study on human volunteer. The gel was found useful in treatment of skin Rashes and produces faster skin recover and damage skin cell, produced Glow and Coldness effect on skin, antibacterial, antifungal and antimicrobial effects. The preparation was stable under normal storage conditions for 6 months.

**KEYWORDS:** Herbal Gel, Radish and Carrot extract.

## 1. INTRODUCTION:

Skin diseases are numerous and a frequency occurring health problems affecting all ages from the neonates to the elderly and Causes harm in number of ways. Maintaining healthy skin is important for a healthy body. Many people may develop skin diseases that affect the skin, including cancer, Bacterial and fungal and microbial infections [1].

### 1.1. Common skin problems:

Skin diseases is a common ailment and its affects elderly and Causes harm in number of ways [1]. There more than a thousand conditions that may affect the skin but more skin disease can be categorized into common type [2].

Rashes: A rash is an area of red, inflamed skin or a group of individual spots the inner layers of skin. Viral infections: these occurs when a virus penetrates the stratum cornea and infects the inner layer of skin. Bacterial infection: such infections are cause by variety of bacteria, the most common type being Staphylococci, streptococci, E. coli and salmonella typhi. Fungal infection: harmless fungi present on surface of skin which Causes infection including ringworm and local itching.

Cancer and tumors: skin cancer is a most common cancer among all there are three types of skin cancer

1. Basal cell cancer
2. Squamous cell cancer
3. Malignant melanoma.

Trauma: trauma describes an injury to the skin caused by a blow, a cut or a burn.

Fungal skin infections: Fungal skin infections Fungal or superficial mycoses are common causes of skin diseases in most age groups. They include three main diseases dermatophyte or ringworm versicolor. There is significant difference, through in the epidemiology and clinical behavior of these infections when they present in childhood. This is in part due to variations in rates of exposure in the case of Dermatolophytosis.

## **1.2. Herbal drugs for skin diseases:**

Natural drug from the plants are gaining popularity because of several advantages such as often having fewer side effects, better patient tolerances, being relatively less expensive and acceptable due to a long history of use.

### **1.2.1. Raphanus Sativus L (Common name: Radish):**

Radish is found effective in treating viral, Bacterial, fungal and microbial infections and treating rashes, acne, the skin injury by cut, blow or by burn, Dry skin and Ringworm can also be treated [3-4-5-6].

### **1.2.2. Daucus Carrot L. (Common name: Carrot):**

Carrots is found effective in cancer cell and Prevents cell Death. It also treating pimples and rashes [7].

As carrot has a good skin healing property because of rich in Vitamin C, it helps skin recover faster from external wounds and also reduces skin inflammation [8-7].

Carrot gives Glow and Coldness effect on skin [9].

## **1.3. USES:**

1. This is a Radish and Carrot gel use to treat various skin problems such as rashes, redness, Dry skin, irritation, Bacterial, fungal and microbial infections heal due to the Radish.

2. This Gel is effective in skin cancer and death cell and treating pimples, it is good skin healing property because of rich in Vitamin C, it also reduces skin inflammation and produces glow and Coldness effect on skin due to the Carrot.
3. No side effect.

## REVIEW OF LITERATURE

**Vyas J., et al., 2020** study that the present investigation aims at development and evaluation of herbal gel using natural ingredients which gives therapeutic effect without any side effect. The gel were prepared using Carbopol with addition to the natural turmeric and glycerin (softening agent) and required amount of neem water and with no added preservative. Then Gel was adjusted to pH 7. Prepared formulation was evaluated for physical appearance, pH, spreadability, viscosity and homogeneity, skin irritation on animal model (rabbit) and anti crack (cracked heels) activity on human volunteers. ICH guidelines have followed for stability studies. Results reveal that gel showed good appearance, homogeneity, and spread ability. Viscosity is ranging between 4200 and 4500 centipoises. All formulations have shown no skin irritation to animals. The prepared gel has successfully reduced number and size of pimples during two weeks study period and cracked heels study on human volunteer. The gel was found useful in treatment of skin Rashes, edema and in skin cracks.

**Aiyalu R., et al., 2020** study that the The objective of the study is to formulate and evaluate a topical herbal gel containing *Cardiospermum halicacabum* and *Vitex negundo* leaf extracts for their anti-arthritis activity in rats. Twelve herbal gel formulations were prepared using 1.5% of gelling agents carbopol 934 (F1-F6) and carbopol 940 (F6-F12) and they were evaluated for physical appearance, net content, viscosity, extrudability, pH, spreadability, in vitro diffusion profile and primary skin irritation tests. The stability study for the topical herbal gel formulation was done as per ICH guidelines and anti-arthritis activity was evaluated by Freund's Complete Adjuvant (FCA) induced arthritis method. Assessment of body weight, paw volume, hematological and biochemical parameters, histopathological examination and In vitro determination of serum biomarkers were also carried out. Formulated gels were homogenous, stable and complied with the guidelines. Among the formulations, F4 showed better release (98.4 %) characteristics than other formulations. No erythema or edema was observed in the skin irritation test confirming the gel was nontoxic and safe. Topical application of the herbal gel F4 containing carbopol 934 displayed significant ( $p < 0.001$ ) anti-arthritis activity compared to diseased rats. Reduction in paw volume, no agglutination in C - reactive protein and rheumatic factor, reduction in TNF $\alpha$  level, regaining of normal hematological, and biochemical parameters, reduction in spleen and thymus weight and histopathological examination supported the anti-arthritis activity of the gel formulation.

**Sheeba, Asha, 2009** studied that *Cardiospermum halicacabum* (CH) (Sapindaceae) has been used in Chinese medicine for a long time in the treatment of inflammation, rheumatism and in various diseases (Jeyadevi et al., 2013). The anti-inflammatory activity of ethanol extract of CH reported to inhibit LPS induced COX-2, TNF- $\alpha$  and iNOS expression in RAW264.7 cells. Experimental pharmacological studies have shown the analgesic and vasodepressant activities (Gopalakrishnan, Dhananjayan, Kameswaran, 1976), anti-pyretic

activity against yeast-induced pyrexia in rats (Asha, Pushpangadan, 1999), anti-malarial (Waako et al., 2005), anti-oxidant activity (Kumaran, Karunakaran, 2006), anti-ulcer activity against ethanol-induced gastric ulcer in rats (Sheeba, Asha, 2006) and suppression of the production of TNF- $\alpha$  and nitric oxide in human peripheral blood mononuclear cells.

**Babu, Krishnakumari, 2016** studied that A number of compounds have been isolated and identified in CH, viz. arachidic acid, apigenin, apigenin-7-O-glucuronide, chrysoeriol-7-O-glucuronide and luteolin-7-O-glucuronide (Subramanyam et al., 2007). *Vitex negundo* Linn. (Verbenaceae) (VN) known as Nirgundi in Hindi, grows gregariously in wastelands and is also planted as a hedge-plant containing several flavonoids such as casticin, orientin, isoorientin, luteolin, luteolin-7-O-glucoside, corymbosin, glycosidic iridoids, alkaloids and terpenoids (Nair, Mohenan, 1998). VN has been documented for potent anti-arthritic (Tamhankar, Saraf, 1994), anti-inflammatory, anti-pyretic (Telang, Chatterjee, Varshneya, 1999), anti-convulsant (Gupta, Mazumder, Bhawal, 1999), hepatoprotective and bronchial relaxant (Nair, Mohenan, 1995). They are also used as tonics, vermifuge, lactagogue, emmenagogue, anti-bacterial, antipyretic and anti-histaminic agents.

**Ghosh, 2020** studied that there is no report on preclinical studies of CH and VN on topical gel for its anti-arthritic activity and hence a topical herbal gel was developed using CH and VN and evaluated for anti-arthritic activity, to explore the scientific proof for the use of these plants in the treatment of arthritis. CH and VN was formulated in the form of gel as the administration of gel is easy, causes localized effect, no pain or irritation during application, no first pass effect and no GIT degradation and can be delivered directly on to the affected area. Though all parts of CH and VN are used as medicine, leaves are used majorly for treating arthritis in traditional medicine (Kumar et al., 2008) and hence topical gel formulation was designed using the leaf extracts of both the plants.

## RESEARCH ENVISAGED & PLAN OF WORK

The present investigation aims at development and evaluation of herbal gel using natural ingredients which gives therapeutic effect without any side effect. The gel were prepared using Carbopol with addition to the natural turmeric and glycerin (softening agent) and required amount of neem water and with no added preservative. Then Gel was adjusted to pH 7. Prepared formulation was evaluated for physical appearance, pH, spreadability, viscosity and homogeneity, skin irritation on animal model (rabbit) and anti crack (cracked heels) activity on human volunteers. ICH guidelines have followed for stability studies.

## PLAN OF WORK

- A. Exhaustive Literature survey
- B. Identification, collection and drying of Radish and Carrot Herbal Topical Gel
- C. Procurement of reagents
- D. Formulation and Evaluation of Radish and Carrot Herbal Topical Gel

- Extraction of the chosen herbs with hydroalcoholic solvent

- Qualitative chemical evaluation

E. Compilation of work

## DRUG PROFILE

Common Name: radish

**Kingdom:** Plantae

**Phylum:** Magnoliophyta

**Class:** Magnoliopsida

**Subclass:** Dilleniidae

**Order:** Capparales

**Family:** Brassicaceae

**Genus:** Raphanus

**Subject:** Raphanus sativus L.

Type: Annual



Family: Brassicaceae

Native Range: Garden origin

Zone: 2 to 11

Height: 2.00 to 3.00 feet

Spread: 1.00 to 2.00 feet

Bloom Time: Flowers not showy

Bloom Description: White to pale violet

Sun: Full sun

Water: Medium

Maintenance: Medium



### Culture

Best grown in full sun in loamy or sandy soils. Can be seeded directly in two-week intervals between mid-April and the first of May for a spring crop and in the month of August for a fall crop. Radishes become tough and develop a hotter taste as they become older. Harvest when young before radishes bolt and become woody.

### Appearance

*Raphanus sativus* is an edible root vegetable. It can grow up to 6 in. (15.2 cm) tall.

### Foliage

The leaves are a dark green with a velvet/fuzzy texture.

### Flowers

The flowers are a white with purple. They are in season from April to June and from October to January in most parts of North America.

## Fruit

Raphanus sativus has a variety of different colors which range from white, pink, red, and purple radishes. The root vegetable usually can grow up to 1.6-3.1 in. (4-8 cm) in diameter.

## Ecological Threat

Raphanus sativus invades fields, roadsides, and waste areas. It is native to the Mediterranean.

## Noteworthy Characteristics

Raphanus sativus, commonly called the radishes, have had a long relationship with man. Southern Asia is believed to be the country of origin since truly wild forms have been found there. Middle Asia and India appear to be secondary centers where many different forms developed subsequently. Third-century B.C. Greeks wrote of their radishes, and by 100 A.D., Roman writers described small and large types, mild and biting varieties, and round and long forms. A German botanist in 1544 reported radishes of 100 pounds. Radishes appear to be one of the first European crops introduced into the Americas, closely behind the arrival of Columbus.

Genus name comes from the Latin name, from the Greek word raphanis used for this vegetable which has been known from antiquity.

Specific epithet means cultivated.

The common name radish comes from the Latin radix meaning "root".

## Problems

Flea beetles can be a problem as well as other pests typically found on Brassicaceae crops. Floating row covers can be very useful.

## Uses

The roots can be eaten raw, cooked, or pickled. The greens are also edible. The young, tender sprouts can be eaten in salads, on sandwiches, or as a side dish.

## Daucus Carrot L. plant profile



*Daucus carota*, whose common names include wild carrot,[3] European wild carrot, bird's nest, bishop's lace, and Queen Anne's lace (North America), is a flowering plant in the family Apiaceae. It is native to temperate regions of the Old World and was naturalized in the New World.

Domesticated carrots are cultivars of a subspecies, *Daucus carota* subsp. *sativus*.

## Description

Inflorescences and foliage Flowers (worm's-eye view) Fruit cluster containing oval fruits with hooked spines

The wild carrot is a herbaceous, somewhat variable biennial plant that grows between 30 and 120 cm (1 and 4 ft) tall,[4][5] and is roughly hairy, with a stiff, solid stem. The leaves are tripinnate, finely divided and lacy, and overall triangular in shape. The leaves are 5–15 cm (2–6 in) long,[5] bristly and alternate in a pinnate pattern that separates into thin segments. The flowers are small and dull white, clustered in flat, dense umbels. The umbels are terminal and about 8–15 cm (3–6 in) wide.[6][5] They may be pink in bud and may have a reddish or purple[7] flower (the "ruby") in the centre of the umbel. The lower bracts are three-forked or pinnate, which distinguishes the plant from other white-flowered umbellifers. As the seeds develop, the umbel curls up at the edges, becomes more congested, and develops a concave surface. The fruits are small, dry, bumpy, oval and flattened, with short styles and hooked spines, as well as protective hairs surrounding it.[8][6] The fruit has two mericarps, or bicarpellate. The endosperm of the fruit grows before the embryo.[9] The dried umbels detach from the plant, becoming tumbleweeds.[10] The function of the tiny red flower, coloured by anthocyanin, is to attract insects. The flowers bloom from May to September.[6][5]

Similar in appearance to the deadly poison hemlock, *D. carota* is distinguished by a mix of tripinnate leaves, fine hairs on its solid green stems and on its leaves, a root that smells like carrots, and occasionally a single dark red flower in the center of the umbel.[11][12] Hemlock is also different in tending to have purple mottling on its stems, which also lack the hairiness of the plain green Queen Anne's lace (wild carrot) stems.[13] Both plants have been spread into North America by European settlers and are now common wildflowers; *Daucus carota* is often known as Queen Anne's lace there. Anne, Queen of Great Britain is the Queen Anne for whom the plant is named.[14] It is so called because the inflorescence resembles lace, prominent in fine clothing of the day; the red flower in the center is said to represent a droplet of blood where Queen Anne pricked herself with a needle when she was making the lace.[15]



Some umbels have a red floret in the center.

## Function of the dark central floret[edit]

The function of the central dark floret of *D. carota* has been subject to debate since Charles Darwin speculated that they are a vestigial trait.[16] It has been suggested that they have the adaptive function of mimicking insects, thus either discouraging herbivory,[17] or attracting pollinators[18] by indicating the presence of food or opportunities for mating.[19] One study in Portugal found that the dark florets contributed to visitation by the varied carpet beetle, *Anthrenus verbasci*, and that higher numbers of dark florets correlated with increased visitation, whereas inflorescences without dark florets had fewer visits. Replacing the dark florets with one or more freeze-killed *A. verbasci*, who are similar to the florets in size and shape produced similar results to those observations of inflorescences with intact florets.[20]

## Taxonomy[edit]

The carrot was first officially described by Carl Linnaeus in his 1753 work *Species Plantarum*. [21] In 2016, an international team sequenced the full genome of *Daucus carota*. [22]

## Subspecies[edit]

Cultivated carrot's only parent is *Daucus carota*. [23]

Both domestic and wild carrot are from the same species, *Daucus carota* L. There are several subspecies of *D. carota* that have evolved to different climates and atmospheres. Two examples of these subspecies are specifically from the Netherlands. *D. carota* subsp. *sativus* has roots that can be a wide range of colors. It has a thicker root and sweeter taste. The whorl of barbs above the spine on the vallecular ridges of the mericarp of *D. carota* subsp. *sativus* mature very well.[clarification needed] *D. carota* subsp. *carota* has white roots that do not vary in color and, unlike *D. carota* subsp. *sativus*, has a thin root, bitter taste and are not edible. The middle umbellet of *D. carota* subsp. *carota* is not well developed (unlike in *D. carota* subsp. *sativus*) and the color of the flower can vary from red to deep purple. [24]

## Subtaxa[edit]

The following subtaxa are accepted:[2]

- *Daucus carota* var. *abyssinicus* A.Braun
- *Daucus carota* subsp. *annuus* (Bég.) Mart.Flores, D.M.Spooner & M.B.Crespo
- *Daucus carota* subsp. *azoricus* Franco
- *Daucus carota* subsp. *cantabricus* A.Pujadas
- *Daucus carota* subsp. *capillifolius* (Gilli) Arbizu
- *Daucus carota* subsp. *caporientalis* Reduron
- *Daucus carota* subsp. *carota*

- *Daucus carota* subsp. *commutatus* (Paol.) Thell.
- *Daucus carota* subsp. *corsoccidentalis* Reduron
- *Daucus carota* subsp. *drepanensis* (Arcang.) Heywood
- *Daucus carota* subsp. *fontanesii* Thell.
- *Daucus carota* subsp. *gadecaei* (Rouy & E.G.Camus) Heywood
- *Daucus carota* subsp. *gummifer* (Syme) Hook.f.
- *Daucus carota* subsp. *halophilus* (Brot.) A.Pujadas
- *Daucus carota* subsp. *hispanicus* (Gouan) Thell.
- *Daucus carota* subsp. *major* (Vis.) Arcang.
- *Daucus carota* subsp. *majoricus* A.Pujadas
- *Daucus carota* subsp. *maritimus* (Lam.) Batt.
- *Daucus carota* subsp. *maximus* (Desf.) Ball
- *Daucus carota* var. *meriensis* Reduron
- *Daucus carota* subsp. *otaportensis* Reduron
- *Daucus carota* subsp. *rupestris* (Guss.) Heywood
- *Daucus carota* subsp. *sativus* (Hoffm.) Schübl. & G.Martens
- *Daucus carota* subsp. *tenuissimus* (A.Chev.) Mart.Flores, D.M.Spooner & M.B.Crespo
- *Daucus carota* subsp. *valeriae* Reduron

Distribution and habitat[edit]

Native to temperate regions of Europe[5] and southwest Asia, the plant was spread to North America and Australia.

The plant is commonly found along roadsides and in unused fields. It thrives best in sun to partial shade.[6]

Toxicity[edit]

Skin contact with the foliage of *Daucus carota*, especially wet foliage, can cause skin irritation in some people.[25][26] It may also have a mild effect on horses.[27]

The compound falcarinol is naturally found in *Daucus carota* for protection against fungal diseases. Lab tests show the compound to be toxic to mice and the water flea *Daphnia magna*. [28] Normal consumption of carrots has no toxic effect in humans. [29]

Uses[edit]

Like the cultivated carrot, the *D. carota* root is edible while young, but it quickly becomes too woody to consume. [citation needed] The flowers are sometimes battered and fried. The leaves and seeds are also edible. [6]

*D. carota* bears a close resemblance to poison hemlock, and the leaves of the wild carrot may cause phytophotodermatitis, [30][26] so caution should also be used when handling the plant. The seeds and flowers have been used as a method of contraception and an abortifacient for centuries. [31][32][33] If used as a dyestuff, the flowers give a creamy, off-white color.

*D. carota*, when freshly cut, will draw or change color depending on the color of the water in which it is held. This effect is only visible on the "head" or flower of the plant. Carnations also exhibit this effect. This occurrence is a popular science demonstration in grade school.

Beneficial weed[edit]

This beneficial weed can be used as a companion plant to crops. Like most members of the umbellifer family, it attracts wasps to its small flowers in its native land; however, where it has been introduced, it attracts very few wasps. In northeast Wisconsin, when introduced with blueberries it did succeed in attracting butterflies and wasps. [34] This species is also documented to boost tomato plant production when kept nearby, and it can provide a microclimate of cooler, moister air for lettuce, when intercropped with it. [35] However, the states of Iowa, Michigan, and Washington have listed it as a noxious weed, [36] and it is considered a serious pest in pastures. It persists in the soil seed bank for two to five years. [37]

Taste[edit]

Several different factors can cause the root of a carrot to have abnormal metabolites (notably 6-methoxymellin) that can cause a bitter taste in the roots. For example, carrots have a bitterer taste when grown in the presence of apples. Also, ethylene can easily produce stress, causing a bitter taste. [38]

**EXPERIMENTAL WORKS****MATERIALS AND METHODS:****2.1. Materials:**

Extract of Radish, extract of Carrot, Methyl paraben, Colouring agents, Carbopol.

**Table 1: Formulation of tropical herbal gel**

Sr. No.	Formulation ingredients	Category	Proportion
1	Carrots extract	Produces Glow and Coldness effect on skin, treating death cell, produced skin healing	49%
2	Radish extract	Antimicrobial, antifungal, antiviral, antibacterial	49%
3	Carbopol	Gelling agent	1%
4	Methyl paraben	Preservative	0.5%
5	Colouring agent	Reproduces colour	0.5%

**2.2. Method:****2.2.1 Preparation of radish extract:**

- Selection of radish, washing and peeling them.
- The after cutting cubes and add it into 1000ml distilled water and continuous boiling till 60min.
- After 60min it at room temperature and filter it.

**2.2.2 Preparation of carrot extract:**

- Selection of Carrot, washing and peeling them.
- Then After cutting cubes and add it into 1000ml distilled water and continuous boiling till 60min.
- After 60min it at room temperature and filter it.

### 2.2.3 Formulation of tropical herbal gel:

Herbal gel was prepared using gelling agent carbopol concentration with Radish and Carrot extract Herbal drug both ingredients are added as shown in table 1 to the gel and stirred for sufficient time for homogeneous mixing of extract in gel base. Collapsible tube was used for filling of prepared gel. These formulations were stored at a cool and dry place. Formulation was evaluated for following parameters.

#### Figure 1: Image of gel

### 2.2.4 Treating the Dry skin:

The prepared gel was applied directly to the affected part of the skin twice a day after cleaning the skin properly for two weeks. The effect of the gel was analyzed after a period of 1 min and marked as '0', '\*', '\*\*', '\*\*\*', '\*\*\*\*', '\*\*\*\*\*' for zero effect, minimum effect, minor effect, little effect, good effect and significant improvement respectively. No side effects are noted also the redness or rashes is not observed after application of gel.

### 2.2.5 Anti-fungal study:

The prepared gel was applied directly to the affected part of the skin twice a day after cleanings the skin properly for two weeks. The effect of the gel was analyzed after a a period of one week and marked as '0', '\*', '\*\*', '\*\*\*', '\*\*\*\*', '\*\*\*\*\*', for zero effect, minimum effect, minor effect, little effect, good effect and significant improvements respectively. No side effect is noted also the bacterial and microbial infections is not observed after application of gel.

## 3. ORGANOLEPTIC EVALUATION:

Physics parameters such as color and appearance were recorded.

### 3.1. Viscosity:

Viscosity of gel was measured using Brookfield viscometer (Brookfield viscometer RVT) with spindle number 7.

### 3.2. Extrudability:

The gel formulations were filled in standard capped collapsible aluminum tubes and sealed by crimping to the end. The weights of the tubes were recorded. The tubes were placed between two glass slides and were clamped. 500g was please over the slides, and then, the cap was removed. The amount of the extruded gel was collected and weighed. The percent of the extruded gel was calculating (>90% Extrudability: Excellent, >80% Extrudability: Good, and >70% extensibility: Fair) [10].

### 3.3. Spreadability:

Spreadability was determined by rhea apparatus which consists of a wooden block, which was provided by a pulley at one end. By this method, Spreadability was measured on the basis of slip and drag characteristics of gel. An excess of gels. An excess of gel (about 2g) under study was placed on the ground slide. The gel was then sandwiched between this slide and another glass slide having the dimension of fixed ground slide and provided with a hook. A 1kg weight was placed at the top of the two slides for 5min to expel air and to provide a uniform film of the gel between the slides. Excess of gel was scrapped off from the edges. The top plate was then subjected to pull of 80g with the help of string attached to the hook, and the time (in seconds) required by the top slide to cover a distance of 7.5cm was noted. A shorter interval indicated better Spreadability [11].

Spreadability was calculated using the following formula

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

Where,

S= Spreadability

M= weight in the pan (tied to the upper slide)

L= Length made by the glass slide

T= time (in seconds) taken to separate the upper slide from the ground slide

### 3.4. Measurement of pH:

The PH of developed gel formulations was determined using digital PH meter. The measurement was performed at 1,30,60 and 90 days after preparation to detect any change with time. 1g of gel was dissolved in 100ml distilled water and kept aside for 2hrs. The measurement of PH of formulation was done in triplicate, and average values are calculated [12-13].

### 3.5. Homogeneity:

All developed gels were packed in containers and then tested for homogeneity by visual inspection. They were tested for their appearance and presence of any aggregates.

### 3.6. Grittiness:

All the formulation was evaluated microscopically for the presence of any appreciable particulate matter which was seen under light microscope. Hence, obviously the gel preparation fulfills the requirement of freedom from particular matter and from grittiness as desired for any topical preparation [13-15].

### 3.7 Stability study:

ICH guidelines were followed for stability study. The formulation gel was filled in collapsible tubes and stored at different temperature and humidity conditions, namely  $25 \pm 2^\circ\text{C}/60 \pm 5\%$  RH,  $30 \pm 2^\circ\text{C}/65 \pm 5\%$  RH, and  $40 \pm 2^\circ\text{C}/75 \pm 5\%$  RH for a period of 3 months and studied for appearance, pH, and Spredability [14-15]

### 3.8 Skin irritation test:

The intact skin of Wister rats of either sex with average weight 150-200g was used. The hairs were removed from the rat 3 days before the experiment. Prepared gel formulations were used on the test animal and gel base on control group. The animals were treated skin were treated daily for 7 days, and erythema and edema on the treated skin were examined [16].

## 4. RESULTS:

### 4.1. Physical evaluation:

The herbal gel was prepared using carbopol, Methyl paraben and Colouring agents by using various concentrations of Radish extract and Carrot extract which were subjected for appearance, Viscosity, Spredability, pH and homogeneity. The prepared gel formulations have Brown colour with a translucent appearance and have smooth feel on application which was remain same on stability testing period.

All these formulations have shown optimum viscosity. The pH value of prepared formulation ranged 7 which is considered acceptable to avoid the risk of irritation on application to the skin. The formulation when prepared and after 3 months remain homogeneous without any gritty particle. Furthermore, the stability study 's results revealed that the preparation was stable under normal storage conditions.

**Table 4: physical evaluation of gel formulation.**

Evaluation time period	Appearance	Viscosity	Spredability	PH	Homogeneity
0 time	Brown	4520	24.36	6.3	Homogeneous
After 1 month	Brown	4260	22.35	6.5	Homogeneous
After 2 month	Brown	4300	24.83	6.8	Homogeneous
After 3 month	Brown	4500	19.32	7	Homogeneous
After 4 month	Brown	4580	19.14	6.7	Homogeneous
After 5 month	Brown	4583	19.11	6.6	Homogeneous
After 6 month	Brown	4585	19.09	6.7	Homogeneous

#### 4.2. Extraction of the gel:

The extrusion of the gel from the tubes is an important during its applications and in patient acceptance. Gel with high consistency may flow quickly, and hence, suitable consistency is required to extrude the gel from the tube. Extrudability of gel formulation It was found to be good.

#### 4.3. Acute skin irritation study:

Results of skin irritation test indicate that prepared gel were not produce irritation, redness or edema on application and free from dermatological reaction.

#### 4.4 Anti-Fungal activity:

The prepared gel was applied directly to the affected part of the skin twice a day after cleanings the skin properly for two weeks. The effect of the gel was analyzed after a a period of one week and marked as '0', '\*', '\*\*', '\*\*\*', '\*\*\*\*', '\*\*\*\*\*', for zero effect, minimum effect, minor effect, little effect, good effect and significant improvements respectively. No side effect is noted also the bacterial and microbial infections is not observed after application of gel.

**Table: 2 antifungal activity**

Abbreviation	Evaluation time period	Effect of substance
0	1st day	Zero effect
*	2nd day	Minimum effect
*	3rd day	Minimum effect
**	4th day	Minor effect
**	5th day	Minor effect
***	6th day	Little effect
****	7th day	Good effect

#### 4.5 Treating the Dry skin:

The gel was found effective in treating dry skin. Vita.A, K, B6, E and C are present in the gel, it is helping the recovery of skin cell and it is producer moisturize eff on Dryskin.

**Figure: 3 Before gel use.**

**Figure: 4 After gel use**

**Table 3: For observation of therapeutic effect. Treating the Dry skin.**

<b>Evaluation period</b>	<b>time</b>	<b>Effect of substance</b>
Affect 5sec		Zero Effect
After 10sec		Minimum Effect
After 15sec		Minor Effect
After 20sec		Little Effect
After 30sec		Good Effect

#### **4.6 Glow and Coldness effect on skin:**

Applied the gel on the skin injury by cut, blow or by burn, Dry skin and Ringworm are treated. During our study the gel was treating skin problems and improve Glow on skin.

#### **4.7 Skin Death cell or Damage cell:**

After the regular use gel is treating the skin death cell or Damage cell. Recover the cell.

### **5. DISCUSSION:**

Different concentration of Carbopol, Radish extract, Carrot extract, Methyl paraben and Colouring agents use for preparation of topical gel formulations and they were stable during the period of stability testing.

All the formulation was subjected for investigations of anti-acne, Glow and Coldness effect on skin and treating skin Death cell and Damage cell activities the trial on human volunteer's affected part.

### **SUMMARY & CONCLUSION**

Results shown that gel formulations are good in appearance, homogeneity, Extrudability, and Spredability. The Herbal gel was successfully prepared using carbopol as a gelling agent. Gel was evaluated for clinical study, skin irritation study and other physicochemical test. The gel was found useful in in the treatment of acne (pimple), skin Rashes, injury, boils, blow or by burn, Dry skin etc; The gel was stable for the study period of six months. The gel can be used as for different skin related problems without any side effects due to its herbal origin.

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