

# Formulation and Evaluation of Turmeric Gel

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**Abstract:** Herbal medicine has plays an importance in both medicinal and economic. The usage of herbal medicine has increased the utility, safety and efficacy. Herbal medicine also increases patient compliance as they devoid of typical side effects of allopathic medicines. The present research has been undertaken with aim to formulate and evaluate the herbal gel containing turmeric rhizomes extract. The gel formulations was designed by using aqueous extract in varied concentration and also evaluated by using various physicochemical parameter. The gel was prepared by the using carboxymethylcellulose, triethanolamine, turmeric extract, glycerin and rose water. The skin PH was maintained by dropwise addition of the triethanolamine. The physicochemical parameter of the formulation are carried out by different properties i, e PH, viscosity, spreadability, etc.

**Keywords:** Carboxy methyl cellulose, Turmeric Rhizomes Extract, Gel, Rose Water

## I. INTRODUCTION

Traditional medicine plays an important role in health care services. The large number of medicinal plants are used with various pharmacological activities. Gel formulations are used to deliver topical drug delivery system because of easy application also with increases penetration time and lesser side effects. As per the I. P the gel is defined as homogeneous semi-solid preparation consists of dispersion of one or more medicaments in suitable hydrophobic or hydrophilic bases. The gel formulations was designed by using aqueous extract of turmeric rhizomes. Topical anti-inflammatory activity of the gel was also evaluated. The ayurveda is a science based on Indigenous system of medicine. The turmeric has been used as a non toxic drug in ayurveda for treatment of various diseases including skin diseases, inflammation hepatic disorders etc. The plant selected for present work are *curcumin longa* which contain the high percentage of flavonoids & also responsible for anti-inflammatory activity. The herbal medicines are more accepted in the world for their lesser side effects & low cost. It has great significance for nutritional & heath benefits. It plays an important role in health benefit.

## II. MATERIAL AND METHOD

### 2.1 Collection of Plant Material

The rhizomes of the *curcuma longa* were collected from Samarth Rural Educational Institution in Samarth Gurukul campus



Fig 1. Collection of dried turmeric rhizomes

## 2.2 Preparation of Extract

The rhizomes of turmeric were collected and washed thoroughly with distilled water. In that the 150 gm pieces of turmeric rhizomes was imbibed with 500 ml water for 3 hours or overnight with occasional stirring finally extract was collected and concentrated to get yellowish residue. This extract was stored in airtight containers at cool and dark place.

## 2.3 Preparation of Gel

Formulation of gel:

Sr. No	Ingredients	Role	Quantity
1.	Haridra water	Essence cool water	100 ml
2.	Triethanolamine	Clear gel base	2 gm
3.	Carboxymethylcellulose	Gelling agent	3 gm
4.	Glycerin	Preservative	1 ml
5.	Rose water	Moisturiser	1 ml

Table 1. Role of ingredients with their formula

## 2.4 Procedures for Formulation of Gel

The gel base was prepared by using gelling agent. Weighed accurately amount of carboxymethylcellulose is dissolved in the sufficient amount of distilled water to make a gel base. The gel base is add in 100 ml of haridra water then mix triethanolamine dropwise with the continuous stirring till the gel is formed then add glycerin and rose water mixing homogeneously to form homogeneous gel, finally transferred in a suitable container.

## 2.5 Evaluation Parameter for Gel

### A. Physical Evaluation

- PH:** About 1 gm gel was accurately weighed and dispersed in 100 ml purified water. The PH of the dispersion was measured by using digital PH meter. The measurement of PH were done.
- Homogeneity:** The developed formulations were tested for homogeneity by visual inspection after the gel has been filled in the container. They were tested for their appearance and presence of the any aggregates.
- Viscosity:** The measurements of viscosity of the gels was done with DV-I brookfield viscometer and the corresponding reading was noted.
- Spreadability:** Adequate amount of sample is taken in between two glasses slides and a weight of 1 gm applied on the slides for 5 min and the observe the spreadability. Spreadability can be calculated by following formula:  

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

Where S: Spreadability  
M: Weight tide the upper slide.  
L: Length of glass slide  
T: Time taken to separate the slides.
- Antimicrobial Study:** Nutrient agar was transferred were sterilized at 121°C in autoclave about 15 min. The microbial strain was dispersed in medium and poured into the petri dish and allow to cool until it solidifies cups are prepared with the help of sterile steel. Formulation are placed in in the cups and incubated for 24 hrs, the zone of inhibition was observed.
- Washability:** Formulation was applied on the skin and then ease of extend washing with water was checked.
- Stability Test:** Physical stability of the herbal gel was carried out for 4 weeks at various temperature condition like 2°C, 25°C, and 37°C. The herbal gel was found to be physically stable at different temperature.

## III. RESULT AND DISCUSSION

### 3.1 Physical Evaluation

The results of physical evaluation are colour, odour, taste etc.

Sr. No	Parameter	Result
1.	Description	Semisolid
2.	Odour	Characteristics
3.	Colour	Yellow
4.	Consistency	Smooth

**Table 2 Physical Evaluation of gel.**

### 3.2 PH

The PH of the turmeric gel was measured by using digital PH meter. The PH of the turmeric gel was found to be 6.56 .

### 3.3 Loss on Drying

Loss on drying was determined by placing the formulation in petri plate on water bath and dried for temperature 105 °c. Loss on drying was found to be 30%.

### 3.4 Antimicrobial Activity

The anti –microbial activity of formulation was observed.



**Figure 2: Microbial activity of gel**

## IV. CONCLUSION

It is proved that study the turmeric used for the various medicinal antibacterial, anti-inflammatory, etc. This gel become a media to use these medicinal properties like properties effectively and easily as simple dosage form. The present study was done to prepare and evaluate herbal gel for this herbal extract were prepared by using simple maceration process to obtain good yield and there was no harm.

## V. CONFLICT OF INTEREST

The authors declared no conflict of interest.

## VI. ACKNOWLEDGEMENT

The author would like to thank to Samarth Institute of pharmacy, Belhe, Mrs. S. Alhat Mam for providing all chemicals and excipients. And also most thanks to Mrs.. Gaikwad mam for their guidance time to Time and consistent support.

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