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Research Article

Formulation And Evaluation Of Turmeric And Coriander Based Herbal Nail Polishes

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ABSTRACT

Cosmetics have been in utilization for more than thousands of years. Nail polish used as cosmetics as since hundreds of years as nail protector and provide attractive appearance to nail. Marketed nail polishes are made by purely chemical based process which has long time side effects to nail. The present work deals with formulation and evaluation of turmeric and coriander based herbal nail polishes. Curcumin was extracted from turmeric powder by simple chemical process. Formulation process is very easy and free from hazardous chemicals. Formulated nail polishes have yellow (LF1) and greenish yellow (LF2) in colour. Drying time of nail polishes are 62 sec (LF1) and 72 sec (LF2). Formulated nail polishes were sufficient smooth and hard. Consistency and texture of formulations are promising. Both formulations are easily spreadable quality materials. Evaluation tests were found to in normal range according to I.P. Novel formulations can used as alternatives as chemical-based nail polished which is free from harmful chemicals and side effects related to it.

INTRODUCTION

Nail is the protective structure used for centuries as survival tools, have over the years become an accessory for beautification. The human nails not only the protective structure and decorative role, but also considered as alternative pathway for the drug delivery, especially in nail diseases like psoriasis or onychomycosis. These nail diseases widely spread in the all over population. Although

the architecture and composition of the nail plate severely limits penetration of drugs and addition to that only a fraction of topical drug interactions. For the perfect treatment of the nail disease the applied the active drug must permeate through the dense keratinized nail plate and reach in the deeper layers, the nail bed and the nail matrix. The inadequate research and knowledge regarding the properties of keratinized nail plate, the nail bed

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and the nail matrix caused a less focus on ungula system.[1-5] A major role of healthy nail is giving protection from the injury to the nail part like distal phalanx, the fingertip, and the surrounding tissue of the nail. Nails helps to increases delicate movements of the distal digits from the counter pressure which is exerted on the pulp of the finger or on the mash of the finger. The nail act as a counter-force when the end of the finger is come into the contact with object and then it enhancing the sensitivity of the fingertip even through there is no nerve endings in the nail itself.[6-8] Fingernails are used for scratching and grooming and are an efficient natural weapon. The nails also increase to the aesthetic appearance of the hand and foot. The finger nail protects the fingertip and tissue from wounds and it helps for exact developments of the nail skin.[9-13] Herbal formulations are used to treat diseases form thousands of years and known as side effect less formulations. Marketed nail polishes are made up form purely chemical based process and used chemicals are harmful to nails after long time use. Herbal formulations made by using natural herbs and very less side effects, due to these properties their demand is increase continuously.[14-16] Herbal nail polish is one of the novel options to treat nail diseases and beautify them. So in recent paper we deal with the formulation and evaluation of herbal nail polish.[17-19]

Plant Profile

1. *Curcuma longa*

Synonym:

Haldi, Indian saffron, haridra, turmeric

Biological source

It consists dried rhizomes of plant *Curcuma Longa*.

Family

Zingiberaceae

Geographical source:

The plant is a native to southern asia and is cultivated extensively in temperature regions. It is

grown on large scale in India, China, East indies, Pakistan and Malaya.

Chemical constituents:

Turmeric contains yellow colouring matter called as curcuminoids (5%) and essential oil (6%). The chief constituent of the colouring matter is curcumin(60%). The volatile oil contains mono and sesquiterpens like zingiberene (25%), tumerone, artumerone, borneol and cineol.

Uses

Turmeric used as aromatic, anti-inflammatory, blood purifier and its chemical constituent curcumin have anti-fungal activity. It also used as antiprodic, spice, colouring agent and a common household remedy for cough and cold.

2. *Coriandrum sativum*

Synonym:

Coriandryl fruit, fructus coriandri, cilantro

Biological source:

It consists of dried ripe fruits of *Coriandrum Sativum*.

Family:

Umbelliferae

Geographical source:

Cultivated in central and eastern Europe, particularly in Russia, Hungary, Africa, and India. In India it is cultivated in Maharashtra, UP, Rajasthan, Jammu, and Kashmir.

Chemical constituents:

Coriander consist of about 1% volatile oil the chief volatile components are d(+)-linalool, along with other constituents like borneol, p-cymene, camphor, geraniol, limonene, and alpha-pinenes. The fruit also contain fatty oil and hydroxycoumarins.

Uses:

Aromatic, carminative, stimulant, alternative, antipasmodic, diaphoretic, and flavouring agent. It also used as refrigerant, tonic, appetizer, diuretic, aphrodisiac and stomachic.



Curcuma Longa



Coriander Sativum

Fig.1 Figure of Plants

MATERIALS AND METHODS

Powder of turmeric and coriander are procured from local source. All chemicals are purchased from Loba Chemicals and used without purification.

Extraction process of curcumin form curcuma longa

Accurately weight 5gm of turmeric powder and transferred into 250 ml beaker. 50 ml of dry petroleum ether was added to same beaker and stirred at room temperature for 20 min. Filtered the solution and obtained residue was allowed to air dry for 5h. Dry residues were mixed with 50 ml chloroform and allowed to stir at room temperature for 20 min. Residues was collected and dry after filtration. Dry residues were mixed with 50 ml dry methanol and filter it. Organic layer concentrated under reduce pressure to give curcumin.

Formulation of nail polish

Film forming material was triturated into mortar pastel and make free flowing powder. Ethyl cellulose and resin were dissolved into ethyl acetate and stirred for 20 min (solution A). API was suspended into plasticizer and mixed both well in separate beaker was added to solution A.

stirred solution until uniform dispersed all. Pigment was added to the solution and stirred for 20 min. Transfer all content in to suitable container.

Evaluation Parameters

1. Colour:

Colour comparing with master color standard by applying on thumbnails, holding them side by side moving the thumb with the standard first on the right and then left. Artificial acrylic nails have been utilized as well for matching comparative shades.

2. Drying time:

The application and performance properties of a nail coating depend greatly on the volatility characteristics of its solvent system and therefore on its drying time. A thin layer of lacquer is spread or flowed out on a clean and clear glass plate and observed. The time taken to dry is measured with a stop watch. The total time should be less than 10min. Film is applied under the controlled temperature and humidity condition at 25oC and 50% relative humidity.

3. Smoothness of flow:

Smoothness of flow is determined the smoothness of film. This can be done by sample was poured to approximately 1.5inches and spread on the glass plate and made rise vertically.

4. Hardness:

This is the measure of the hardness of the film. Hardness was evaluated after apply nail polish on nail and apply external pressure by hand on it.

5. Spreadibility:

Spreadibility is the ability of a film to spread on nail. Spreadibility of nail polish is determined by applying the formulated nail polish on glass slide and then another glass slide was placed over the glass slide. Then load the weight on upper glass slide.

RESULTS & DISCUSSION

Table 1. Formulation of Nail Polishes

Sr.no	Ingredients	Quantity (lf1)	Quantity (lf2)
1.	Curcumin	1gm	1gm
2.	Ethyl cellulose	4.25gm	4.25gm
3.	Formaldehyde	0.90ml	0.90ml
4.	Ethyl acetate	3ml	3ml
5.	Castor oil	0.75ml	0.75ml
6.	Coriander	--	Q.S.



LF1



LF2

Fig.2 Final Appearance Of Nails Polishes

1. Colour:

Colour of nail polish is determined by using the standard colour strip. As per the standard colour strip colour of first nail polish is yellow and colour of second nail polish light green.

2. Drying time:

Drying time was found to be 60-80 seconds. Optimum drying time is less than 10min.

3. Smoothness of flow:

Smoothness of flow of nail polish was found to be smooth.

4. Hardness:

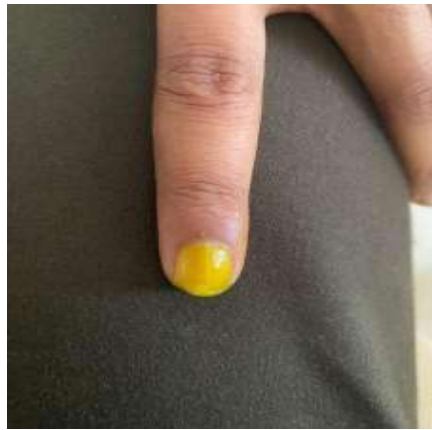
The hardness of nail polish was found to be sufficient hard.

5. Spreadability:

Spreadability of nail polish was found to be easily spreadable.

Table 2. Results of formulated nail polishes

Sr. no	Test	Observation (LF1)	Observation (LF2)
1.	Appearance	Yellow colored liquid	Light green colored liquid
2.	Drying time	62 seconds	72seconds
3.	Smoothness	Smooth	Smooth
4.	Hardness	Sufficient hard	Sufficient hard
5.	Color	Yellow	Green
6.	Consistency	Good	Good
7.	Spreadability	Easily spreadable	Easily spreadable

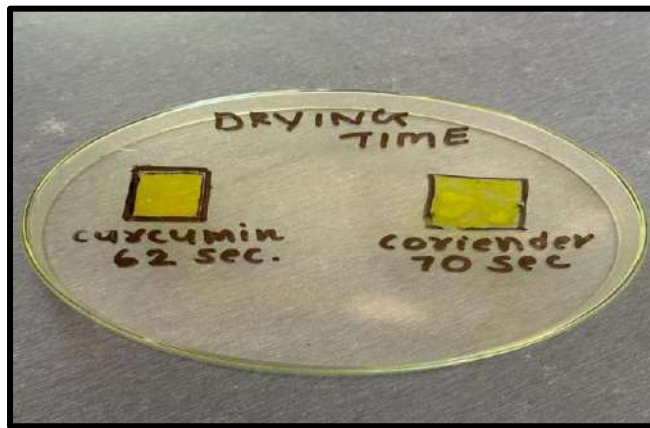


LF1



LF2

After applying on nails



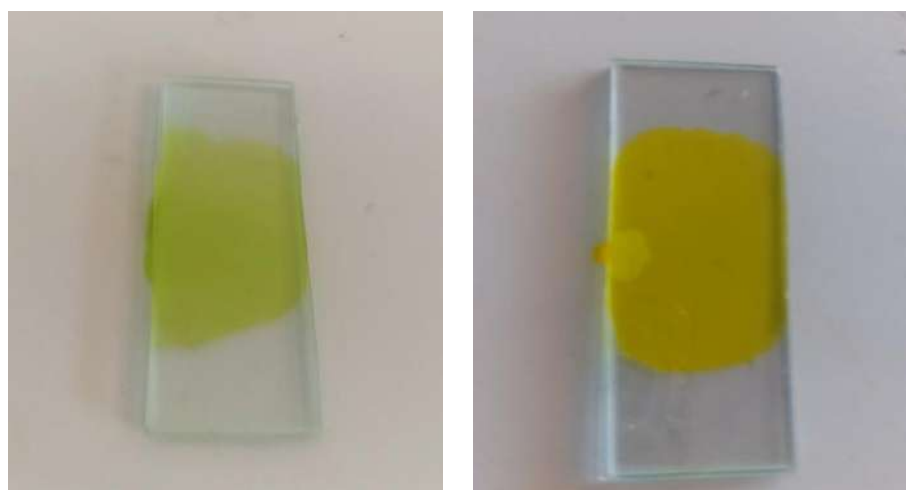
Drying time of nail polishes



Smoothness of flow



Hardness Of Nail Polishes



Spreadability of nail polishes

Fig.3 Evaluation test results of Nail polishes

CONCLUSION

In present study, two different nail polish formulations were formulated and evaluated. Used raw materials were highly pure. Curcumin successfully extracted by turmeric powder. Formulation process was very easy and free from toxic chemicals. Formulated nail polishes were looks light yellow to greenish yellow in colour with good texture. Formulated nail polishes have sufficient hardness and excellent spreadibility. Drying time was observed near to 1 min for both formulations. On the basis of above data it was concluded that turmeric and coriander based herbal nail polishes were successfully formulated and evaluated and ready to use as alternative of marketed chemical based nail polishes.

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CONFLICT OF INREST

Author declares no conflict of interest.

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