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## Formulation and evaluation of *Morus alba* anti-aging cream

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### Abstract

In day-to-day practice, Medicinal plants or Herbs are widely used by the traditional methods for curing various diseases. There has been an increase in domestic of plant- based medicine cosmetics, health products, food supplements and various pharmaceutical products. The aim of present study is to formulate and evaluate herbal cold cream using *Morus Alba*. *Morus alba* is Well known plant used in treatment of various diseases with therapeutic activity partly due to the presence of polyphenols antioxidants, caffeic, protocatechuic, Vanillic as well as vitamin c, zinc, calcium, phosphorus and iron. Purpose of this research is to determine the anti-aging property of the herbal extract.

**Keywords:** herbal cream, anti-aging, *Morus alba*, antioxidants

### Introduction

Skin aging is characterized by features such as wrinkling, loss of elasticity, laxity, and rough textured appearance due to the result of continual worsening process because of damage of cellular DNA, and protein. Aging process is classified into two types i.e., 'sequential skin aging' and 'photo-aging'. In the aging process keratinocytes are unable to form a functional stratum corneum and rate of emergence from neutral lipids slow down, as a result the formation of pale skin with wrinkles. Photo aging is the one the main reason of premature aging due to the over exposure to the UV radiation from Sunlight. It is characterized by dry, pale and shallow skin. Cosmetic products are used to protect the skin form various endogenous and harmful substance and enhance the beauty, attractiveness and producing skin health by preventing various skin disorders. The natural and synthetic chemicals present in the skin formulation that support the health, texture and integrity of the skin, maintain elasticity, removal of dark spots, maintain moisture and protect the skin from harmful UV radiation raised from the sun. The therapeutic activity of this herbal cream is due to the presence of the natural ingredients because it helps to reduce the production of free radicals in the skin and maintain skin texture for long time. The herbal cosmetics are the best choice to reduce the skin disorders such as hyperpigmentation, skin wrinkling, skin aging, dry skin, discoloration. The *Morus alba* containing large number of antioxidants and polyphenols. The antioxidant activity of Vitamin C is preventing the formation of free radicals and slowdown the aging.

The literature shows that antioxidants substance present in the living organism it will act as a protective barrier, i.e., the synergistic effect of different antioxidants prevents the formation of free radicals and protect the skin and other body parts.

### Materials and Methods

#### Chemicals and Equipment's

All chemicals and solvent used were of analytical reagent grade (AR). Hard paraffin, vitamin E, Liquid paraffin, white bees wax, methyl paraben, sandalwood oil, zinc oxide, purified water, breaker, water bath, spatula, burner, glass rod, funnel, filter paper, conical flask, electric balance.

#### Plant materials

A fresh leaves of *Morus alba* were collected from Kaglipura area, Bangalore, India

#### *Morus alba* leaf for extraction

The fresh leaves were collected and cleaned by using normal tap water to remove dirt and

and dusts then washed with purified water twice. After washing the leaves, it will allow to dry in room temperature for five days or in hot air oven at 45 °C for 48 hours to get constant weight dry mass. The dry leaves are then collected and powdered by using grinding mill to a particle size about 0.5 mm. The powdered dry leaves are then packed in an airtight container at dark cool room until use.



**Fig 1:** Powdered *Morus alba*

### Extraction of dried powdered *Morus alba* leaf

In the first stage of the study, the powdered leaves were extracted with purified water by maceration with (2:10) dried powdered leaves to extraction solvent ratio at room temperature for 7 days. Two hundred gram of powdered *Morus alba* was taken and mixed with 1000ml of purified water as solvent in a closed glass vessel. The menstruum was mixed in the interval of every 24 hours. At end of the maceration period the menstruum was filtered by using Whatman No. 1 filter paper. The marc was re-extracted by the same process and concentrated extract was mixed together and stored in Amber colour container.



**Fig 2:** Extraction of *Morus alba*

**Table 1:** Preparation of *Morus alba* anti-aging cream

SI No	Ingredients	F1	F2	F3
1.	Morus alba extract	2g	4.5g	10.5g
2.	Bee's wax	2.5g	5g	12.5g
3.	Liquid paraffin	10g	20g	50g
4.	Vitamin E	100mg	200g	500g
5.	Hard paraffin	2.5g	5.6g	12.5g
6.	Distilled water	2.5g	2g	1.5g
7.	Zinc oxide	1g	2g	5g
8.	Methyl paraben	1g	2g	5g
9.	Sandalwood oil	0.2g	0.4g	1g

### Procedure

Weigh the accurate quantity of bee's wax, and transfer into the China dish and melt at a low temperature. Add required quantity of hard paraffin slowly after dissolving the both the

ingredients then add liquid paraffin and heat. Meanwhile the required amount of water and *Morus alba* extract is mixed together and heated. When the temperature of both the oil phase and aqueous phase reaching the temperature at 75 °C remove the heat and add aqueous phase in to the oil phase and stir it continuously. Add vitamin E, methyl paraben, zinc oxide, and sandalwood oil with continuous stirring. Transfer the cream into a suitable container and stored in dark place.

### Evaluation of cream

#### Organoleptic evaluation

The cream thus obtained was evaluated for its organoleptic properties like odour, colour, and state. The appearance of the cream was examined by its roughness and color and graded.

#### Evaluation of microbial development

##### a) Method of preparing microbial suspension

Soil (300g) was gathered blended with 1000 ml of purified water and permitted to stand for 15 minutes, and filter the above suspension by using sterile filter paper.

##### b) Procedure for microbial examination

The formulated cream was inoculated on the plates of agar media by steak plate method and a control was prepared by omitting the cream. The plates were placed in to the incubator and are incubated at 37°C for 24 hours. After incubation period, plates were taken out and check the microbial growth by comparing with control.

#### Stability studies

Stability testing of drug products being as a part of drug discovery and ends with the demise of the compound or any commercial products. For testing the stability of the prepared cream was done by keeping the cream in a room temperature for one month and evaluated.

#### pH of the cream

The pH meter was calibrated using standard buffer solution. About 0.5 g of cream was weighed and dissolved in 50.0 ml of distilled water and its pH was measured.

#### Homogeneity

The formation was tested for the homogeneity by visual appearance and by touch.

#### After feel

Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream was checked.

#### Removal test

The applied cream was washed with tap water and check the removal efficiency of the cream.

#### Irritancy test

Mark an area (1sq.cm) on the left-hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythematic, edema, was checked if any for regular intervals up to 24 hours and reported.

### Result

#### Organoleptic evaluation

The organoleptic properties of the cream were evaluated

**Table 2:** Types of Specification & Limit

No	Specification	Limit
1.	State	Semi-solid
2.	Colour	Off white
3.	Odour	Sandal
4.	Texture	Smooth

**Test for microbial development**

The cream was free from microbial development.

**Homogeneity**

All ingredients produce uniform mixing in other ingredients present in the cream.

**After feel**

Emolliency, slipperiness, and amount of residue left after the application of fixed amount cream was found good.

**Irritancy test**

The formulated cream shows no redness, inflammation, edema, and irritation during irritancy studies. These formulations are safe to use for skin.

**Removal test**

The cream was easily removed by washing with tap water.

**PH of the cream**

The pH of the cream was found to be in the range of 5.7 which is good for skin pH.

**Discussion**

The secondary metabolites present in the herbal extract cream such as phenolic compounds responsible for the antioxidant property, along with the phenolic compound other secondary metabolites present in the *Morus alba* such as vitamin E, flavones and caffeic possesses a free radical scavenging ability. It having ability to prevent premature aging, skin wrinkling, preventing skin discoloration, and protect the skin from UV radiation arising from the sun.

**Conclusion**

Due to the presence of high number of antioxidants present in the *Morus alba* leaves, it's clear that on combining the extract of *Morus alba* with different compound in the different ratio we get multipurpose effect. It concluded that the formulated cream showed good consistency and medical property. The *Morus alba* extract may prevent hyperpigmentation or patches on the dark skin and naturally lighten the skin tone. Other uses of *Morus alba* cold cream are.

- It helps to prevent dark spots and discoloration
- It aids to improve the appearance of uneven skin tone
- It protects the skin from environmental factors
- It hydrates and nourish the skin
- It helps to prevent the premature aging

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