



Evaluation And Formulation Of Anti-Ageing Cream Using By Green Coffee

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Abstract: The present research aimed to formulate and evaluate an herbal anti-ageing cream utilizing the potent antioxidant properties of Green Coffee bean extract. Unroasted green coffee beans are rich in chlorogenic acid and polyphenols, which act as powerful antioxidants to combat free radicals, a primary cause of premature skin ageing. The cream was developed using a simple process with a vanishing cream base (Oil-in-Water or O/W emulsion). The formulation included components like stearic acid, cetyl alcohol, liquid paraffin, glycerin, and propylene glycol. The final product was subjected to a comprehensive evaluation, including organoleptic tests, pH measurement, viscosity, spreadability, irritancy, and physical stability testing. The results confirmed that the cream possessed desirable properties (smooth texture, non-greasy feel, ideal pH of 6.9, and good washability) and was safe for topical use, showing no adverse reactions or irritancy (Burchard Test). This study concludes that green coffee extract is a promising, safe, and effective natural ingredient for developing anti-ageing cosmetic formulations.

Keywords: Green coffee extract, Anti-ageing cream, Herbal formulation, Vanishing cream, Antioxidants.

1. INTRODUCTION:

Now-a-days herbal extracts are used in the cosmetic preparations for augmenting beauty and attractiveness. Herbal cosmetics are classified on the basis of dosage form like- cream, powder, soaps, solutions, etc. and according to part or organ of the body to be applied for like; cosmetics for skin, hair, nail, teeth and mouth etc. Creams are semisolid emulsions intended for application to the skin or mucous membrane. A low fat moisturizer that disappears into the skin is called as vanishing cream. It softens skin, leaving nothing behind. Vanishing cream are o/w emulsion based preparations containing aqueous phase and oil phase.

What is Green Coffee?

Unlike regular coffee, green coffee beans are not roasted, thus have a higher amount of chlorogenic acid, which is believed to have various health benefits of green coffee. As our body can easily absorb chlorogenic acid, it can take full advantage of green coffee. It doesn't taste like roasted coffee, instead, it has a milder taste, somewhat similar to [herbal tea](#). Moreover, it contains less caffeine than its roasted beans



Biological source of green coffee is dried ripe seeds of coffee Arabica belongs to family rubiaceae. Chemical constituents are caffeine, tannin, fixed oil and_oils waxes also present. Green coffee is unroasted coffee beans from Coffee fruits (Coffee arabica, Coffee can ephora). It contains more chlorogenic acid than roasted coffee.

Side Effects of Green Coffee

Green Coffee is generally considered to be safe for topical application and for internal consumption as well. But consuming a large amount of Green coffee can cause caffeine-related disorders such as insomnia, restlessness, stomach disorder, nausea and vomiting and other related side effects. Pregnant women and nursing mothers should always consult a doctor before consuming Green Coffee. Green Coffee is known to be high in Chlorogenic acid which can cause bleeding disorder, anxiety disorders. So Green Coffee should always be consumed in moderation. You can enjoy the healthcare and beauty benefits of Green Coffee when taken in moderation.

Benefits of Green Coffee for Your Skin

Green coffee is different from the usual coffee which you drink daily. It is made from the unroasted and raw coffee beans and is known to the powerhouse of antioxidants which is well known for its anti-ageing properties. The high level of Chlorogenic Acid and caffeine are responsible for enhancing the beauty of your skin. Recently, the beauty industry has seen a surge in the use of skincare products containing Green Coffee. Hence many skincare companies are harnessing the goodness of Green Coffee in their products. This new beauty ingredient has taken the beauty industry by storm and has become a key ingredient in many skin care creams, lotions and moisturizers. Let us dig deeper into the skincare benefits of Green Coffee.

Anti-Ageing Effect

Green Coffee is known to be rich in chlorogenic acid which is known to be a potent antioxidant as it effectively fights free radicals responsible for causing wrinkles and fine lines. The fatty acids and esters present in Green Coffee help to plump up your skin, thereby erasing fine line and wrinkles.

1. Firms Your Skin

The caffeine and chlorogenic acid present in Green Coffee is known to tighten your skin. It has a diuretic effect due to which it pulls the moisture out of fat cells. It has a tightening effect on your skin which helps to make your skin look more youthful.

2. Reduces Redness

In studies of coffee bean extract, one of the secondary and unexpected benefits of all those antioxidants was a reduction in the redness of the skin. It's yet another reason to give the extract a closer look.

3. Boosts Collagen Production

Collagen is the building block for beautiful, radiant and youthful skin. So if you want to keep your skin looking youthful and fresh, radiant skin then Green Coffee can help in attaining it. It helps to boost collagen production which increases the elasticity of your skin, thereby helps to get rid of sagging skin and tightens your skin.

4. Improves Texture

If you want to have a soft, smooth skin then Green Coffee extract will definitely help you with it. It is rich in fatty acid which helps to keep your skin hydrated and you will see a noticeable impact of coffee bean extract on the texture of your skin. Green Coffee extract helps to even out your skin tone, thus improving the texture of your skin.

5. Makes Your Skin Brighter

Green Coffee extract is known to repair the damaged tissues of your skin, boosts blood circulation and keeps your skin hydrated and well-nourished, thereby adding a glow to your skin and making it look bright and radiant.

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How Is It Beneficial to Your Body

Unroasted coffee beans extract or the green coffee is rich in antioxidants and is considered to be beneficial for your health. It helps to detoxify your body by cleansing the liver and eliminating toxins. The unroasted and the raw coffee beans are a rich source of chlorogenic acids which is powerful antioxidants and is also known to exhibit anti-inflammatory property which helps boost your health and beauty. It is beneficial in weight loss management, boosts metabolism, effectively treats diabetes, improve blood circulation, controls cholesterol and blood pressure. Green coffee beans is loaded with beauty benefits as it is rich in antioxidants which helps to fight free radicals which is responsible for making your hair dry, dull and damaged. Green coffee is also known to fight hair fall. The Green

coffee is loaded with antioxidants which fight early signs of ageing and the fatty acids and ester present in Green coffee keeps your skin hydrated.

Information about Green Coffee

Coffee beans are extracted from the coffee plant *Coffea Arabica*. Green Coffee is the extract of the regular coffee beans which is not roasted and is completely raw. Green coffee is considered to be loaded with properties which is beneficial for your health as well as beauty. Green coffee is entirely different from the normal coffee which you drink through the origin on both is the same. Green coffee is milder in taste as compared to the normal coffee which you are used to drinking. Green coffee is somewhat similar in taste to the herbal tea and its chemical profile is completely different from the roasted coffee beans. While roasting most of the potent antioxidants are lost.

What is the mechanism of action of green coffee?

The theorized mechanism of action by which green coffee produces weight loss is through the inhibition of the enzyme glucose-6-phosphatase. In vitro, glucose-6-phosphatase induces the enzymatic process of glucose production in the liver.

What is the active ingredient in green coffee extract?

Green coffee extract contains chlorogenic acids, which are a group of antioxidant compounds that scientists believe may be responsible for its health effects.

incredible Health Benefits Of Green Coffee

- Promotes Weight Loss. Green coffee bean is a prized supplement for its potential to stimulate .
- Regulates Blood Sugar. ...
- Controls Blood Pressure. ...
- Potent Anti-Ageing Effects. ...
- Prevents Cancer. ...
- Boosts Mood. ...
- Detoxifier.

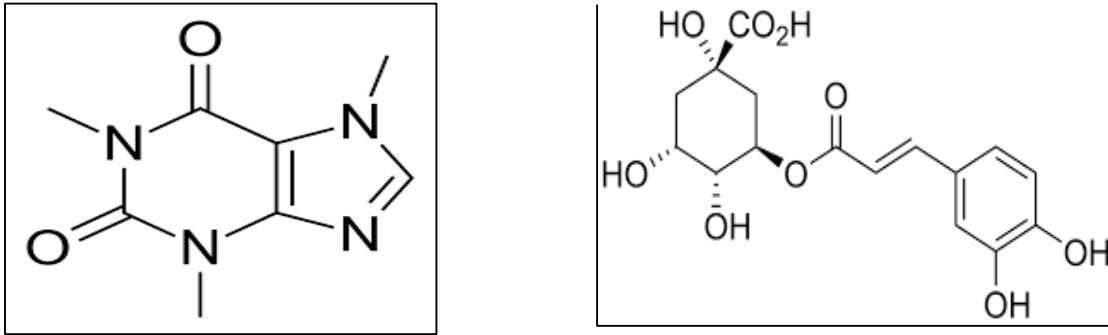


figure 1. Structure of caffeine (left) and structure of chlorogenic acid (right)

The chlorogenic acid in green coffee is thought to have health benefits. It might affect blood vessels so that blood pressure is reduced. It might also affect how the body handles blood sugar and metabolism. Green coffee also contains caffeine, but in lower amounts than regular coffee.



Figure 2; green coffee beans (left side) and coffee plant (right side)

There are many uses of green coffee such as can reduce blood pressure, boost metabolism, slow down the aging process, fight against harmful free radicles, natural antioxidant.

1 Tablespoon of Green Coffee powder contains the following:

Nutrition	Nutritional Value
Carbohydrates	1g
Fiber	3g
Fat	0
Calcium	50 mg
Potassium	71 mg

Caffeine	20mg
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Vanishing creams were known for their smooth, dry feel on the skin and their pearly sheen. Chemically they are oil-in-water emulsions consisting of stearic acid, an alkali, a polyol and water. The alkali reacts with some of the stearic acid – the best was triple pressed (t.p.) – to form a soap which then functioned as the emulsifier. The polyol (e.g. glycerin) helped to soften and protect the skin and prevent chaps, a function it also performed when used to make glycerine creams and jellies.

Uses of green coffee:

- ❖ Green Coffee is known to be rich in chlorogenic acid.
- ❖ which is known to be a potent antioxidant as it effectively fights free radicals responsible for causing wrinkles and fine lines.
- ❖ The fatty acids and esters present in Green Coffee help to plump up your skin, thereby erasing fine line and wrinkles.
- ❖ It is also prevent the hair fall and also increase growth of hairs.
- ❖ It is also reduce dark circle.
- ❖ It is also help in weight loss.

Composition of anti-ageing cream :

Ingredients	Percent
Stearic acid t. p.	10
Cetyl alcohol	6
Liquid paraffin	6.6
Glycerin	5
Water	q.s

Methyl paraben	0.05
Propylene glycol	30

Formulation :

For the preparation of formulation, we use vanishing cream as base i.e O/ W type of emulsion. Vanishing creams get their name from the fact that they seemed to disappear when spread onto the skin. The main core ingredient of vanishing cream is stearic acid. Stearic acid govern consistency of the cream. In emulsions, Stearic Acid is an effective stabilizer, thickener and softener. [8]

Formula for anti-aging cream:

Active ingredient	Used percentages
Green coffee	0.16 g
Oil phase	
Stearic acid	1.6 g
Cetyl alcohol	1 g
Liquid paraffin	0.1 g
Aqueous phase	
Glycerine	0.83 g
Methyl paraben	0.05 g
Propylene glycol	5 g
Distilled water	q.s

Above formula as per 10 g emulsion preparation.

Roles of ingredients:

Green coffee	Provide anti aging property due to potent antioxidant effect
Stearic acid	Governs consistency of the cream
Cetyl alcohol	Prevent creams from separating oil and liquid
Liquid paraffin	Helps to lock moisture
Glycerine	Prevent from drying of cream

Methyl paraben	Used as preservative
Propylene glycol	Work as emollient to create protective layer on skin
Water	As vehicle

Material and Method of preparation:

Steps carried out in the preparation of vanishing herbal cream were as follows-

Preparation of oil phase:

Stearic acid (10%), cetyl alcohol(6%),liquid paraffin (6.6%) was taken into one porcelain dish and this mixture was melted at 70°C.

Preparation of aqueous phase: green coffee powder(1.6%), Glycerin (5%), methyl paraben (0.05%), propylene glycol (30%), Water (q.s) were taken into another porcelain dish and heated this mixture at 70°C.

Addition of aqueous phase to oil phase: The aqueous phase was added to the oil phase with continuous stirring at 70°C.and add green coffee powder into mixture. Now, once the transfer was completed it was allowed to come at room temperature, all the while being stirred. Perfume (0.5%) was added at last just before the finished product was transferred to suitable container. Then cream was evaluated for various physical parameters.[1]

Evaluation of cream:

Determination of organoleptic properties: The appearance of the cream was judged by its color, pearlscence and roughness and graded.[9]

pH: The pH meter was calibrated and measured the pH by placing in the beaker containing 20mg of the cream.[1,3]

Determination of homogeneity: The formulations were tested for the homogeneity by visual appearance and by touch.[5]

Spreadability test: 500mg of the cream was sandwiched between 2 slides. A weight of 100gm was placed on upper slide. The weight was removed and extra formulation was scrapped off.

Homogeneity: The test was done by physical touch with hand.

Appearance: The appearance of the cream was judged by its color, pearlescence and roughness and graded.

After Feel: Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream were checked.

Type of Smear: After application of cream, the type of film or smear formed on the skin was checked.

Removal test: The ease of removal of the cream applied were examined by washing the applied part with tap water.

Irritancy test: The cream was applied to the specified area is noted. Presence of irritancy, erythema and edema were checked.

Determination of emolliency: Emolliency, slipperiness and amount of residue left after the application of fixed amounts of cream was checked.[1,4]

Burchard test :

Also called patch test. Patch tests were performed on the forearms of 3 volunteer forearm was saturated with 1.0 g of formulation. Each was applied to the 5 × 4 cm marked regions separately on each forearm. The regions were covered with the surgical dressing after application. The patches were removed after 24 hr. After 24 hr volunteer said there no irritation or redness or itching.[7]

Physical stability:

Formulated cream preparations were kept at different temperature condition like ambient temperature 25±2oC (room temperature) and 45±5oC (condition of accelerated stability testing) for a period of 15 days. The prepared formulation stable at room temperature as well as high temperature

Results and discussions:

The herbal vanishing cream was prepared by using fine powder of green coffee. Following are the parameter and observation-

sr.no	Parameter	Observation
1	Appearance	Creamish white
2	Odour	Characteristic odour
3	pH	6.9

4	Spreadability	Easily spreadble
5	Homogeneity	Smooth and consistent
6	Burchard test	No allergy
7	Tye of smear	Non-greasy
8	Emolliency	No residue left
9	Viscosity	15934cps
10	Washability	Washable
11	Irritancy test	No edema and irritation
12	Physical stability	Stable
13	Grittiness	No gritty particles

CONCLUSION:

The present study successfully demonstrated that green coffee extract can be effectively utilized in the formulation of a safe, stable, and efficient anti-ageing cream. Green coffee beans, being rich in chlorogenic acid, polyphenols, tannins, and natural antioxidants, significantly contribute to reducing free-radical damage—one of the primary causes of skin ageing. The prepared formulation, based on a vanishing cream base (O/W type emulsion), showed excellent physicochemical properties such as smooth texture, homogeneity, ideal pH, good spreadability, non-greasy nature, and easy washability. Evaluation parameters including irritancy test, Burchard patch test, viscosity analysis, smear type, and physical stability confirmed that the cream is non-irritant, cosmetically appealing, and remains stable under various conditions. No adverse reactions like redness, edema, or itching were observed, indicating good skin compatibility.

Overall, the study concludes that green coffee-based anti-ageing cream offers promising potential as a herbal cosmetic product. With its strong antioxidant profile and skin-nourishing properties, the formulation may help delay premature ageing, improve skin texture, enhance moisture retention, reduce fine lines, and promote overall skin health. Thus, green coffee extract can be considered a valuable natural ingredient for the development of effective and consumer- friendly anti-ageing skincare formulations.[1]

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