# FORMULATION AND EVALUTION OF AVOCADO BODY LOTION

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**ABSTRACT** :-

The skin is a complex organ that protects the body from the external environment. It acts as a protective barrier against physical, chemical, and microbial threats while regulating water loss and maintaining internal homeostasis. In addition to forming a permeability barrier, the skin plays an important role in temperature regulation, sensory protection against ultraviolet (UV) radiation, tissue repair, and wound healing.

As the outermost organ of the body, the skin is vulnerable to disorders such as inflammation, infection, and irritation, necessitating the use of effective and safe topical preparations. This research aims to develop and assess a body lotion formulated with avocado (Persea americana) oil as the main active component. Avocado oil is rich in fat- soluble vitamins such as A, D, and E along with essential unsaturated fatty acids and naturally occurring antioxidants.

The pH values ranged within a safe range for skin application, and the best spreadability was observed in the formulation.

**INTRODUCTION** :-

The skin performs several essential roles in maintaining overall health. It acts as a protective physical barrier that regulates permeability, defends against microbial invasion, supports thermoregulation, shields the body from ultraviolet (UV) radiation, and aids in wound healing.

Avocado is obtained from the tree botanically known as Persea americana Mill, a tropical and subtropical species that produces a pear-shaped climacteric berry.

In recent years, there has been increasing interest in herbal and plant-based cosmetic formulations due to their safety, biocompatibility, and minimal side effects compared to synthetic products. Among various natural ingredients, avocado oil derived from Persea americana has gained attention for its exceptional skin- moisturizing properties.

Avocado oil is rich in essential fatty acids (particularly oleic acid and linoleic acid), vitamins A, D, and E, and antioxidant compounds.

The present study focuses on the formulation and evaluation of a body lotion containing avocado oil as the primary active ingredient. The formulation aims to develop a stable, effective, and cosmetically acceptable preparation with good spreadability, pH compatibility, and viscosity.

**MATERIALS AND METHODS:-**

1. Avocado oil
2. Emulsifying wax
3. Stearic acid
4. Borax
5. Glycerin
6. Rose water
7. Vitamin E Oil
8. Preservatives
9. Perfume

**EXTRACTION METHOD :-**

Avocado oil can be extracted from ripe avocados using either a cold or heat method, depending on the desired quality and yield. In the cold extraction method, ripe avocados are first washed, peeled, and deseeded, and the pulp is then blended into a smooth paste. This paste is slowly mixed (malaxation) for about 30–60 minutes to help the oil droplets combine. After mixing, the paste is left undisturbed or filtered through a muslin cloth, allowing the oil to

separate and float on the surface, which is then carefully collected and filtered to remove impurities. In the heat extraction method, the prepared avocado pulp is heated at a low temperature (around 60– 80°C) with continuous stirring until the water content evaporates and the oil separates out. The oil is then filtered and collected. Cold extraction is preferred for pharmaceutical and cosmetic applications because it preserves nutrients like vitamin E and antioxidants, while the heat method gives a higher yield but slightly reduces quality.

**METHOD OF PREPARATION:- PHASE-A**

Take a clean beaker, Add- Avocado oil (or mashed avocado extract) , Emulsifying wax , Stearic acid (optional, for thickness) , Heat this mixture to 70–75°C until everything melts completely.

**PHASE -B**

In another beaker, take Distilled water , Glycerin (humectant) , Heat this also to 70–75°C.

**PROCEDURE :-**

1- Slowly add the oil phase into the aqueous phase with continuous stirring.

2- Use a stirrer or homogenizer to form a smooth emulsion.

3- Allow the mixture to cool while stirring continuously.

4- This helps in proper lotion consistency.

5- When temperature drops below 40°C, add- Preservative , Fragrance or essential oil , Vitamin E (optional)

6- Mix thoroughly until uniform.

7- Check for smooth texture and proper consistency.

| SR.NO | INGRIDIENTS | % |
|---|---|---|
| 1 | Avocado oil | 10 |
| 2 | Emulsifying wax | 5 |
| 3 | Stearic acid | 3 |
| 4 | Distilled water | 75 |
| 5 | Glycerin | 5 |
| 6 | Methyl paraben (preservative) | 0.2 |
| 7 | Propyl paraben (Preservative) | 0.1 |
| 8 | Vitamin E | 1 |
| 9 | Fragrance | QS |

**EVALUTION OF THE DEVELPOED BODY LOTION**

**Oraganolepic properties:**

Physical appearance for the developed formulation were evaluated and tabulated as follows. All the formulation complied with the standard colour, odour, texture, state

| Sl. No | Parameter | Observation |
|---|---|---|
| 1 | Colour | Light green |
| 2 | Odour | Mild, pleasant |
| 3 | Texture | Smooth |
| 4 | State | Semi-solid |

**HOMOGENICITY:-**

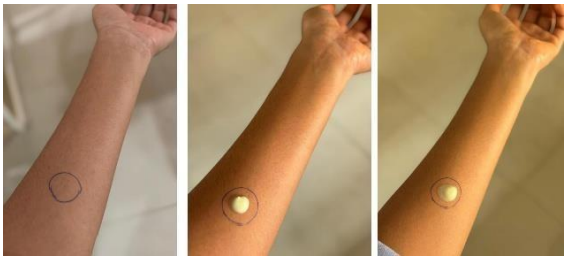
The formulation were tested for homogeneity by visual appearance and by touch .

**PH DETERMINATION:-**

0.5g body lotion by taken and dispersed in 50ml distilled water and then pH was measured by using gital pH meter .

**SKIN SENSITIVITY TEST:-**

A portion of lotion was applied on the forearms and left for 15min. After 15min any kind of irritation if occurred was noted from the study it was observed that there is no such irritation occurred after the usage of formulation .



**WASH ABILITY :-**

A portion of lotion was applied over the skin of hand and allowed to flow under the force of flowing up water for 10min. The time when the lotion completely removed was noted.

**DETERMINATION OF SPREADABILITY :-**

The preparation is weighed as much as 0.5 g , placed on top of the watch glass, put another watch glass, given a weight of 150g, and left for 60seconds. After that, the diameter was measured, and the lotion distribution was recorded. Standard power spread range from 5-7 cm.

**DETERMINATION OF EMULSION :-**

Colouring is given to lotion by adding methylene blue. The preparation is homogeneous with methylene blue so lotion is an o/w type emulsion.

**VISCOSITY TEST-**

The formulation is put into the container. Spindle No.2 is installed, ensuring the rotor is immersed in the practice. Then, turn on the viscometer and make sure that spindle rotates. The test uses a viscometer at a reading of 20 rpm.Observation was made on the viscometer needle, leading to viscosity scale number, and the observation was carried out. The requirement for suitable viscosity for topical preparation in the form of lotion is 2000-50000.

**ACID VALUE-**

About 10 g of the sample was dissolved in a mixture of alcohol and solvent. The solution was heated gently using a reflux condenser until complete dissolution. Then, phenolphthalein indicator was added and titrated with 0.1 N sodium hydroxide (NaOH) until a faint pink color appeared, indicating the endpoint.

**ANTIMICROBIAL ACTIVITY-**

Petri plates containing Muller-Hinton agar were inoculated with bacterial culture (such as Staphylococcus aureus). Wells were created in the agar, and the sample was added into them. The plates were incubated at 37°C for 24 hours. The antimicrobial activity was evaluated by measuring the clear zone around the wells. A standard drug like streptomycin was used for comparison.

**II. RESULT AND DISCUSSION**

The preparation of body lotion was done successfully by using Avocado extract and the evaluation parameters are checked

Organoleptic Evaluation: The developed formulation exhibited desirable organoleptic properties, characterized by a Light green color, pleasant odor, smooth texture, and semi-solid state.

**pH Evaluation:**

The pH of the lotion was found to be around 5.15 which is close to the natural pH of the skin, making it suitable for topical application.

Homogenicity Evaluation:

The homogenicity evaluation showed that indicating good stability and acceptability.

Determination of Emulsion: The emulsion test showed that indicating good stability and acceptability.

Viscosity evaluation: The viscosity evaluation showed that indicating good spreadability and acceptability.

Spreadability Evaluation: The spreadability evaluation showed that indicating good spreadability and acceptability.

**SKIN SENSITIVITY TEST:-**

It is one of the test that focused on the incidence of any allergic reaction or skin reactions occurred during the application of the product. The test was carried out in our laboratory and the results revealed the absence of any skin irritation and skin damage and proved for its good moisturizing power with cooling affect.

**Washability Evaluation:**

The washability evaluation showed that good washability indicating good safety and acceptability.

**ACID VALUE:-**

The acid value of the body lotion was found to be 2 mg KOH/g, indicating low free fatty acid content and good stability.

**ANTI MICROBIALACTIVITY:-**

Petri plates containing Muller-Hinton agar were inoculated with bacterial culture (such as Staphylococcus aureus). Wells were created in the agar, and the sample was added into them. The plates were incubated at 37°C for 24 hours. The antimicrobial activity was evaluated by measuring the clear zone around the wells. A standard drug like streptomycin was used for comparison.

## CONCLUSION

In this study, a body lotion was successfully formulated using avocado extract. The prepared formulation was evaluated for various physicochemical and performance parameters, and the results were found to be within acceptable limits. The formulation showed good spreadability, smooth texture, and easy washability, making it suitable for topical application. It was also found to be non-irritant to the skin, indicating good compatibility. Due to the natural moisturizing properties of avocado, the lotion provided effective skin hydration and nourishment. Further studies are recommended to enhance the formulation and to evaluate its long-term stability and performance in real-life conditions.

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