

A REVIEW ON FORMULATION AND EVALUATION OF MUCIN LOADED MOISTURIZER STICK

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ABSTRACT

A moisturizer stick is a type of cosmetic product designed to provide hydration and nourishment to the skin. It is a convenient and easy- to- use alternative to traditional moisturizers that come in bottles or jars. The moisturizer stick is typically a solid waxy formula that can be applied directly to the skin, providing a targeted and mess-free application. Moisturizer sticks are often small and portable, making them perfect for on-the-go hydration. Moisturizer sticks contain variety of ingredients like snail mucin, emulsifying wax etc .,that work together to soothe and moisturize the skin .^[1]

Material and Methods: Stearic acid, Liquid paraffin, Lanoline, Glyceryl monostearate, Glycerine, Propylene glycol, Isopropyl myristate, Triethanolamine, Methyl paraben, Propyl paraben, Rosemary oil, Water to make. By using emulsification method it has been formulated in to moisturizing stick with snail mucin to evaluate its efficacy and safety parameters as compare to available commercial moisturizer.^[3]

Results: Mucin loaded moisturizing stick that are able to generate moisture balance and hydration to the skin became organized and evaluated successfully.

INTRODUCTION

Cosmetics is a Greek phrase which means ‘adorn’(addition of something ornamental to someone or a thing). The Federal Food, Drug, and Cosmetic (FD&C Act) define cosmetics by their intended use, as “articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body for cleansing, beautifying, promoting attractiveness, or altering the appearance”. Cosmetics encompass pores and skin care creams, colored touch lenses, hair colors, hair sprays, toddler merchandise, tubtub oils, bubble tubtub, tubtub salt and plenty of different sort of merchandise.^[1]

Moisturizers are the most prescribed products in dermatology practice and also the most intriguing one. The incidence of dryness related dermatoses are on the increase courtesy urbanization, adulteration, pollution.^[4] Treatment with moisturizer aims at maintaining skin integrity and well-being by providing a healthy appearance of the individuals. Numbers of moisturizers are available under the label of natural, safe, organic, herbal while the basic properties of humectancy, occlusivity and emolliency are consistent across all moisturizers.^[5]

MOISTURISING STICK

Treatment of skin can be performed with stay on products such as ointments, creams, lotions, sticks, oils and gels.^[7] Moisturizers are topically applied products designed to increase the water content of the skin. Ingredients used in these products have a range of actions, including preventing transepidermal waterloss.^[12]When moisturizers are used on the so called dry skin, many distinct disorders that manifest themselves with the generally recognized symptoms of dryness are treated.^[5]

Oils, emulsifiers, humectants influence the aesthetic properties of the moisturizer and the stability of the formulation.^[13] During the development steps, the concentration of fats as well as the type of fats and the amount and type of emulsifiers, humectants, preservatives are considered as well as the impact of other excipients such as chelating substances, antioxidants, fragrances and other agents found in emulsions. Also pH has to be addressed. Most formulations have pH between 3 and 8.^[6]

Moisturizers can come in different formulations to cater to different skin types and preferences. Some common types of moisturizer formulations;

1. **CREAMS:** Creams are typically thick and rich in texture making them ideal for those with dry or mature skin. They provide deep hydration and nourishment to the skin leaving it feeling soft and smooth.^[15]
2. **LOTION:** Lotions are lighter in texture compared to creams and are suitable for those with normal to slightly dry skin. They provide hydration without feeling heavy or greasy on the skin.^[8]
3. **GELS:** Gels are light weight and are ideal for those with oily or acne prone skin. They provide hydrations without clogging the pores and some gel formulations can even help to control excess oil production..^[15]
4. **STICKS:** It comes in a solid stick like forms. It is designated to provide targeted hydration to specific areas of the face or body .^[19] They are easy to use on the go and can be applied without getting your hands messy.^[16] Some moisturizer sticks also contain additional ingredients such as antioxidants or SPF to provide extra benefit on the skin.
5. **SERUM:** Serums are light weight and designated to penetrate deep in to the skin.^[20]
6. **OILS:** They are typically made from natural plant oils and are ideal for those with dry or aging skin.
7. **MISTS:** They are ideal for those with normal to dry skin and can be used over makeup.
8. **BALM:** Balms are thicker and more emollient than creams and designed to provide intensive hydration to the skin.^[18]

MUCIN-IMPORTANCE

Snail mucin is widely used in skincare due to its healing, moisturizing, regenerative, brightening, anti-acne and anti-aging properties. Its compounds make it a powerful natural active ingredient in skincare. Snail mucus is naturally rich in allantoin, glycolic acid, proteins, peptides and anti-oxidants-all components that are beneficial to your skin.^[10]

ADVANTAGES

Due to its naturally rich composition snail mucus has a multi action function and can help us with different skin concerns. Benefits of snail mucus extract:

1. Regenerates,repairs and rejuvenates skin
2. Reduces hyperpigmentation and dark spots
3. Heals acne and prevent acne breakouts
4. It has incredible anti-aging properties
5. Moisturizes and deeply hydrates skin
6. Has anti-inflammatory and anti-bacterial properties
7. Provides anti-oxidative protection from free-radicals.^[11]

DISADVANTAGES

- If anyone is allergic to snails in general, they are better to avoid using it.
- It is recommended to conduct a patch test before application. Apply it to a small portion of forearm and leave it on for 24 hours. If you do not see any adverse reaction, it can be applied to face.
- Snail mucin on its own has no known reactions with skincare actives. But some added ingredients could react to another products. This can cause unwanted effects and reduce the formulation's overall efficacy.
- Some people may find it gross to apply to the face, so it may contradict to personal interests.^[11]

Structural variations of mucin

Mucins contain several domains that contribute to the overall functions. The structural variations allows for their extensive biological diversity and unique physical characteristics. A tandem repeat domain located in the centre of the protein backbone, rich in serine, threonine and proline serves as an anchor for glycosylation. Mucin glycans predominantly O-linked but minor amounts of N-linked glycans can be present. The length of glycosylation domain and number of repeats differ between mucins and imparts different chemical characteristics.^[10]

ISOLATION OF MUCIN FROM SNAIL

1. Collecting snail mucus: The mucus can be obtained by gently stimulating the snail, which will release the mucus onto a clean surface.
2. Removal of impurities: The mucus may contain various impurities, such as dirt, debris and other proteins. These can be removed by filtration or centrifugation.
3. Extraction of mucin: Mucin can be extracted from the purified mucus using a chaotropic agent, such as urea or guanidine hydrochloride. These agents disrupt the non-covalent bonds that hold the mucin molecules together, allowing them to be solubilized.
4. Dialysis: The extracted mucin is dialyzed against a buffer to remove the chaotropic agent and any other small molecules
5. Purification: Mucin can be further purified using various techniques, such as gel filtration chromatography or ion exchange chromatography.
6. Characterization: The purified mucin can be characterized using techniques such as SDS-PAGE, which separates proteins by their molecular weight or lectin-binding assays, which detect specific carbohydrate residues present on mucin.^[10]

SNAIL MUCINS AS DRUG DELIVERY VEHICLES

The adaptability of snail mucin biopolymers make them uniquely promising candidates for normal drug delivery systems. During mating, male snails shoot a dart to deliver mucus containing accessory proteins into the female, which in turn increase the fertility of female snail.^[11] This process relies on a multifunctional systems with each component playing a defined role. The dart act as a needle, piercing tissue and injecting the mucus that carries the accessory proteins into the female snail.^[10] In a similar manner mucus could be adapted to act as a delivery vector for bioactive molecules. Snail mucus are known to pair exceptionally well with any medication that is absorbed via mucosal membrane because of their ability to facilitate diffusion across membranes. For eg: Metformin hydrochloride, a diabetes medication was attached to giant African land snail mucin using polyethylene glycol (PEG) to increase bioavailability of the drug.^[11]

APPLICATIONS

1. Targeted hydration

Moisturizing sticks can be used to provide targeted hydration to specific areas of the skin, such as elbows, knees, or heels. They are particularly prone to dryness or roughness.

2. Nourishing cuticles

Moisturizing sticks can be used to nourish and hydrate dry cuticles. They can also help prevent nail-related issues.

3. Soothing irritated skin

Moisturizing sticks can be used to soothe irritated skin caused by conditions such as eczema, psoriasis. They can also be used to calm redness and inflammation.

4. Alternative to traditional lotion

Moisturizing sticks are a great alternative to traditional lotion, as they are mess-free and easy to apply without getting your hands greasy.^[8]

5. Protect skin

Moisturizing stick can be used to form a protective layer on the skin, especially during harsh weather conditions like winter or dry climates. This helps to lock in moisturizer and prevent further dehydration.

6. Convenience

Moisturizing stick are easy to use and can be applied directly to the face with out the need for additional tools or applicators. They are also portable and can be carried in a purse or backpack for on-the-go-touch-ups.

7. Targeted application

Moisturizer stick allow for targeted application which can be useful for areas of the face that require more intense hydration or protection. They can also be used to spot-treat dry patches or other skin concerns.

8. On-the-spot treatment

If you experience dryness or flakiness in certain areas of your face, you can use a moisturizing stick as an on-the-spot treatment to provide instant hydration, relief and nourished throughout the day.^[12]

DISSCUSSIONS AND CONCLUSION

The existing work, it turned in to determination of formulation and evaluation of mucin loaded moisturizing stick. The mucin loaded moisturizing stick is made with snail mucin and other ingredients were subjected to various assessment parameters. Thye mucin loaded moisturizing stick haven't produced any pores and skin infections or increase of any microorganisms at period. Stability parameters like visible appearance, texture, nature and odor, PH of formulation confirmed that there had been no sizeable versions in the course of the take a look at period.^[10]

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