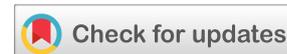




(REVIEW ARTICLE)



Dried serum powder and sheet mask for anti-aging purposes

Sumbul Fatma Hasan Khan *, Shrutika Sanjay Bawankar, Sana Parveen Moin Shaikh, Gaurav Suryanarayan Sharma, Gaurav Chhotelal Jaiswal and Mitali Milind Bodhankar

Department of Pharmaceutical Sciences, Gurunanak College of Pharmacy, Khasra No. 81/1, kashinagar, Mauza Nari, Kamptee Road, behind C.P. Foundary, Bank Colony, Nagpur, Maharashtra 440026 India.

GSC Biological and Pharmaceutical Sciences, 2021, 15(03), 218–224

Publication history: Received on 07 May 2021; revised on 15 June 2021; accepted on 17 June 2021

Article DOI: <https://doi.org/10.30574/gscbps.2021.15.3.0168>

Abstract

Wrinkles are one of the most common skin problems which are a natural part of the aging process. A lot of claims are made about how to make wrinkles go away. Some methods can be painful or even dangerous. To overcome these problems we can use anti-aging sheet mask which is the latest and easiest method to get rid from wrinkles.

Sheet masks are face-shaped sheet fabrics soaked in nutrition-packed solution called serum. The sheet is made up of variety of materials including papers, fibers or gel types. It is observed that sheet masks are super simple and hassle-free.

There are several disadvantages of conventional sheet mask like there shelf life is less and some of them may prone to oxidative decay. To overcome this problem powdered form serum is suggested. By using ingredients in powdered serum, the shelf life of the product can be increased. In serum powder, packaging products can be stored again once the packaging has been opened, with the help of a re-closable container; products remain as fresh as ever.

By using the dried serum Powder with compressed sheet mask tablet instead of conventional serum sheet mask for Anti-aging purpose we can increase the shelf life of product and there will be little or no need of preservatives. Dried serum powder can be given in a re-closable container by which the product can be reused so there will be no wastage of serum.

Keywords: Dried serum powder; Serum sheet mask; compressed sheet mask; Anti-aging sheet mask

1. Introduction

The skin is one of the largest organs and constitutes 16% of the human body weight. It weighs around 5 kgs and covers an area of about 2 square meters. It is one of the tissues in our body that duplicates the most and the fastest. The skin has three main functions: protection, regulation and sensation [1]. There is hundreds of skin condition that affects you. Skin disorders vary greatly in symptoms and severity. They can be temporary and permanent and may be painless and painful. Some have situational causes, while others may be genetics. Some skin conditions are minors and others can be life threatening [2]. Over time, skin begins to wrinkle. Things in the environment, like ultraviolet (UV) light from the sun; can make the skin less elastic. Gravity can cause skin to sag and wrinkle. Certain habits, like smoking, also can wrinkle the skin.

*Corresponding author: Sumbul Fatma Hasan Khan

Department of Pharmaceutical Sciences, Gurunanak College of Pharmacy, Khasra No. 81/1, kashi nagar, Mauza Nari, Kamptee Rd, behind C.P. Foundary, Bank Colony, Nagpur, Maharashtra 440026 India

A lot of claims are made about how to make wrinkles go away. Most of them don't work. Some methods can be painful or even dangerous [3]. To overcome these problems we can use anti-aging sheet mask which is the latest and easiest method to get rid from wrinkles.

Sheet masks have found popularity for the quick boost in hydration and goddess-like radiance they are known to lend the skin in a pinch. Sheet mask targets anti-aging concerns like sagging skin and fine lines. Sheet masks not only brighten and hydrate but they can also go the distance for mature skin to firm, tone and lift [4]. But problem is that the shelf life of liquid serum is less, to overcome this problem we can use powdered form of serum with sheet masks. Serum sheet masks may suffer from oxidative decay which cannot be seen in powdered serum. In powdered form of serum there is no need of preservative. Powdered serum can be stored again once the packaging has been opened. For anti-aging purpose we can use powdered form of aloe Vera, vitamin C, papaya, lavender, glycerin. These ingredients must be water soluble. To use the product you just have to pour some water in the container and let the ingredients dissolve properly. Put the sheet mask tablet in the solution. Let the sheet tablet expand and absorb the solution then apply it on your face for 15 min. For Anti-aging purpose there are some funky variant with ear hooks which allows maintaining and strengthening the lifting effect.

1.1. Causes of Wrinkles

The skin covers the entire external surface of the human body and is the principal site of interaction with the surrounding world. It serves as a protective barrier that prevents internal tissues from exposure to trauma, ultraviolet (UV) radiation, temperature extremes, toxins, and bacteria. Other important functions include sensory perception, immunologic surveillance, thermoregulation, and control of insensible fluid loss [5].

Wrinkles are one of the most common skin problems which are a natural part of the aging process. As people get older, their skin becomes thinner, drier, and less elastic, which means it, is less able to protect itself from damage. This leads to wrinkles, creases, and lines on the skin. These lines deepen as the person gets older. Wrinkles affect people of different skin tones differently due to structural and functional differences in the skin [6].

There are several medical (topical medicines and creams) and many invasive techniques available for ameliorating wrinkled skin.

1.1.1. Medical Method

Vitamin A acid anti-oxidant or alpha hydroxyl acid contains creams.

1.1.2. Surgical Methods

Some surgical methods are there like Laser resurfacing, dermabrasion, microdermabrasion, fractional resurfacing, cosmetic surgery, Botox (injection of botulinum toxin). But these methods are very complex and inconvenient; therefore we can use the special serum sheet mask to get rid from wrinkles and skin-aging.

1.2. Serum Sheet Mask

Sheet masks are admirably becoming the most widely adapted beauty regime today. It's slowly turning to be an indispensable part of the beauty treatments of women and men across the globe and the hottest product to rule the skincare product. Sheet masks aim at hydrating, balancing, moisturizing, calming and brightening your skin. Sheet masks comprise extremely thin sheets made from cotton/ fabric that are soaked in serum via a nutrition enriched liquid or hydro gel and packaged individually for the affluence of using them. They're made either from thick yet flexible paper, cellulose or an assortment of fabrics such as microfibers or cotton wool, coconut pulp etc. Sheet masks designed for dry skins are also made of materials like synthetic fibers which are extremely absorbent and can hold high amounts of water without any difficulty [7]. The sheet contains a liquid-retaining layer which absorbs the liquid component, and the liquid-retaining layer is formed from a nonwoven structural member containing a transparent fiber. The hydro gel is the newest ingredient used for making sheet masks.

1.3. How to Use Sheet Mask

To use a sheet mask, first clean your face well. Snip opens the sachet just before use, handle it with clean hands, and apply it over your face. Press gently, till every bit is sticking to the surface of the skin. Leave on for 15-20 minutes then Peel off, and that's it. Rinse your face with water, not soap – just let the goodness of the serum soak in.

2. Material Use for Making Sheet

There are many companies which use their unique type of fabrics for making sheets. Here are some materials that are many used.

2.1. Non-woven fabrics

They are inexpensive & Breathable and have limited capacity to transfer actives to the skin and replenish moisture. They do not adhere to skins contours for more than a few minutes Therefore, serum evaporates quickly. For example: Cotton and synthetic materials (e.g. viscose, rayon)

2.2. Hydro gel

This is a transparent material packaged as two-part systems, with top and bottom halves to apply separately on the face. Hydro gel adheres to the face and forms a protective seal as the skin absorbs the actives and gives a cooling effect on application.

2.3. Bio cellulose

It is produced by microorganism *Acetobacter xylinum* and 100% biodegradable. Bio-cellulose is invisible, and provides great comfort and prevents moisture evaporation.

2.4. Cotton sheet mask

Cotton sheet mask fits well on the face and has a white fabric. It is breathable & inexpensive. They have better absorption system into the skin compared to non-woven fiber. Cotton sheet mask does not contain harsh chemicals.

2.5. Charcoal sheet mask

This sheet mask material is a black material and feels super smooth on the skin. Charcoal powder is compressed and infused into the sheet to detox the skin and help balance out excess oils [8].

3. Drawbacks

Sheet masks, are not as effective for exfoliating or cleaning the skin compared to the paste-type mask. Serum from low-quality sheet masks evaporates quickly even before it gets soaked into the deeper layer of your skin. If you leave the mask on your skin for longer than 20 minutes or as indicated, the serum might be sucked back into the mask once the mask starts. Since conventional sheet masks are individually stored in a bag, users have to insert their entire hand including fingers, palm and back of the hand into the bag, As a result their hands come in contact with cosmetic lotion. Several discarded sheet masks that are made of synthetic sheets can prove to be extremely hazardous to the environment. Cannot re-use a sheet mask because once you apply the cellulose sheet on your face, it transfers its benefits into your skin and has no use the next time.

4. Types of Sheet Mask

Type Of Mask	Description	Main Content	Brand
Hydrating sheet mask (for dry skin)	1. Intense boost of hydration In just 15 minutes, your skin is infused with moisture that leaves it feeling soft and plump	1. Water 2. Glycerine 3. Hyaluronic acid 4. Sea water	GARNIER – Hydra bomb serum mask
Oil control sheet mask (for oily/acne prone skin)	1. Help in controlling the extra oil production and reducing the resulting acne. 2. Help get rid of the excess sebum without drying your skin out.	1. Tea tree 2. Witch Hazel 3. Charcoal 4. Lotus	GARNIER – Green tea serum sheet mask

Brightening sheet mask (for dull skin)	1. Serum Sheet Mask reduces the appearance of spots and instantly brightens your skin 2. Also hydrating it. All of this in just 15 minutes.	1. Cherry blossom/Rose 2. Apple/ Pineapple 3. Vitamin C 4. Rice, Pearl etc.	GARNIER- Light complete serum mask
Anti-aging sheet mask (for mature skin)	1. Reduce the appearance of wrinkles & firming up the skin. 2. It revives saggy skin and hydrates skin to reveal a radiant and young-looking complexion	1. Snail mucins 2. Sea weed 3. Honey 4. Ginseng 5. Collagen	GARNIER- Ageless white serum mask
Detoxifying sheet mask (for clogged skin)	1. The charcoal draws out impurities and toxins from your pores and helps firm up your face.	1. Charcoal 2. Black Algae	GARNIER- Pure charcoal serum mask

5. Dried Serum Powder

Since conventional serum sheet masks have many disadvantages, we can use dried serum powder with sheet mask for more convenience.

Examples of dried serum powders are Hyaluronic acid, Charcohyaluronic acid powder, Vitamin A powder.

6. Dried Serum Powdered for Anti-Aging Purposes

For Anti-aging purpose there are some sheet mask with ear hooks which allows maintaining and strengthening the lifting effect having high fitting properties onto skin, and also provide skin tightening effect, and an excellent lift-up effect on a flaccid cheek or face line. It is made up of laminate in which a non-elastomeric fiber layer and an elastomeric layer are integrated through lamination, and has stretch ability in a vertical direction of a face.

6.1. Ingredients used as powdered form are

Powdered Aloe Vera, powdered Vitamin C, lavender, papaya and glycerin.

6.1.1. Vitamin C Powder

Vitamin C plays an active role as an antioxidant and to eliminate ROS that can cause damage to nucleic acids, proteins, and cell membranes. The level of vitamin C decreases with age. Topical vitamin C increases the messenger RNA (mRNA) level of collagen I and III and their processing enzymes in the human body. Topical vitamin C has been reported to improve wound healing and reduce facial wrinkles, improve the appearance of photo aged skin, and protect against immediate effects of UV radiation. This vitamin can increase collagen synthesis and help in the prevention of skin aging. Antioxidants such as vitamin C act by neutralizing the singlet oxygen cascade and, therefore, limit the formation of ROS [9].

6.1.2. Aloe Vera powder

Aloe Vera is the perfect plant for skin care. Some of the many powers of aloe Vera are that it can treat burns, moisturize, aid digestion, sanitize, cool skin, and it has anti-inflammatory properties. It is also great for acne, rosacea, and hair care. Aloe Vera is rich in vitamin A, C and E, enzymes, minerals and antioxidants, aloe Vera powders are known to improve hair and skin health, increase the skin firmness and elasticity. It gives a beautiful natural glow to the skin [10].

6.1.3. Papaya Powder

Papaya (be it in raw, dried, or fermented form) is exceptionally rich in all sorts of micro-nutrients including vitamins, minerals, and various photochemical. Together, these substances can enhance the regenerative processes in the body, reduce DNA damage, and support hydration. All of these effects are essential to slow down the natural process of aging in the body. The skin and hair will benefit the most from papaya, since these tissues are regularly subjected to damage from the wind, UV radiation, and constant temperature changes. All parts of the papaya plant, including its pulp

and peel, are packed with natural antioxidants. The flavonoids, polyphenols, carotenoids, and other phytochemicals of the papaya plant are able to effectively capture and neutralize the free radicals. An excessive amount of free radicals increases the oxidative stress levels this leads to the development of inflammation. Free radicals may also cause DNA damage, and even increase cancer risk [11].

6.1.4. Lavender Powder

Lavender has a distinct, relaxing aroma. It is often used in aromatherapy and commercial bath products. There is a growing body of research looking at the potential health benefits of this popular plant. In a research team studied the antioxidant effects of lavender. Their findings suggested that lavender powder helps protect against oxidative stress in the brain. These same effects may help reduce the appearance of wrinkles and fine lines when applied to the skin. Some people are allergic to lavender. It is advised to do a patch test before applying any new substance to the skin [12].

6.1.5. Glycerin powder

Glycerin is important as an anti-wrinkle, "skin-identical" substance to restore elasticity to the delicate eye area, creating more supple and beautiful skin and re-establishing the proper moisture balance. Glycerin is a natural, fatty substance that combats loss of elasticity, thinning, wrinkles, dark circles, puffiness, and dryness of the delicate skin in the eye area. It plumps the skin of the eye area, regenerates fresh new skin cells, and reduces irritation which can cause puffiness. Glycerin should be on the ingredient list of any anti-aging eye care skin treatment [13].

All these ingredients are water soluble. Dissolve the powder in water and then soak this solution on the compressed sheet mask tablet.

7. Packaging

Typically Face masks are moist, and it is very important to use a packaging material that will keep the mask from drying out. Great packaging can play a major role in marketing of product.

7.1. Packaging of Liquid Serum Mask

There are various types for packaging of liquid serum face mask such as

7.1.1. Seal pouches

Seal pouches have been around a very long time. They are similar in configuration to standard plastic "zips lock" style pouches

7.1.2. Chambered Pouches

Chambered pouches are able to sell combinations of dry sheet and liquid serum in separate chamber of one pouch. A first packaging space and a second packaging space separated from each other with the help of seal. A mask sheet disposed in the first packaging space in a dry state, and a cosmetic liquid which is disposed in a liquid state in the second packaging space.

But there are several disadvantages of liquid serum and its packaging-

- Serum contains fragile ingredients that can be damaged by exposure to water or oxygen.
- The improper sealing or damage during transport of pouch may leads to loss of liquid serum.

7.2. Packaging of powdered serum

Sheet masks are a product-infused sheet of fabric, typically packaged in a flexible pouch to keep the sheet moist and maintain the product's freshness. Freshness is a key to a product's effectiveness, so packaging plays a huge role in the success of these products. Flexible foil pouches offer the most sustainable, effective packaging for sheet masks because they optimize freshness while using minimal packaging material [14]. There are several disadvantages of packaging of liquid serum mask like Face masks are typically moist, and it is very important to use a packaging material that will keep the mask from drying out and few masks may also suffer from oxidative decay. The shelf life is low and after one use the reaming extra serum is not useful.

These problems can be overcome by using powdered form of serum face mask sheet contribute to the overall appearance and effectiveness in packaging. In powder form of serum, packaging products can be stored again once the

packaging has been opened, the re-sealable container can give consumer the opportunity to open and close as frequent as necessary to store the product back. With the help of a re-closable container, products remain as fresh as ever

The benefit of this equally chambered container is that the customers can use the amount of powder as per their need. The powdered serum is packed in the lower compartment protected by middle lid. As per the convenience one can take the needed amount of powder in the upper compartment and pour required amount of water into it, wait until all the powdered ingredients get dissolved, then add compressed sheet mask tablet and allow it to expand. The sheet mask is ready to use without using any other vessel.

7.3. Packaging of Compressed Sheet Mask

Compressed dry sheet mask are highly absorbent paper mask can absorb face care cosmetics and turn it into a relaxing face mask in no time. They come packed in individual packets that can be carried anywhere due to their coin compact size. The mask does not contain any added cosmetic ingredient. Thus, user can choose liquid on their choice e.g. egg, milk, syrup, rose water or toner. Dry sheet mask are compressed into a tiny little circle and individually wrapped. Once the compressed sheet mask is saturated in a liquid, it expands and you can unravel it and place it on your face for using the compressed sheet mask first soak the compressed mask paper in a liquid. Leave until the soaked paper becomes swollen then Unfold the soaked paper. Then apply the sheet mask to face and leave on for 10~15 minutes until the facial product is completely absorbed. You can put clay on top of the paper mask for better result [15].

8. Conclusion

There are several medical (topical medicines and creams) and many invasive techniques available for ameliorating wrinkled skin. But these methods are very complex and inconvenient; therefore we can use the special serum sheet mask to get rid from wrinkles and skin-aging.

But conventional serum sheet masks have many disadvantages as it has less shelf life and need of preservative and possibility of oxidative decays so for avoiding these problems we can use dried serum powder with sheet mask for more convenience.

For removing wrinkles there are many herbal ingredients which can be used in powdered form for e.g. vitamin C powder, Aloe Vera powder, Papaya powder, Lavender powder. For Anti-aging purpose there are some funky variant with ear hooks. This mask allows maintaining and strengthening the lifting effect.

Dry sheet mask are compressed into a tiny little circle and individually wrapped. Once the compressed sheet mask is saturated in a liquid, it expands and you can unravel it and place it on your face.

There are many benefits of using dried serum powder and compressed sheet mask tablet as they are very easy and convenient to use unlike other treatment of wrinkles which are complex. The shelf life of powdered serum is more than the liquid and as the powder is moisture free so there will be little or no need of preservative. Powders are stored in a re-closable container which can give consumer the opportunity to open and close as frequent as necessary to store the product back. So the powdered serum form is more convenient for the treatment of wrinkles.

Compliance with ethical standards

Acknowledgments

There was no external support for the financing of this work.

Disclosure of conflict of interest

No conflict of interest. All the authors contributed appropriately for the completion of this work.

References

- [1] Leider M. Introduction to the human skin [Internet]. Share4Rare. 2021.
- [2] Brind'Amour K. Skin Disorders: Pictures, Causes, Symptoms, Treatments, and Prevention [Internet]. Healthline. 2021.

- [3] Editorial. Skin Care and Aging [Internet]. National Institute on Aging. 2021.
- [4] PEREIRA D. 7 Sheet Masks For Every Anti-Aging Skin Concern [Internet]. swirlster.ndtv.com. 2021.
- [5] Amirlak B. Skin Anatomy: Overview, Epidermis, Dermis [Internet]. Emedicine.medscape.com. 2021.
- [6] Brazier y. Wrinkles: Causes, treatment, and prevention [Internet]. Medicalnewstoday.com. 2021.
- [7] Editorial U. All About Sheet Masks: What They Are, How to Use Them and More – The Urban Guide [Internet]. Urbancompany.com. 2021.
- [8] Knack T. The 8 different types of sheet mask and when to use them [Internet]. Theklog.co. 2021.
- [9] Nilforoushzhadeh M, Amirkhani M, Zarrintaj P, SalehiMoghaddam A, Mehrabi T, Alavi S et al. Skin care and rejuvenation by cosmeceutical facial mask. *Journal of Cosmetic Dermatology*. 2018;17(5):693-702.
- [10] Vega S. 15 Natural Aloe Vera Skincare Supplements and Products You Can Buy on Amazon [Internet]. One Green Planet. 2021.
- [11] Ferrero n. dried papaya powder health benefits [Internet]. Royal Fruits. 2021.
- [12] Fletcher J. 10 best essential oils for wrinkles: What works best and why? [Internet]. Medicalnewstoday.com. 2021.
- [13] Candace C. Glycerin: The Anti-Aging Moisturizer That Restores Elasticity to the Delicate Eye Area [Internet]. Bellatory. 2021.
- [14] O'Donnell B. Flexible Pouches for Face Mask Packaging | Learn More [Internet]. Standuppouches.net. 2021.
- [15] How to Use a Compressed Paper Mask for a DIY Facial: 4 Steps [Internet]. Wikihow.com. 2021.