

FORMULATION AND EVALUATION OF POPPY EXFOLIATOR SCRUB

Mohammad Ali^{*1}, Pooja V.², Sahana L.², Shalini B. V.² and Sindhu S.²

M. Pharm., Associate Professor, Department of Pharmaceutics, Bharathi College of Pharmacy, Bharathinagara Mandya Dist.



*Corresponding Author: Mohammad Ali

M. Pharm., Associate Professor, Department of Pharmaceutics, Bharathi College of Pharmacy, Bharathinagara Mandya Dist.

Article Received on 14/10/2024

Article Revised on 04/11/2024

Article Accepted on 25/11/2024

ABSTRACT

Aim: The aim of the present study was to formulate and evaluate of poppy exfoliator facial scrub containing a blend of natural ingredients (Poppy seeds, Sandalwood powder, Rice flour, Turmeric powder, badam oil and rose water) and cosmetics excipients (Sodium lauryl sulfate, Methyl paraben, Glycerin, Carbopol 936) that provides exfoliating, nourishing and protective benefits to the skin. **Method:** The present study we attempt develop a poppy exfoliator facial scrub by mixing ingredients together in a mortar and pestle and the formulated products were assessed by using different evaluation method like sensitivity, pH, spreadability, greatness, grittiness test etc. **Results:** Among all the formulation there's no change in physical properties. All the prepared poppy facial scrubs were checked for the pH. The pH of all the formulation found in the range of 5-7 these are well between the ranges for topical administration. The formulation F4 has showed the pH 6.7 therefore there is no need of adjusting the pH of formulation. The formulation F1, F2, F3, and F4 shows 5.13gm/sec, 5gm/sec, 4.96gm/sec, 5.06gm/sec spreadability respectively. All the formulation shows the values within the standard value, F4 shows the better spreadability compares to others. **Conclusion:** From the above results it is concluded that F4 formulation shows good consistency and spreadability, pH, grittiness, sensitivity. From the above study it can be concluded that poppy exfoliator facial scrub is safe to use and natural remedies are more acceptable now a days.

KEYWORDS: Poppy Seeds, Facial Scrub, Exfoliator, Hydrating agent, Skin care.1. INTRODUCTION
COSMETICS

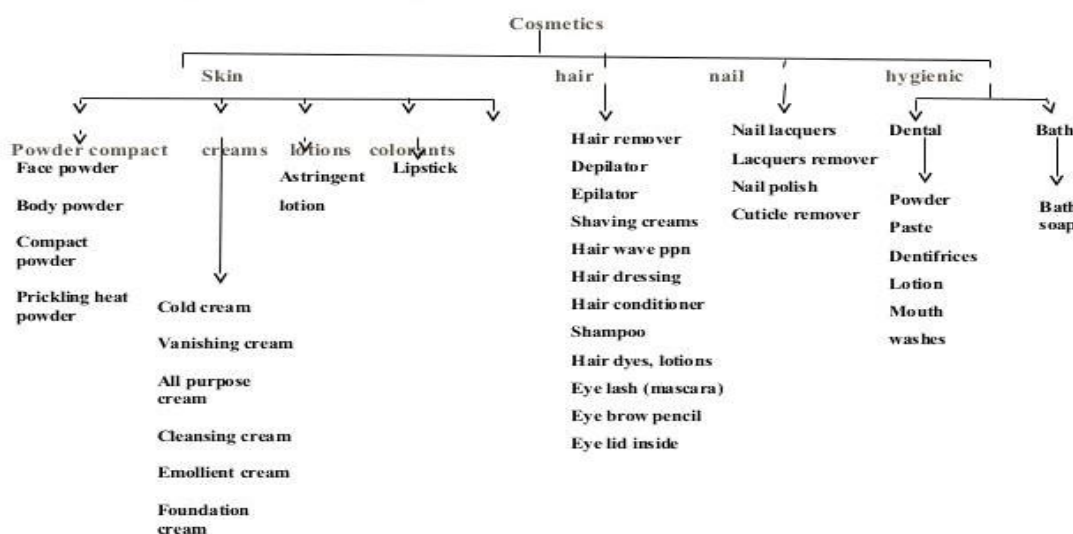
The word cosmetics is derived from Greek word - komestikos that means to adorn. From that time any materials used to beautification or promoting appearance is known as cosmetics. The word "cosmetic" actually stems from its use in Ancient Rome. They were typically produced by female slaves known as "cosmetae" which is where the word cosmetics steamed. Recently cosmetics have been necessity for men and women. They need for cosmetic is often associated with the assumption relating physical attractiveness. In general, cosmetics are ingredients used to adorn the face area such as cheeks, lips, even the eyes. Cosmetics are readily available in the form of scrub, lipsticks, perfumes, eye shadows nail polishes, hair sprays etc... Other cosmetics like face powder give glow to the skin after applying the base scrub. Then we have lipsticks which are applied by many women of all ages. There made from wax and Cocoa butter in the desired amount. Cosmetics like scrubs gels and colognes are used on a daily basis by both women and men. Scrub act as a cleanser for the face in many circumstances. More recently anti-aging scrubs have been manufactured which can retain younger looking

skin for many years. The best cleansing agents are cleansing scrub, soap and water. Cosmetic scrub serves as skin food for hard, dry and chapped skin. It mainly lubricates, softens and removes unwanted dirt from the skin.

Some of the key benefits of cosmetics includes

- Hydration and moisturization
- Sun protection and prevention of skin damage
- Anti-aging and wrinkle reduction
- Acne treatment and prevention
- Soothing and calming irritated skin
- Improving skin elasticity and firmness
- Brightening and evening skin tone
- Enhances physical appearance

CLASSIFICATION OF COSMETICS



Topical Drug Delivery

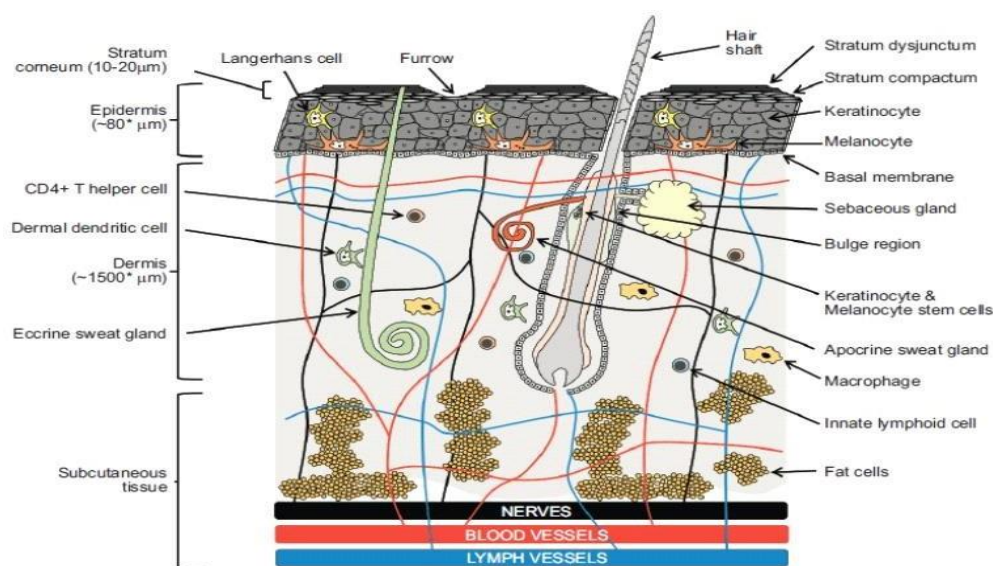
Topical drug delivery can be defined as application of drug via skin to directly treat or cure the skin disorders. These topical drug delivery systems are generally used for local skin infection like fungal infection or where other route of administration is no suitable. It can penetrate deeper into skin and hence give better absorption. Topical application has no of advantages over the conventional dosage forms. In general, they are deemed more effective less toxic than conventional formulations due to the bilayer composition and structure. In the formulation of topical dosage forms, attempts have been made to utilize drug carrier that ensure adequate localization or penetration of advantages over the conventional dosage forms. In general, they are deemed more effective less toxic than conventional formulations due to the bilayer composition and structure. In the formulation of topical dosage forms,

attempts have been made to utilize drug carrier that ensure adequate localization or penetration of the drug within enhance the local and minimize the systemic effects, or to ensure adequate Percutaneous absorption. Topical preparation prevents the GI-irritation, prevent the metabolism of drug in the liver so as increase the bioavailability of the drug. Topical preparations give its action directly at the site of action.

Physiology of Skin

The skin is one of the largest and most important organs in the body and comprises approximately 16% of the human body weight. As it covers the entire body.

The skin is continuous with the membrane lining the body orifices and in certain areas contains accessory structures such as glands, hairs and nails.



- ❖ **Epidermis:** The epidermis is the most superficial layer of the skin and is composed of stratified keratinized squamous epithelium, which varies in thickness in different parts of the body. It is the thickest on the palms of the hands and soles of the feet. There are no blood vessels or nerve endings in the epidermis, but its deeper layers are bathed in the interstitial fluids from the dermis, which provides oxygen and nutrients, and drains away as lymph.
- ❖ **Dermis:** The dermis is tough and elastic. It is formed from connective tissue and the matrix contains collagen fibers interlaced with elastic fibers. Rapture of elastic fibers occurs when the skin is overstretched, resulting in permanent stretch marks that may be found in pregnancy and obesity. Collagen fibers are the main cells found in the dermis. They bind water and give the skin its tensile strength, but as this ability declines, underlying its deepest layer there is areolar tissue and varying amount of adipose tissue. With age, wrinkles develop. Fibroblasts, macrophages and mast cells are
- ❖ **Subcutaneous gland:** This consists of secretory epithelial cells derived from same tissue as the hair follicles. They secrete an oily substance, sebum into the hair follicles and are present in skin of the parts of the body except palms of the hands and the soles of the feet.

Functions of skin

- **Protection:** An anatomical barrier from pathogens and damage between the internal and external environment in bodily defense, Langerhans cells in the skin are parts of the adaptive immune system.
- **Protection:** An anatomical barrier from pathogens and damage between the internal and external environment in bodily defense, Langerhans cells in the skin are parts of the adaptive immune system.
- **Sensation:** Contains a variety of nerve endings that react to heat and cold, touch pressure, vibration, and tissue injury, see stomata sensory system and Hepatics.
- **Heat regulation:** The skin contains a blood supply far greater than its requirements which allows precise control of energy loss by radiations, convection and conduction. Dilated blood vessels increase perfusion and heat loss, while constricted vessels greatly reduced cutaneous blood flow and conserve heat.

Control of evaporation: the skin provides a relatively dry and

Mechanism

Upon application of the topical drug on the skin. It will diffuse to the outer layer of the skin, known as stratum corneum. There are three routes possible for the drugs to cross the skin. The first route is through the appendages. It is known as the "first cut" where the drug molecules will be partitioned into the sweat glands to bypass the

stratum cornea barrier. If the drug molecules are not transported via the "first cut", it usually remains in the stratum cornea bilayer lipids, where the drug molecules transport through either the trans cellular routes or paracellular routes

into the deeper area of the skin like subcutaneous layer. For the paracellular routes, it means that the solutes transport via the junction between the cell. When the topical drug molecules transport via the paracellular routes, it needs to travel across the stratum corneum, which is a highly fat region, but between the cell. On the other hand, the topical drug molecules may travel through the transcellular route. This route allows molecules to be transported via cell. Transcellular route transports the drug molecules into the bilayered lipid cells found in stratum corneum. Inside of the bilayered lipids in the stratum corneum is a water – soluble environment, and the drug molecules will diffuse through this bilayered lipids into deeper area of the skin. During the transportation of the topical drug molecules, it can bind to the keratin that exists as one of the skin components in the stratum corneum.

ADVANTAGES

- Avoid of first pass metabolism.
- Convenient and easy to apply.
- Avoid the risk.
- The avoid the function of intestine and intrapaten.
- Achievement of efficacy with the lower total daily dosage of drug by continuous drug input.
- Avoid fluctuation of drug level inter and interpatient variation.

DISADVANTAGES

- Skin irritation of contact dermatitis may occur due to the drug and excipient.
- Poor permeability of some drugs through the skin.
- Can be used only for drugs which requires very small plasma concentration for action.
- Enzyme in epidermis may denature the drugs.

FACIAL SCRUB

A facial scrub is a skin care product used to exfoliate the skin which removes dead skin cells from the surface of the skin and reduces tanning of skin. Generally, a skin is of three types: dry skin, oily skin and sensitive skin. The people with dry skin must use facial scrub which contains hydrating ingredients and moisturizer is must for them. After using scrub, general scrubs should be used for sensitive skin. For those who are having oily skin, it is essential to get a scrub that exfoliate deeply to prevent pores from clogging and also to balance the skin's oily production. We can use it face scrub twice or thrice a week followed by light weight face oil. Regardless of skin type, always we should select a scrub which is not hurt full but gentle to the skin. The harsh ones can do more harm than good to the skin. The oily skin gel-based scrub is preferred. For dry skin, cream-based scrub is used. For sensitive skin, scrubs with super soft granules

are having good results cream-based scrub is use full. For sensitive skin, scrubs with super soft granules are having good results

IDEAL CHARACTERISTICS OF FACIAL SCRUB

- Gentle exfoliation
- Suitable for your skin type
- pH balanced
- toxic free
- abrasive (mild)
- Having the ability remove skin dead cells
- Non -comedogenic
- Hypo-allergic
- Non sticky surface
- Fragrance –free or mind scent
- Moisturizing properties
- Easy to use

Types of facial scrub

There are several types of facial scrubs, each with its own unique benefits and ingredients. Here are some common types of facial scrubs:

1. Physical Scrubs: Contain small particles like sugar, salt, or coffee grounds that help remove dead skin cells through physical exfoliation.

2. Chemical Scrubs: Use alpha-hydroxy acids (AHAs) or beta-hydroxy acids (BHAs) to dissolve dead skin cells and promote cell turnover.
3. Enzyme Scrubs: Contain enzymes like papain or bromelain that break down dead skin cells and help unclog pores.
4. Micro-exfoliating Scrubs: Use tiny, round particles like jojoba beads or polyethylene beads for gentle exfoliation.
5. Natural Scrubs: Made with natural ingredients like honey, oatmeal, or green tea, these scrubs are gentle and suitable for sensitive skin.
6. Clay-based Scrubs: Use clay minerals like kaolin or bentonite to detoxify and purify the skin.
7. Exfoliating Cleanser Scrubs: Combine a gentle cleanser with exfoliating particles for a 2-in-1 product.
8. Peeling Scrubs: Contain a higher concentration of AHAs or BHAs for a more intense exfoliating experience.
9. Sensitive Skin Scrubs: Gentle, fragrance-free, and hypoallergenic scrubs designed for sensitive skin.
10. Customizable Scrubs: Allow you to mix and match different ingredients to create a personalized scrub.

Ingredients profile

INGREDIENTS (gm)	F1	F2	F3	F4
Poppy seeds	16.5 gm.	16 gm.	15.0	14 gm.
Vitamins E capsule	2 ml	2 ml	2 ml	2 ml
Sandal wood powder	5 gm.	5 gm.	5 ml	5gm
Turmeric	2 gm.	2 gm.	2 gm.	2 gm.
Badami oil	7 ml	9 ml	6 ml	8 ml
Orange peel powder	6.5 gm.	6 gm.	8 gm.	7 gm.
Rice flour	3 gm.	2 gm.	4 gm.	3.5 gm.
SLS	0.75 gm.	0.75 gm.	0.75 gm.	0.75 gm.
Glycerin	6.5 ml	6 ml	7 ml	7.5 ml
Methyl Paraben	0.70 gm.	0.70 gm.	0.70 gm.	0.70 gm.
Amaranth	0.2 gm.	0.2 gm.	0.2 gm.	0.2 gm.
Rose water	QS	QS	QS	QS
Carbopol	1gm
CMC	0.5 gm.

Method of preparation

- ❖ All the natural ingredients were first cleaned to remove any dirt or impurities
- ❖ Then all the natural ingredients were shade dried in according with our requirements
- ❖ Then required ingredients were ground in to fine powder with grinder and then sieved

- ❖ Then ingredients are weighed according to a formula specified in the formulation
- ❖ Then weighed powder and the other ingredients were mixed together to form powder scrub
- ❖ The prepared formulation was filled in to air tight container for further analysis
- ❖ The formulation F4 was incorporated into the gel using 2% w/v carbopol

PROCEDURE FOR EVALUATION TEST APPEARANCE

For colour and odour prepared scrub was evaluation the colour was found to be and odour was found to be pleasant and characteristics

PH

The prepared scrub was evaluated for its pH by using calibrating digital pH meter at constant temperature of 1 gm of product and it found to be 6.7 pH.



WASHABILITY

The product applied on skin washability with water it was easily removed were checked manually.

SPREADABILITY

On the glass slide small amount of scrub is placed and another slide was placed on the top of the scrub. The spreadability of scrub was checked manually by applying the scrub on skin with gentle rub and it was easily spreadable.



CONSISTENCY

The consistence was determined manually it was found to be solid by visual observation.

GRITTINESS

In scrub few small particles were observed.

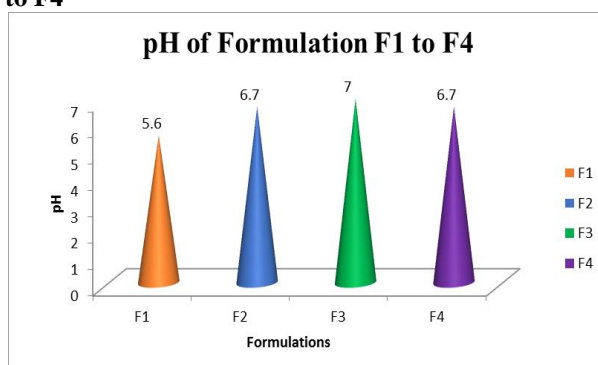
FOAMABILITY

The foamability was measured by small amount of scrub was shake with water in graduated measuring cylinder.

Results of all evaluation parameters

Sl. No.	Parameters	F1	F2	F3	F4
1	Consistency	Good	Good	Good	Good
2	Washability	Easily Washable	Easily Washable	Easily Washable	Easily washable
3	Sensitivity	No Allergic Reaction	No Allergic Reaction	No Allergic Reaction	No allergic Reaction
4	Irritation	Non -Irritant	Non- Irritant	Non- Irritant	Non -Irritant
5	Grittiness	Small gritty Particles	Small gritty Particles	Small gritty Particles	Small gritty particles
6	Foamability	Good	Good	Good	Good

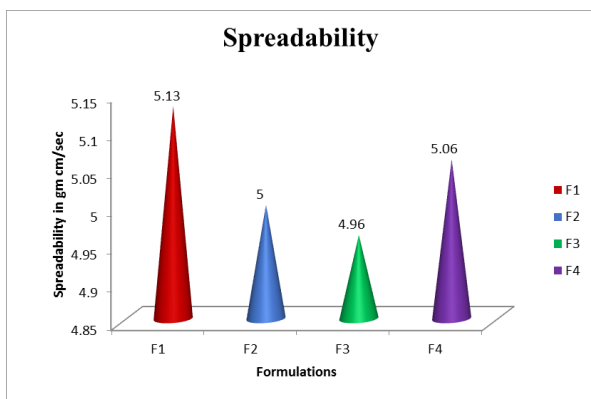
Result of pH Formulation F1 to F4



Sl. No.	Formulation	pH
1	F1	5.6
2	F2	6.7
3	F3	7.0
4	F4	6.7

Result of Spreadability

Formulation	Mass in (gm)	Length of spread (cm)	Time in (sec)	Spreadability gm cm /sec
F1	100gm	15.4	300	5.13
F2	100gm	15	300	5
F3	100gm	14.9	300	4.96
F4	100gm	15.2	300	5.06



CONCLUSION

By in cooperation of poppy seeds has scrubbing agents in to the formulation, efficacy of product increases Facial scrubs are a valuable addition to any skincare routine, offering numerous benefits for various skin types and concerns. By removing dead skin cells, unclogging pores, and improving skin texture, facial scrubs can help:

- Enhance skin radiance and brightness
- Reduce acne and prevent future breakouts
- Improve skin tone and texture
- Minimize the appearance of fine lines and wrinkles
- Prepare skin for other products and treatments
- Boost overall skin health and appearance

When used correctly, facial scrubs can be a powerful tool in achieving healthier, more radiant, and smoother skin. Remember to choose a scrub suitable for your skin type, exfoliate gently and regularly, and follow up with nourishing products to maximize the benefits.

In summary, facial scrubs are a simple yet effective way to:

- Revitalize and rejuvenate the skin
- Address specific skin concerns
- Improve overall skin health and appearance
- Enhance the effectiveness of other skincare products
- Achieve a brighter, smoother, and more radiant complexion

By incorporating a facial scrub into your skincare routine, you can unlock a range of benefits that will leave your skin looking and feeling its best.

REFERENCES

- Vatsa E, Aggarwal M, Gautam S. Formulation and Evaluation of Polyherbal Facial Scrub. Just agriculture multidisciplinary, 2021 May.
- Nemade CT, Baste N. Formulation and evaluation of a herbal facial scrub. World J Pharm Res., Mar. 2014; 3(3): 4367-71.
- Pise S, Shaikh F, Vohra P. Formulation and evaluation of herbal anti-acne face scrub. Research Journal of Topical and Cosmetic Sciences, 2023; 14(2): 53-7.
- SK R, Neelofar Sulatna S, Mohana Priya R, Parameswari CS, Ramana BV, Badarinath AV. FORMULATION AND EVALUATION OF NATURAL HERBAL FACE PACK. World Journal of Pharmaceutical Research, Jun 9, 2017; 6(8): 1561-73.
- Avhad SA, Dixit A, Bhakare SS, Akiwate JK, Aswale DU, Anbhule RV. Formulation and Evaluation of Polyherbal Face Pack. Journal of Drug Delivery and Therapeutics, Sep. 15, 2022; 12(5): 153-5.
- Rahatal RA, Bora SS. FORMULATION AND EVALUATION OF POLYHERBAL FACE PACKS.
- Ghode DS, Chatur VM, Ghode DP, Shaha N, Prajapati S, Thorave A. Formulation And Evaluation Of Facial Scrub Containing Sunflower Seeds And Other Natural Ingredients. World Journal of Pharmaceutical Research, Jun 20, 2019; 8(9): 1772-81.
- Sahu D, Nageshwar TS. Formulation and Evaluation of Herbal Face Pack.
- Prathyusha J, Yamani NS, Santhosh G, Aravind A, Naresh B. Formulation and evaluation of polyherbal face scrubber for oily skin in gel form. International Journal of Pharmaceutical Sciences and Drug Research, Jul 30, 2019: 126-8.
- Dave P, Patel G, Patel D, Patel B, Patel D, Chakraborty GS, Jani R. Formulation and Evaluation of Herbal Face Scrub containing Coffea arabica Linn, Myristica fragrans, and Lens culinaris as an Antioxidant and Antiseptic Activity. International Journal of Drug Delivery Technology, 2022; 12(3): 1183-6.
- Ghadage PK, Mahamuni SS, Kachare DS. Formulation and evaluation of herbal scrub using tamarind peel. Research Journal of Topical and Cosmetic Sciences, 2021; 12(1): 40-3.
- Prolapita CO, Safitri CI. Formulasi dan Uji Mutu Fisik Seitan Body Scrub dari Arang Aktif Sekam Paddy (Oryza sativa): Formulation and Physical Quality Test of Provision of Body Scrub from Rice Husb Active Character (Oryza sativa). InProceeding of Mulawarman Pharmaceuticals Conferences, Apr. 10, 2021; 13: 213-217.

- 13 Hilda D, Arini A, Nancy CD. Formulation of body scrub cream from extract of arabika green coffee (*Coffea arabica* L.) as antioxidant. In4th International Conference on Sustainable Innovation 2020–Health Science and Nursing (ICoSIHSN 2020), Jan 16, 2021; (337-342). Atlantis Press.
- 14 Savitri AK, Fitriyati N, Mustika AA. Formulation of the body scrub cream containing moringa seed powder (*Moringa oleifera*) and its examination dermal acute irritation. GEOMATE Journal, Oct. 28, 2019; 17(62): 244-9.
- 15 Vatsa E, Aggarwal M, Gautam S. Formulation and Evaluation of Polyherbal Facial Scrub. Just agriculture multidisciplinary, 2021 May.
- 16 Knokke S, Gangurde MS, Khairmode P, Kapadi V, Harpade A. FORMULATION AND EVALUATION OF ONION SCRUB.
- 17 Marathe MV, Nikum MA, Marathe MG, Patil MS, Patil MS. Formulation and Evaluation of Herbal Face Scrub.
- 18 Chauhan L, Gupta S. Creams: A review on classification, preparation methods, evaluation and its applications. Journal of drug delivery and therapeutics, Oct 15, 2020; 10(5-s): 281-9.
- 19 Ainurofiq A, Maharani A, Fatonah F, Halida HN, Nurrodlotiningtyas T. Pre-Formulation Study on The Preparation of Skin Cosmetics. Science and Technology Indonesia, Oct. 18, 2021; 6(4): 273-84.
- 20 Jaiswal S., Guide Mr. C. G. K, Dr. Prchi. U. Formulation And Evaluation Aloe Cold Cream. INTERNATIONAL.
- 21 Ghadage PK, Mahamuni SS, Kachare DS. Formulation and evaluation of herbal scrub using tamarind peel. Research Journal of Topical and Cosmetic Sciences, 2021; 12(1): 40-3.
- 22 Prolapita CO, Safitri CI. Formulasi dan Uji Mutu Fisik Seitan Body Scrub dari Arang Aktif Sekam Paddy (*Oryza sativa*): Formulation and Physical Quality Test of Provision of Body Scrub from Rice Husb Active Character (*Oryza sativa*). InProceeding of Mulawarman Pharmaceuticals Conferences, Apr. 10, 2021; 13: 213-217.
- 23 Hilda D, Arini A, Nancy CD. Formulation of body scrub cream from extract of arabika green coffee (*Coffea arabica* L.) as antioxidant. In4th International Conference on Sustainable Innovation 2020–Health Science and Nursing (ICoSIHSN 2020), Jan. 16, 2021: 337-342. Atlantis Press.
- 24 Savitri AK, Fitriyati N, Mustika AA. Formulation of the body scrub cream containing moringa seed powder (*Moringa oleifera*) and its examination dermal acute irritation. GEOMATE Journal, Oct. 28, 2019; 17(62): 244-9.
- 25 Vatsa E, Aggarwal M, Gautam S. Formulation and Evaluation of Polyherbal Facial Scrub. Just agriculture multidisciplinary, 2021 May.
- 26 Knokke S, Gangurde MS, Khairmode P, Kapadi V, Harpade A. FORMULATION AND EVALUATION OF ONION SCRUB.
- 27 Marathe MV, Nikum MA, Marathe MG, Patil MS, Patil MS. Formulation and Evaluation of Herbal Face Scrub.
- 28 Chauhan L, Gupta S. Creams: A review on classification, preparation methods, evaluation and its applications. Journal of drug delivery and therapeutics, Oct 15, 2020; 10(5-s): 281-9.
- 29 Ainurofiq A, Maharani A, Fatonah F, Halida HN, Nurrodlotiningtyas T. Pre-Formulation Study on The Preparation of Skin Cosmetics. Science and Technology Indonesia, Oct 18, 2021; 6(4): 273-84.
- 30 Jaiswal S., Guide Mr. C. G. K, Dr. Prchi. U. Formulation And Evaluation Aloe Cold Cream.