WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 13, 1246-1281. Research Article ISSN 2277–7105

FORMULATION AND EVALUATION OF VITAMIN C COSMECEUTICAL CREAM FOR STRETCH MARKS AS NOVEL DRUG DELIVERY SYSTEMS

Mahmoud Mahyoob Alburyhi[1]*, Maged Alwan Noman[1], Abdalwali Ahmed Saif[1]

[1]Professor Dr. of Pharmaceutics and Industrial Pharmacy, Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Sana'a University, Sana'a, Yemen.

Article Received on 04 June 2026,
Article Revised on 24 June 2026,
Article Published on 01 July 2026,

https://doi.org/10.5281/zenodo.21054827

***Corresponding Author**

Mahmoud Mahyoob Alburyhi

Professor Dr. of Pharmaceutics and Industrial Pharmacy, Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Sana'a University, Sana'a, Yemen.

How to cite this Article: Mahmoud Mahyoob Alburyhi[1]*, Maged Alwan Noman[1], Abdalwali Ahmed Saif[1]. (2026). Formulation And Evaluation Ofazithromycin And Paracetamol Combination Therapy As Suppositories Novel Drug Delivery Systems. World Journal of Pharmaceutical Research, 15(13), 1246–1281.

ABSTRACT

The objective of the present study to formulate an effective cream for the treatment of stretch marks using a blend of natural oils and vitamins. Essential ingredients such as Vitamins C for their roles in promoting collagen production and improving skin elasticity also caffeine for improving blood flow, and a blend of natural oils were selected for their moisturizing and nourishing properties. The cream was formulated using advanced cosmetic techniques and evaluated through stability tests, microbial tests. Additionally, the tests confirmed that the cream is safe for use, causing no irritation or side effects. The study concludes that this oil- and vitamin-based cream offers a promising solution for stretch mark treatment. It was concluded that the optimized cream formulation is the best formulation among all cream formulations NDDS. Formulation scientist from his experience and knowledge have to significantly in the preformulation study stage and is an important factor in the NDDS (Novel Drug Delivery Systems) product development process.

KEYWORDS: Vitamin C (Ascorbic acid), NDDS, Development, Formulation, Creams, Stretch marks, Cosmeceutical.

INTRODUCTION

Stretch Marks[1,22]

Stretch marks, also known as striae distensae (SD), are visible linear scars that form in areas of dermal damage as a result of stretching of the skin. Stretch marks do not represent a serious health issue, but they can have a profound psychological impact on patients, especially on young, healthy women who are frequently affected by this problem. The breasts, upper arms, abdomen, buttocks, and thighs are the area's most frequently affected by this condition.

For the treatment of SD. numerous techniques have been tried that work to stimulate the formation of collagen. These include topical creams, chemical peels, microdermabrasion, pulse dye laser, diode laser, ablative and nonablative lasers, intense pulse light, micro-needling, fractionated microneedle radiofrequency, dermal filler injections, and others. None is advised as standard therapy due to inadequate skin color improvement or persistent skin atrophy.

Types of Stretch Marks

Striae atrophicans (thinned skin), striae gravidarum (following pregnancy), striae rubrae (red), striae albae (white), striae nigra (black) and striae caerulea (dark blue)**.** Striae are a form of dermal scarring associated with stretching of the dermis. They often result from a rapid change in weight (gain and loss) or are associated with endogenous or exogenous corticosteroids. Proposed mechanisms relate to hormones, physical stretch, and structural alterations of dermal collagen and elastic tissue. Adrenocorticotropic hormones promote fibroblast activity and increase protein catabolism. Pregnancy-related hormones may also contribute. Serum relax in has been described to be lower in women with striae distensae Deficiency of fibrillin has also been proposed.

Striae distensae occur in pregnancy (43% to 88%), puberty (6% to 86%) and obesity (43%). Striae atrophicans follow medical conditions, particularly Cushing syndrome/disease, and treatments, usually exogenous topical or systemic corticosteroids, or surgery. Other associated diseases are Marfan syndrome anorexia nervosa various febrile illnesses, and chronic liver disease. Medications associated with striae also include chemotherapy, prolonged antibiotic therapy, contraceptives and neuroleptics.

Striae are more common in females than in males and may be more common in certain races. They can appear more prominent in dark-skinned individuals. A positive family history is a risk factor for striae. During pregnancy, striae are more common in younger women than in older women.

Pathophysiology is thought to involve elastases released from mast cells and macrophage activity. Elastolysis of the mid-dermis is followed by a reorganization of collagen and fibrillin. Histopathology of striae rubrae reveals excessive fine elastic fibers in the papillary dermis with thicker tortuous fibers in the periphery, with perivascular lymphocytes, dilated dermal vessels and edema. There are reduction and reorganization of elastin and fibrillin fibers, and structural changes in collagen fibers, which are thicker and densely packed in parallel rows. Histopathology of striae albae shows epidermal atrophy, loss of rete ridges, less vascularity, and densely packed, thin and scar-like horizontal collagen bundles. They appear similar to mature atrophic scars.

Pharmaceutical Research Paths[23,80]

Pharmaceutical research is characterized by having both a natural source and synthetic source for primary active raw materials and excipients, each source is mainly prepared to the effectiveness and safety of the drug.

The development of pharmaceutical dosage forms is the basis for delivering the drug to the body. The development of drug delivery systems makes the drug the fastest to arrive, most effective, accurate. and in fast time. Some systems were need to prolong the effect, so they operate with controlled delay system.

All of this development through the various methods of administrating medicine to the body requires developing the medicine, starting from natural and synthetic sources of raw materials for the active ingredients and excipients that are used in formulating medicines in their various dosage forms. The research related to this path is research in drug design or drug extraction, preformulation studies, formulations, evaluation research and stability studies. Clinical studies are important in the development of pharmaceutical dosage forms, and pharmacovigilance follow-up services the safety of medicines. Studying Pharmacoeconomics saves the cost of drug manufacturing, industrial pharmaceutical research and development of production lines, which makes pharmaceutical dosage forms in continues development.

Pharmaceutical care and treatments depend mainly on prescribing medications, taking into account the most important factor, which is drug delivery systems. Research and studies on the effectiveness and use of medicines, their mechanism of action, and safety are all relevant to the manufacture of pharmaceutical dosage forms. Pharmacokinetics and pharmacodynamics research is considered the most important factor in developing novel drug delivery systems NDDS. The continuous development in the pharmaceutical industry is accelerating in the development of drug delivery systems that serve to improve human healthcare.

Dosage Forms and Novel Drug Delivery Systems[81-154]

The drug is defined as a substance recognized by official pharmacopoeia / In house (IH) which, is intended for its use in the diagnosis, cure, mitigation, treatment, or prevention of disease. Rarely drug is given in its pure chemical form. To ease the drug administration by a human being, it is essential to convert it into physical form in which drug is dispensed known as dosage form. The dosage form is a package of Active Pharmaceutical Ingredient (API) along with selective non medicinal compounds known as excipients.

Dosage Forms Pharmaceutical dosage forms, including oral, injectable, topical, and others, are essential in the therapeutic use of medications. These formulations generally consist of the active pharmaceutical ingredient along with excipients and other non-consumable components like packaging or delivery mechanisms. The term “dosage form” may sometimes only refer to the chemical composition of the drug, excluding the delivery method or container.

A dosage form refers to the specific physical formulation through which a medicinal substance is administered to achieve therapeutic effects. Dosage forms act as delivery systems that transport active pharmaceutical ingredients (APIs) to their intended sites of action within the body, enhancing therapeutic outcomes while reducing potential adverse effects. The selection of an appropriate dosage form depends on factors such as the drug's physicochemical characteristics, the desired route of administration, the patient's clinical condition, and considerations related to age and ease of use. Pharmaceutical dosage forms are composed of two essential components:

Active Pharmaceutical Ingredient (API)

The pharmacologically active compound responsible for producing the desired therapeutic effect.

Pharmaceutical Excipients

Inactive substances incorporated into the formulation to ensure stability, enhance bioavailability, improve patient acceptability, or facilitate the manufacturing process. Common excipients include colorants, sweeteners, flavoring agents, surfactants, solubilizers, antioxidants, preservatives, thickening agents, suspending agents, binders, solvents, lubricants, and lipid-based materials.

The major biopharmaceutical considerations include: Pharmacodynamic Considerations, therapeutic objective, toxic effect, adverse reactions of candidate drug molecule. Drug Consideration: Physicochemical characterization of the candidate drug molecules. Drug Product Consideration: Bioavailability of candidate drug molecule, pharmacokinetics of candidate drug molecule, desired drug dosage form, route of administration for the candidate drug molecule, and desired dose of the candidate drug molecule. Patient Consideration: Compliance and acceptability of the final drug product. Manufacturing Considerations: Cost, availability of pharmaceutical raw materials, stability and quality.

Formulation and Development

This stage involves the actual combination of candidate drug molecule with various excipients and also optimizing the concentration at which each excipient is used. The choice of excipients depends on the properties of the drug molecule and the nature of the intended drug product.

Classification of Dosage Forms

Pharmaceutical dosage forms can be classified in multiple ways, depending on their physical nature, route of administration, site of application, or intended therapeutic use and related data as shown in Tables (1 to 5).

No.	Table 1: Dosage Form Classifications Based on Physical Form State.	
1	**Solid Dosage Forms**	Powders, Tablets, Effervescent tablets, Capsules, Soft Gelatin Capsule (SGC), Hard Gelatin Capsule (HGC) Lozenges/Troches, Granules, Effervescent Granules, Chewable, Pills, Insufflation, Cachets, snuffs, Spansules, Hypodermic Tablets, Tablet Triturates, Dental Cones, Pastilles, Pessaries, Vaginal Rings, Transdermal Patches, Suppositories, Implants, Ocular Inserts, Film coated tablet, Orodispersible Tablets, Enteric-Coated Tablets, Dispensing Tablets, Tablet Triturates, Lollipops, Chewing Gum.
2	**Semi Solid Dosage**	Creams, Ointments, Pastes, Gels, Poultices, Suppositories, Hair colors, Shampoos, Lipsticks, Avaleha.

	Forms	
3	**Liquid Dosage Forms**	Syrups, Mixtures, Linctuses, Elixirs, Gargles, Mouthwashes, Lotions, Oral Drops, Nasal Drops, Ear Drops, Suspensions, Emulsions, Eye Washes, Liniments, Enemas, Irrigations, Draughts, Eye Drops, Douches, Drops, Tinctures, Spirits, Injections, Collodion, Paints, Throat Paints, Oxymels, Aromatic Waters. Extracts, Inhalants.
4	**Gaseous Dosage Forms**	Pressurized dispensers, Inhalers, Aerosols, Nebulizers, Sprays, Metered Dose Inhalers (MDIs), Dry Powder Inhalers (DPIs).
5	**Special Drug Delivery System**	Ocular Inserts, Progestaserts, Intra –Uterine, Liposomes, Prodrugs, Transdermal Patches.

No.	**Table 2: Dosage Form Classifications Based on Route of Administration.**	
1	**Oral Dosage Forms**	Powders, Granules, Tablets, Capsules, Suspension, Gels, Pills, Elixirs, Syrups, Emulsion.
2	**Parenteral Dosage Forms**	Solutions, Suspensions, Emulsions.
3	**Trans dermal Dosage Forms**	Ointments, Powders, Creams, Lotions, Pastes.
4	**Intra ocular Dosage Forms**	Solutions, Suspension, Ointments, Gels.
5	**Conjunctival Dosage Forms**	Ointments
6	**Vaginal Dosage Forms**	Solutions, Tablets, Ointments, Creams, Suppositories, Douches.
7	**Sublingual Dosage Forms**	Tablets, Lozenges.
8	**Intra-Nasal Dosage Forms**	Solutions, Sprays, Inhalations, Gels.
9	**Rectal Dosage Forms**	Ointments, Suppositories, Enemas.
10	**Pulmonary Dosage Forms**	Aerosols
11	**Urethral Dosage Forms**	Suppositories.
12	**Intra-Otic Dosage Forms**	Solutions, Suspension, Douches, Ear Powders.

No.	**Table 3: Dosage Form Classifications Based on Site of Application.**	
1	**Skin**	Powders, Emulsion, Gels, Ointments, Creams, Pastes, Lotion, Suspension, Solutions, Shampoos, Lipsticks, Liniments, Douches.
2	**Eye**	Ointments, Gels, Eye Drops, Eye Wash, Eye Lotion, Eye Packs, Contact Lenses.
3	**Tooth**	Powders, Pastes, Spray, Dental cone, Dentrifices.
4	**Hand**	Powder, Emulsion, Gels, Suspension, Ointments, Creams, Paste, Lotions.
5	**Foot**	Powder, Emulsions, Gels, Ointments, Creams, Lotions.
6	**Hair**	Gels, Creams, Hair serums, Hair oils, Hair Sprays, Hair colours.
7	**Nose**	Aerosols, Insufflations, Snuffs, Gels.

8	**Ear**	Ear Drops, Douches, Ear Powders.
9	**Vaginal**	Solutions, Tablets, Ointments, Creams, Suppositories, Douches.
10	**Rectal**	Ointments, Suppositories, Enemas.

Table 4: Dosage Form Classifications Based on Use.	
Internal	Powders, Tablets, Capsules, Emulsion, Syrups, Elixirs, Gels, Pills, Suspension, Avaleha, Pessaries, Suppositories.
External	Aerosols, Ointments, Creams, Powders, Pastes, Lotions, Sprays, Inhalations, Liniments, Throat Paints, Plasters, Jellies, Aerosols, Pellets, Trans dermal Patches.

Table 5: Routes, Dosage Forms, and Uses.		
Dosage Form	**Route of Administration**	**Purpose/Use**
Tablets/Capsules	Oral	Purpose/Use Convenient systemic delivery
Solutions/Suspensions	Oral/Topical	Rapid action, suitable for children
Injections/Infusions	Parenteral	Fast action, emergency use
Inhalers/Nebulizers	Inhalation	Respiratory therapy
Ointments/Creams/Gels	Topical	Local skin or mucosal treatment
Suppositories/Enemas	Rectal/Vaginal	Local/systemic when oral not possible
Transdermal Patches	Skin	Long-term controlled systemic effect
Modified/Controlled Forms	Varies	Targeted or sustained drug delivery

The term dosage forms refer to the means by which drug molecules/APIs are delivered to sites of action within the body to produce optimum desired effects with minimum adverse effects.

The word cosmetic is derived from the Greek word 'cosmetics' meaning decorates. Cosmetics are used to enhance the appearance. Cosmetics is actually derived from its use in ancient era. They produced by female slaves known as the 'cosmetic' derived from 'cosmetics'. The increased cosmetics using peoples stay young and attractive creams are topical preparation to be applied on the skin. Cosmetics are available in the form of creams, lipstick etc. Cosmetic creams such as sunscreens protects the skin from sun rays. Medicated creams are used for wound healing. The ginger extract is used in the treatment of antifungal infection. The creams are easy to applying the skin.

Topical preparation that will be applied to the skin are called creams. Liquid or semisolid viscous emulsions with varying consistency depending on the oil and water. Creams are used for a range of cosmetic functions, as well as cleansing, beautifying, improving, aesthetics,

protection and therapeutic functions. Creams are classified as healthy products because they are created using strategies developed within the pharmaceutical industry each nonmedicated cream is generally used to treat a spread of skin conditions or dermatoses. Developed creams are Ayurvedic, herbal or medically assisted and people use them to treat their skin problems. They are created from one or more of the drug substances dispersed in a suitable phase. Penetration enhancer of cream in skin layers depend on important factors such as formulation factors, biological factors of skin, and physiochemical of drug natural and synthetic sources.

Cosmetics like creams, gels, and colognes are used on a daily basis by both women and men. Creams act as a cleanser for the face in many circumstances. More recently antiaging creams have been manufactured which can retain younger looking skin for many years. The best cleansing agents are cleansing cream, soap and water. Cosmetic creams serve as a skin food for hard, dry and chapped skin.

Pharmaceutical Creams

Pharmaceutical creams are white semisolid preparations intended for external application to the skin and mucous membranes containing one more medicinal agent dissolved or dispersed in either a W/O emulsion or an O/W emulsion or in another type of water-washable base.

Creams are more fluid compared to other semisolid dosage forms, such as ointments and pastes, since the bases used in creams are generally o/w emulsions.

Creams have a whitish with creamy appearance and the use of creams as drug delivery systems is associated with good patient acceptance.

Advantages of Topical Drug Delivery

Avoids complications related to injections and oral administration (e.g., enzymatic degradation, pH variation), provides localized action with a smaller dose, minimizing systemic exposure, allows for easy termination of therapy if adverse effects occur, avoids gastrointestinal irritation, enhances patient compliance and enables self-medication and suitable for drugs with short half-lives or narrow therapeutic windows.

Limitations of Topical Drug Delivery

Topical therapy may not be suitable for all drugs, ideal candidates should be low in molecular weight, lipophilic, and effective at low doses and additionally, penetration enhancers used to improve absorption might cause skin irritation.

Rational Use of Topical Formulations

Topical products serve various functions: Protection: Sunscreens shield skin from UV damage; antibacterial agents prevent infections. Therapy: Direct application of drugs like anesthetics and anti-inflammatory agents targets affected tissues. Cosmetic Use: Products like exfoliants and depilatories are used for personal care. Systemic Therapy: Transdermal patches deliver medications systemically for conditions like hypertension and motion sickness.

Classification of Creams

Classification of Creams, types, common excipients natural, synthetic and related data as shown in Tables (6 to 9).

Properties of Creams

Easy to apply and remove, spread evenly on the skin, should melt at body temperature, help cleanse skin pores, leave a protective, emollient layer, prevent skin dryness unlike soap, aid in removing makeup and impurities, soften and hydrate the skin and remove oil, dirt, and dead skin cells.

Key Characteristics of Creams

Should liquefy at body temperature, must penetrate the epidermis, low viscosity for easy spreading, non-toxic and non-irritating and should not cause inflammation.

Uses of Creams

Cleansing creams: Remove dead skin, dirt, and oil. Vanishing creams: Useful in humid environments to reduce facial sweat. Protective barrier: Prevents moisture loss. Soothing effect: Reduces irritation and supports healing. Medical use: Treats conditions like eczema, dermatitis, rashes, itching, insect bites, and allergies. Can be used on mucosal surfaces.

No.	Table 6: Herbs Commonly Used in Herbal Creams.	
	Uses	**Common Herbs**
1	**Anti-fungal/Bacterial**	Neem, Tea Tree, Turmeric, Basil.
2	**Anti-aging**	Green Tea, Ginseng, Liquorice, Rosehip, Gotu Kola.
3	**Dry/Sensitive Skin**	Calendula, Chamomile, Aloe Vera, Coconut, Shea Butter.
4	**Eczema & Psoriasis**	Liquorice, Turmeric, Chamomile, Oat, Manjistha.
5	**Wound Healing**	Aloe Vera, Calendula, Comfrey, Honey.
6	**Pain Relief**	Arnica, Capsaicin, Ginger, Turmeric, Menthol.
7	**Skin Brightening**	Liquorice, Saffron, Mulberry, Turmeric, Rose Water
8	**Acne & Pimples**	Neem, Tea Tree, Tulasi, Aloe Vera, Turmeric.

No.	Table 7: Some of Excipients Used in Formulation of Creams.	
	Excipients	**Examples**
1	**Vehicle**	Water
2	**Wetting Agents**	Sulfonated Oils, Glycerin
3	**Oils**	Liquid Paraffin, olive oil
4	**Fats**	Almond Oil, fatty acid
5	**Waxes**	Bees Wax, Paraffin wax
6	**Lanolin**	Hydrous Lanolin
7	**Glycol**	Propylene glycol, Ethylene glycol
8	**Colors**	Saffron, Curcumin
9	**Emollients**	Squalene, Lanolin
10	**Emulsifying agents**	Bentonite, Colloidal Kaolin
11	**Gums**	Gum tragacanth, Gelatin
12	**Perfumes**	White blossoms, orange blossom
13	**Humectants**	Honey, Aloe vera

Table 8: Types of Creams.	
Based on Phase	Oil-in-Water (O/W)
	Water-in-Oil (W/O)
Based on the Function	Make-Up Creams
	Vanishing Creams
	Foundation Creams
	Cleansing Creams
	Winter Creams
	General Creams and All-Purpose Creams
	Night Creams and Massage Creams
	Skin Protection Creams
	Hand Creams and Body Creams
	Cold Creams

Table 9: Classification of Creams.			
No.	**Category**	**Types of Creams**	**Description**
1	**Based on Emulsion Type**	Oil-in-Water (O/W) Creams	Water is the continuous phase; non-greasy, easily washable.
		Water-in-Oil (W/O) Creams	Oil is the continuous phase; greasy, more occlusive.
2	**Based on Site of Application**	Topical Creams	Applied on the skin surface for local effects.
		Transdermal Creams	Designed for systemic absorption through the skin.
		Mucosal Creams	Used on mucous membranes.
3	**Based on Therapeutic Purpose**	Antibacterial Creams	Treat bacterial infections.
		Antifungal Creams	Treat fungal infections.
		Anti-inflammatory Creams	Reduce inflammation.
		Analgesic Creams	Provide pain relief.
		Antiviral Creams	Treat viral infections.

		Wound Healing Creams	Promote tissue repair.
4	**Based on Compositions and Consistency**	Vanishing Creams	Non-greasy, leave little to no residue after application.
		Cold Creams	Emollient, greasy, used for dry skin.
		Hydrophilic Creams	Water-attracting, suitable for aqueous drug bases.
		Hydrophobic Creams	Oil-based, repel water, suitable for lipid-soluble drugs.
5	**Based on Drug Release**	Conventional Creams	Immediate release of active ingredient.
		Controlled Release Creams	Slow and sustained drug release over time.

In the present study, it was proposed to Formulated of Vitamin C as Cream Cosmeceutical studies of the safety, efficacy, quality and stability of a formulation are major concepts of any API development process. In API development process, a detailed characterization of the API and other formulation components is usually carried out with commonly different excipients using for formulation development of Vitamin C as Cream Cosmeceutical NDDS to Stretch Marks topical application.

MATERIALS AND METHODS

Vitamin C, and all raw materials used in the formulation including active pharmaceutical ingredients (APIs), excipients, and analytical reagents were obtained as a gift sample from (Shaphaco Pharma Pharmaceutical Industry Company - Yemen), (Yedco Pharma Pharmaceutical Industry Company - Yemen) and from local market.

As shown in Table 10.

Table 10: List of Materials Used.

No.	Name of Materials
1	Turmeric powder (*Local market*), (Yemen)
2	Aloe vera Oil (*Hemani*), (Pakistan)
3	Chamomile Oil (*Hemani*), (Pakistan)
4	Coconut Oil (*Hemani*), (Pakistan)
5	Vitamin C (*Shaphaco*), (Yemen)
6	Caffeine (*Shaphaco*), (Yemen)
7	Liquid Paraffin (*Shaphaco*), (Yemen)
8	Ceto stearyl Alcohol (*Shaphaco*), (Yemen)
9	Cremophor A25 (*Shaphaco*), (Yemen)
10	Methyl paraben (*Shaphaco*), (Yemen)
11	Propyl paraben (*Shaphaco*), (Yemen)
12	Propylene glycol (*Shaphaco*), (Yemen)

13	Zinc oxide (*Shaphaco*), (Yemen)
14	Cetyl alcohol (*Shaphaco*), (Yemen)
15	Stearic acid (*Shaphaco*), (Yemen)
16	Isopropyl myristate (*Shaphaco*), (Yemen)
17	Dimethicone (*Shaphaco*), (Yemen)
18	Glycerin (*Shaphaco*), (Yemen)
19	Menthol (*Shaphaco*), (Yemen)
20	Lanolin (*Shaphaco*), (Yemen)
21	Hexylene glycol (*Yedco*), (Yemen)
22	Phenyl trimethicone (*Yedco*), (Yemen)
23	Titanium dioxide (*Yedco*), (Yemen)
24	Triethanolamine (*Shaphaco*), (Yemen)
25	Sodium dihydrogen phosphate (*Shaphaco*), (Yemen)
26	Peppermint oil (*Shaphaco*), (Yemen)
27	Lime fragrance (*Shaphaco*), (Yemen)

Equipment

All equipment used are listed in Table Error! No text of specified style in document.

Table Error! No text of specified style in document.**: List of Instruments.**

No.	Instruments
1	pH Meter
2	Viscometer
3	Magnetic Stirrer
4	Electronic Balance
5	Digital Thermostatic Water Bath

Formulation and Evaluation of Creams[21-23] [81-192]

Optimization and Development of Cream Formulations

Preparation of Oil Phase

The oil phase was prepared by adding liquid paraffin as the main base. Ceto stearyl alcohol and Cremophor A25 were incorporated and melted together using a water bath. Subsequently, lipophilic components such as dimethicone, stearic acid, isopropyl myristate, lanolin, and cetyl alcohol were added sequentially and dissolved completely. A predetermined quantity of selected oils was then introduced to the mixture. The entire oil phase was maintained at a temperature of approximately 70°C to ensure complete solubilization and homogenization. In F1, F2, F3 curcumin powder added as active ingredient, but problems with stability appeared.

Preparation of Aqueous Phase

In a separate beaker, the aqueous phase was prepared by dissolving glycerin in a specific amount of water, followed by heating to 70°C. Active ingredients (caffeine and vitamin C)

were dissolved separately in water to preserve their efficacy and added gradually to the final mixture in small portions to avoid phase separation.

Additionally, some components were pre-dissolved in suitable solvents before incorporation. For instance, the preservatives methyl paraben and ethyl paraben were dissolved in propylene glycol to ensure complete solubilization. Zinc oxide was then added to this mixture and stirred until partially or fully dispersed. This prepared mixture was added to the oil phase.

Emulsification Formulation

The aqueous phase was added to the oil phase with continuous stirring under high-shear mixing using an electric homogenizer at 70°C. Once the temperature of the emulsion dropped to 40°C or below, the active ingredients (Caffeine, Vitamin C) and volatile substances such as menthol were added and mixed thoroughly.Now, once the transfer was completed it was allowed to come at room stemperature, all the while being stirred. Perfume (1%) was added at last just before the finished product was transferred to suitable container. Then cream was evaluated for various physical parameters.

Final System Optimization

To adjust the final pH of the formulation, two substances used disodium hydrogen phosphate which dissolved in hot water and added to the cream during the final mixing stage and triethanolamine which added to the cold stage at 40°C. as shown in Table 12.

Table 12: Composition of Cream Formulations.

No.	Ingredients	F1	F2	F3	F4	F5	F6	F7
1	**Aloe Vera Oil**	10	1.5	2	3	3	1	1
2	**Coconut Oil**	8	1.5	1.5	2	2	1	1
3	**Chamomile Oil**	--	--	2	2	2	1	0.5
4	**Vitamin C**	3	3	3	3	3	3	3
5	**Caffeine**	1.5	1.5	1.5	1.5	1.5	1.5	1.5
6	**Turmeric Powder**	1	0.5	0.5	0.5	--	--	--
7	**Liquid Paraffin**	12	12	12	12	12	12	12
8	**Ceto stearyl Alcohol**	7	7	7	7	7	7	7
9	**Cremophor A25**	3	3	3	3	3	3	3
10	**Menthol**	--	0.05	0.05	0.05	0.05	0.05	0.05
11	**Methyl Paraben**	0.2	0.2	0.2	0.2	0.2	0.2	0.2
12	**Propyl Paraben**	0.02	0.02	0.02	0.02	0.02	0.02	0.02
13	**Propylene Glycol**	2	4	4	4	4	5	5
14	**Cetyl alcohol**	2	1	1	1	1	1	1
15	**Stearic Acid**	--	2	--	--	--	--	2
16	**Isopropyl myristate**	--	1	1	--	1	1	3

17	**Phenyl trimethicone**	--	--	2	2	--	--	--
18	**Hexylene glycol**	--	--	2	2	--	--	--
19	**Peppermint Oil**	0.1	0.1	0.1	0.1	0.1	0.1	0.1
20	**Dimethicone**	--	--	--	2	2	1	1
21	**Glycerin**	10	6	2	5	5	4	4
22	**Lanolin**	--	--	--	--	2	2	2
23	**Titanium Dioxide**	--	--	--	1	1	--	--
24	**Zinc Oxide**	--	--	--	1	1	1	1
25	**Triethanolamine**	--	0.6	0.6	0.6	0.6	0.6	0.6
26	**Lime Fragrance**	0.5	0.5	0.5	1	1	1	1
27	**Purified Water**	Q.s	Q.s	Q.s	Q.s	Q.s	Q.s	Q.s

Evaluation of Cream Formulations

Macroscopic Evaluation of Formulations

General Appearance

Physical appearance of drug was examined by various organoleptic properties. The general appearance of cream, its visual identity and overall elegance is essential for consumer acceptance. The control of general appearance involves: color, presence or absence of odor, Homogeneity, Phase separation.

The Assessment Focused on the Following Aspects

Color

The formulation was visually inspected to ensure it exhibited a consistent and uniform color throughout the formulation. Any discoloration or uneven shading could indicate instability or improper mixing of components.

Odor

The formulation was checked for any undesirable or strong odor. A pleasant or neutral scent is important to enhance patient compliance, especially for topical applications. The absence of any foul or medicinal odor was confirmed.

HOMOGENEITY

The formulation was examined for uniformity in texture and composition. A homogeneous formulation should not contain any lumps, grittiness, or particulate matter, and should have a smooth, consistent feel when applied to the skin.

Phase Separation

The formulation was checked for any signs of phase separation, such as the separation of oil and aqueous layers. A stable cream should appear as a single, well-blended phase with no visible separation over time.

Viscosity Test

The cream is inserted into the beaker glass container then the mounted spindle is lowered so that the spindle boundary is dipped into the cream. The speed of the tool mounted at 20 rpm is then read and scaled. When the red needle is moving it has stabilized. Viscosity value (n) is expressed in centipoise (cps).

pH Determination Test

The pH of the cream can be measured on a standard digital pH meter at room temperature by taking adequate amount of the formulation diluted with a suitable solvent.

Skin Irritation Test

The study was conducted on healthy adult volunteers. The preparation is applied on the forearm, then left for 48 hours and seen any change in the form of redness and swelling of the skin.

Spreadability Test

A fixed quantity of each test formulation was uniformly placed on a clean glass slide, a second glass slide was carefully placed on top to sandwich the formulation between the two slides. A standardized weight (50 g) was placed on the upper slide for a fixed duration (1 minute) to ensure even distribution and adhesion of the formulation. The weight was removed, and the time taken for the upper slide to detach completely from the lower slide due to the formulation's viscous flow was recorded in seconds (s) and saw if spread smooth and easily the results evaluated in terms: good, very good, excellent spreadability ensures uniform application over the skin.

Microbial Test

To ensure the microbiological safety of the prepared cream formulations, samples with optimal physical and sensory properties were submitted to a certified local laboratory for evaluation. The testing focused on detecting any microbial contamination that could affect product stability or safety. The presence or absence of viable microorganisms was assessed,

and the formulations were classified accordingly as either passing or failing based on standard microbiological criteria.

Stability Studies for optimized Formulation

A stability study was conducted to evaluate the physical and chemical stability of the optimized formulation under accelerated conditions. The optimized formulation was stored for 3 months in an accelerated stability chamber at 40°C ± 2°C and 75% ± 5% relative humidity. This study aimed to ensure that the formulation maintained their intended physical and chemical characteristics throughout the testing period without undergoing undesirable changes. The evaluation focused on monitoring key physical parameters such as changes in color, odor, clarity, phase separation, and overall appearance of the formulation. As shown in Table 13.

Table 13: Stability Study Parameters.

Stability Study	Temperature (°C)	Humidity (%RH)	Time Period
Accelerated Stability Study	40°C± 2°C	75%± 5% RH	3 Months

RESULTS AND DISCUSSION

Evaluation Parameters of the Cream Formulations

Macroscopic Evaluation of Formulations

All cream formulations (F1-F7) exhibited uniform off white creamy coloration and characteristic lime fragrance odor when evaluated 24 hours post-preparation. All cream formulations showed smooth homogeneous texture except formulation (F1). No separation occurs except in formulations (F1, F2, F3).

Viscosity Test

Viscosity measurements revealed significant variation among the formulations. Formulation F7 exhibited the viscosity at 16001CP within 50 rpm as shown in Table 14.

Table 14: Viscosity of Selected Cream Formulation.

The Optimized Formulation	
R.P.M	**Viscosity (cP)**
20	40216
50	16001
100	3897

pH Determination Test

All results of the optimized formulation demonstrated physiologically acceptable pH values ranging from 4.50 to 5.60 as shown in Table 15.

Table 15: pH Results of The Optimized Cream Formulation.

Substances	Initial	After 3 months
pH Using Triethanolamine	4.50	4.71
pH Using Sodium Dihydrogen Phosphate	4.50	5.60

Skin Irritation Test

The prepared cream formulation was applied on the skin of forearm and affected area, by watching the healthy volunteers, all results exhibited excellent tolerance to formulation without irritation.

Spreadability Test

The spreadability by applying the cream and all results exhibited very good spreadability of formulation.

Microbial Test

All of cream formulation samples submitted for microbiological contamination testing met the predefined sterility criteria. No viable microorganisms were detected in any sample, and the formulation was classified as “pass” according to the standard microbiological acceptance limits. The result for aerobic bacteria and total fungi is < 10, as shown in Figure 4.

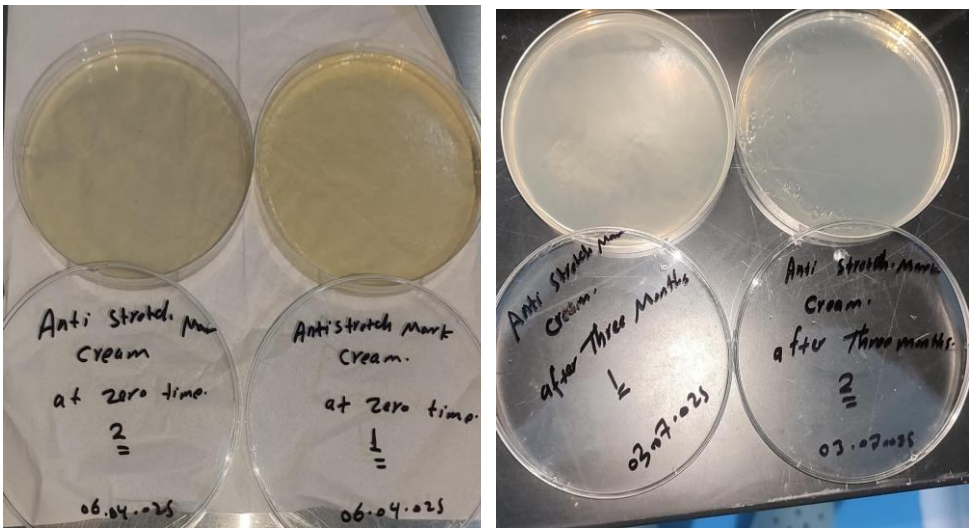

Fig. 4: Microbial Test of the Optimized Formulation.

Stability Study of Optimized Formulation

The evaluation focused on monitoring key physical parameters such as changes in color, odor, clarity, phase separation, and overall appearance (**Error! Reference source not found.**). After the 3 months period, no noticeable changes in appearance, odor, or pH were observed, confirming the robustness and stability of the formulation.

Table 16: Stability Study Results of the Optimized Cream Formulation.

Evaluated Parameter	Initial	After 3 Months
Appearance	Off White Viscous Creamy with Lime Fragrance	Off white Viscous Creamy, Odor Lime
pH	4.50	4.71

CONCLUSION

This study demonstrated the efficacy and safety of a new cream for treating stretch marks, which contains Vitamin C, caffeine, and a blend of natural oils. We developed and evaluated seven different formulations of the cream, each with varying concentrations of ingredients. After conducting thorough evaluations parameters, it was concluded that the optimized cream formulation is the best formulation among all cream formulations NDDS. Formulation scientist from his experience and knowledge have to significantly in the preformulation study stage and is an important factor in the NDDS (Novel Drug Delivery Systems) product development process.

ACKNOWLEDGEMENT

The authors are thankful toYedco Pharmaceutical Industry Company-Yemen, Global Pharmaceutical Industry Company-Yemen, Shaphaco Pharmaceutical Industry Company-Yemen, and Yemen Egyptian Pharmaceutical Industry Company-Yemen, for their support and facilities.

REFERENCES

1. Goldman A & Wollina U. Management of stretch marks with a focus on striae rubrae: Journal of Cutaneous and Aesthetic Surgery., 2016.
2. Amanda M. Oakley, Bhupendra C. Patel. Stretch marks: National Library of Medicine, 2023.
3. Alberts DS, Goldman R, MJ Xu, Dorr RT, Quinn J, Welch K, Guillen-Rodriguez J, Aickin M. Disposition and metabolism of topically administered alpha-tocopherol

acetate: a common ingredient of commercially available sunscreens and cosmetics: Nutrition and Cancer, 1996; 26(2): 193-201.

4. Allen, Loyd V. Jr. Ointments, Creams, and Gels: Ansel's pharmaceutical dosage forms and drug delivery systems, 2018; (11).
5. Bakarat, R. R., Franco, E., Jimenez, M.F.Effect of massage with almond oil on the prevention of striae gravidarum: Journal of Clinical Nursing, 2012; 21(3-4): 422-429.
6. Casabona G & Marchese P. Calcium hydroxylapatite combined with microneedling and ascorbic acid is effective for treating stretch marks: Plastic and Reconstructive Surgery., 2017; 5(9): e1474.
7. Daniyal M., Yaniv-Bachrach Z., Akram M, Bernstein N. Is it safe to consume traditional medicinal plants during pregnancy. Physiotherapy Research: Medical Chemistry Journal, 2021.
8. Guillaume, D. & Charrouf, Z. Argan Oil and Other Argan Products: Use in Dermo cosmetology: European Journal of Lipid Science and Technology, 2011; 113: 403– 408.
9. Herman A, Herman AP. Caffeine's mechanisms of action and its cosmetic use: Skin pharmacology and physiology, 2012; 26(1): 8-14.
10. Kasielska-Trojan A, Sobczak M, Antoszewski B. Risk factors of striae gravidarum: Int J Cosmet Sci., 2015; 37(2): 236-40.
11. Korgavkar K, Wang F. Stretch marks during pregnancy: A review of topical prevention: Br J Dermatol., 2015; 172(3): 15-606.
12. Ledoux M, Beauchet A, Fermanian C, Boileau C, Jondeau G, Saiag P. A . case-control study of cutaneous signs in adult patients with Marfan disease: diagnostic value of striae: J Am Acad Dermatol., 2011; 64(2): 290-5.
13. Lokhande AJ, Mysore V. Striae distensae treatment review and update. Indian Dermatol Online J., 2019; 10(4): 380–395.
14. Lurie S, Matas Z, Fux A, Golan A, Sadan O. Association of serum relaxin with striae gravidarum in pregnant women. Archives of Gynecology and Obstetrics, 2011; 283(2): 219-22.
15. Minjung Chae, Hong Bae, Sunghwan Lim, Kyoungmi Jung, Jounghwa Roh, Kim W. Collagen peptides prevent cortisol-induced decrease of collagen type I in human dermal fibroblasts: International Journal of Molecular Sciences, 2021; 22(9): 4788.
16. Neve S, Kirtschig G. Elastotic striae associated with striae distensae after application of very potent topical corticosteroids. Clin Exp Dermatol., 2006; 31(3): 461-2.

17. Picard D, Sellier S, Houivet E, Marpeau L, Fournet P, Thobois B, Bénichou J, Joly P. Incidence and risk factors for striae gravidarum. J Am Acad Dermatol., 2015; 73(4): 699- 700.
18. Ross NA, Ho D, Fisher J. Striae distensae: preventative and therapeutic modalities to improve aesthetic appearance. Dermatol Surg., 2017; 43(5): 635–648.
19. Sahu T, Patel T, Sahu S, Gidwani B.Skin cream as Topical Drug Delivery System: A Review. Journal of Pharmaceutical and Biological Sciences, 2016; 4(5): 149-154.
20. Salter SA, Kimball AB. Striae gravidarum. Clin Dermatol., 2006; 24(2): 97–100.
21. Summers B, Lategan M. The effect of a topically- applied cosmetic oil formulation on striae distensae: South African Family Practice., 2009; 51(4): 332-336.
22. https://pubchem.ncbi.nlm.nih.gov/compound/Ascorbic acid
23. Alburyhi MM, Noman MA, Saif AA, El-Shaibany A, Hamidaddin MA. Compatibility Studies of Vitamin C with Pharmaceutical Excipients to Development Cream Cosmeceutical as Novel Drug Delivery Systems for Stretch Marks. World Journal of Pharmaceutical Research, 2026; 15(10): 1568-1600.
24. Saif AA, Alburyhi MM, Alkhawlani MA, Noman MA, Saeed SA. Recent Innovative Preformulation Studies of Atorvastatin with Pharmaceutical Excipients to Development Cream for Enhanced Diabetic Wound Healing as Novel Drug Delivery Systems. World Journal of Pharmaceutical and Medical Research, 2026; 12(5): 285-308.
25. Saif AA, Alburyhi MM, Noman MA, El-Shaibany A. Compatibility Studies of Fusidic Acid with Pharmaceutical Excipients to Development Cream Novel Drug Delivery Systems for Enhanced Diabetic Wound Healing. World Journal of Pharmaceutical Research, 2026; 15(10): 1527-1567.
26. Alburyhi MM, Yahya TAA, Saif AA, Noman MA, Alshoba N, Saeed SA. Acyclovir-Excipient Compatibility Studies for Gel Novel Drug Delivery Systems Development. World Journal of Pharmaceutical Research, 2026; 15(6): 1247-1292.
27. Saif AA, Abdullah JH, Alburyhi MM, Noman MA, Saeed SA. Sildenafil-Excipient Compatibility Studies for Pharmaceutical Oral Suspensions Advanced Drug Delivery Systems Development. World Journal of Pharmaceutical Research, 2026; 15(6): 869-908.
28. Noman MA, Saif AA, Alburyhi MM. The Impact of Vitamin D Deficiency and Nutritional Habits on Height and Health Among Yemeni Adult Female Students in Sana'a, Yemen. World Journal of Pharmacy and Pharmaceutical Sciences, 2026; 15(3): 855-875.

29. Alburyhi MM, Saif AA, Noman MA, Saeed SA. Compatibility Studies of Chlorhexidine with Pharmaceutical Excipients for the Development of Gel Novel Delivery Systems. World Journal of Pharmacy and Pharmaceutical Sciences, 2026; 15(4): 1071-1109.
30. El-Shaibany A, Noman MA, Alburyhi MM, Saif AA, *et al. Punica granatum* Flower and *Hibiscus sabdariffa* Calyx: A Narrative Review of Phytochemistry, Antioxidant Mechanisms, and Therapeutic Potential. World Journal of Pharmaceutical Research, 2026; 15(7): 1949-1966.
31. El-Shaibany A, Noman MA, Alburyhi MM, Saif AA, *et al. Punica granatum* Flower and *Hibiscus sabdariffa* Calyx: A Narrative Review of Phytochemistry, Antioxidant Mechanisms, and Synergistic Potential in Oxidative Stress Management. World Journal of Pharmaceutical and Medical Research, 2026; 12(4): 418-427.
32. El-Shaibany A, Noman MA, Alburyhi MM, Saif AA, *et al.* Pharmacological Insights and Pharmaceutical Formulations of *Pandanus odoratissimus* Peduncle and *Curcuma longa*: A Narrative Review of Therapeutic Applications from 2010 to 2025. European Journal of Biomedical and Pharmaceutical Sciences, 2026; 13(4): 375-381.
33. El-Shaibany A, Noman MA, Alburyhi MM, Saif AA, *et al.* Synergistic Potential of *Pandanus odoratissimus* and *Curcuma longa* in the Management of Nocturnal Enuresis: A Comprehensive Narrative Review of Botanical, Pharmacological, and Formulation Strategies. World Journal of Pharmaceutical Research, 2026; 15(7): 1934-1948.
34. El-Shaibany A, Noman MA, Alburyhi MM, Saif AA, *et al.* Pharmacological and Formulation Advances in the Management of Hepatic and Inflammatory Disorders: A Review of *Acalypha fruticosa* and *Tribulus terrestris.* World Journal of Pharmaceutical and Life Sciences, 2026; 12(4): 260-264.
35. El-Shaibany A, Noman MA, Alburyhi MM, Saif AA, *et al.* A Hepatoprotective and Anti-inflammatory Polyherbal Approach: The Synergistic Potential of *Acalypha fruticosa* and *Tribulus terrestris* Extract. European Journal of Pharmaceutical and Medical Research, 2026; 13(4): 520-524.
36. El-Shaibany A, Noman MA, Alburyhi MM, Saif AA, *et al.* The Evolution and Therapeutic Potential of Polyherbal Gels and Key Botanical Extracts in Diabetic Foot Ulcer Management: A Comprehensive Narrative Review. European Journal of Biomedical and Pharmaceutical Sciences, 2026; 13(4): 368-374.
37. El-Shaibany A, Noman MA, Alburyhi MM, Saif AA, *et al.* Global Burden, Pathophysiology, and Emerging Herbal Management Strategies for Diabetic Foot Ulcers:

A Narrative Review. World Journal of Pharmacy and Pharmaceutical Sciences, 2026; 15(4): 1130-1138.

38. El-Shaibany A, Noman MA, Alburyhi MM, Saif AA, *et al.* Antimicrobial Activity of *Commiphora molmol*, *Curcuma longa*, Dragon's Blood Resin, and Propolis Against Diabetic Foot Ulcer Pathogens: An *In Vitro* Evaluation. World Journal of Pharmaceutical Research, 2026; 15(8): 1301-1319.
39. Saif AA, El-Shaibany A, Alburyhi MM, Hamidaddin MA, Noman MA. A Narrative Review of Propolis and Metformin in Topical Dermatology: From Mono-Agent Bioactivities to the Frontier of Emulgel-Based Combination Therapies for Melasma. European Journal of Biomedical and Pharmaceutical Sciences, 2026; 13(5): 248-256.
40. Saif AA, El-Shaibany A, Alburyhi MM, Hamidaddin MA, Noman MA. Recent Advancements Formulation, Development and Pharmacological Activity Evaluation of Aloe Species and Hibiscus sabdariffa for Cancer Supportive Care: A Comprehensive Review. European Journal of Pharmaceutical and Medical Research, 2026; 13(5): 386-393.
41. Hamidaddin MA, El-Shaibany A, Alburyhi MM, Saif AA, Noman MA. Pathogenesis of Melasma, Therapeutic Limitations, and the Emerging Potential of Metformin and Propolis as a Multi-Target Topical Strategy: A Narrative Review. World Journal of Pharmaceutical and Life Sciences, 2026; 12(5): 261-271.
42. Hamidaddin MA, El-Shaibany A, Alburyhi MM, Saif AA, Noman MA. The Synergistic Potential of Aloe rubroviolacea and Hibiscus sabdariffa in Cancer Supportive Care: A Comprehensive Narrative Review. World Journal of Pharmaceutical and Medical Research, 2026; 12(5): 233-240.
43. Alburyhi MM, Al-Ghorafi MA, Saif AA, Noman MA, Saeed SA. Vitamin D3-Excipient Compatibility Studies for Orodispersible Tablets Novel Drug Delivery Systems Development. World Journal of Pharmacy and Pharmaceutical Sciences, 2026; 15(5): 1301-1319.
44. Alburyhi MM, Yahya TAA, Alkhawlani MA, Saif AA, Noman MA. Compatibility Studies of Azithromycin and Paracetamol Combination for the Development as Suppositories Novel Drug Delivery Systems. World Journal of Pharmaceutical and Life Sciences, 2026; 12(5): 309-334.
45. Alburyhi MM, Salim YA, Saif AA, Noman MA. Furosemide-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmaceutical Research, 2024; 13(22): 1178-1219.

46. Alburyhi MM, Saif AA, Noman MA. Lornoxicam-Excipient Compatibility Studies for Microsponge-Based Drug Delivery Systems Development. World Journal of Pharmaceutical and Medical Research, 2025; 11(4): 70-81.
47. Alburyhi MM, Noman MA, Saif AA, Salim YA, Hamidaddin MA, Yahya TA, Al-Ghorafi MA, Abdullah JH. Lisinopril-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmaceutical Research, 2024; 13(16): 59-111.
48. Alburyhi MM, Saif AA, Noman MA, Saif RM. The Importance of Stability Testing in Pharmaceutical Development of Ceftriaxone Implant Biodegradable Tablets. Matrix Science Pharma (MSP)., 2025; 9(2): 58-63.
49. Alburyhi MM, Saif AA, Noman MA, Yassin SH. Compatibility Studies with Pharmaceutical Excipients of Simvastatin for the Development of Novel Drug Delivery Systems. World Journal of Pharmaceutical Research, 2024; 13(19): 1463-1512.
50. Alburyhi MM, Hamidaddin MA, Noman MA, Saif AA, Yahya TA, Al-Ghorafi MA. Rivaroxaban-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. European Journal of Pharmaceutical and Medical Research, 2024; 11(9): 370-404.
51. Alburyhi MM, Noman MA, Saif AA, Hamidaddin MA, Yahya TA, Al-Ghorafi MA. Rosuvastatin Calcium-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmaceutical Research, 2024; 13(13): 1549-1582.
52. Saif AA, Alburyhi MM, Noman MA, Yahya TA, Al-Ghorafi MA. Famotidine-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmaceutical Research, 2024; 13(18): 1346-1408.
53. Al-Ghorafi MA, Alburyhi MM, Saif AA, Noman MA, Yahya TA. Drotaverine-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmaceutical Research, 2024; 13(18): 1285-1340.
54. Alburyhi MM, Saif AA, Noman MA. Ticagrelor-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(10): 1081-1132.
55. Alburyhi MM, Noman MA, Saif AA, Al-Ghorafi MA, Yahya TA, Yassin SH, AlKhawlani MA. Diclofenac-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmaceutical Research, 2024; 13(14): 1297-1333.

56. Noman MA, Alburyhi MM, Saif AA, Yahya TAA. Evaluation and Drug Stability Studies Some Atorvastatin Tablets Brands Available in Sana'a Market Yemen. World Journal of Pharmaceutical and Medical Research, 2024; 10(12): 231-236.
57. Saif AA, Noman MA, Alburyhi MM, Yahya TAA. Evaluation and Drug Stability Studies Some Levocetirizine Tablets Brands Available in Sana'a Market Yemen. World Journal of Pharmaceutical Research, 2024; 13(24): 1009-1022.
58. Al-Ghorafi MA, Alburyhi MM, Saif AA, Noman MA. Meloxicam-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmaceutical and Medical Research, 2025; 11(1): 87-106.
59. Alburyhi MM, Saif AA, Saif RM. Preformulation Study of Ceftriaxone and Ciprofloxacin for Lipid Based Drug Delivery Systems. EJUA-BA, 2022; 3(4): 339-350.
60. Noman MA, Alburyhi MM, Alqubati MA. Preformulation and Characterization Studies of Clopidogrel Active Ingredient for Orodispersible Tablets Development. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(3): 996-1015.
61. Alburyhi MM, Noman MA, Alemad AF. Preformulation Studies of Cefixime for Dispersible Tablets Delivery System Development. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(12): 75-99.
62. Noman MA, Alburyhi MM, Saif AA. Knowledge and Perception about Pharmacovigilance Among 4Th and 5Th Levels Pharmacy Students in Some Public and Private Universities, Sana'a Yemen. World Journal of Pharmaceutical and Medical Research, 2023; 9(11): 14-19.
63. Alburyhi MM, Saif AA, Noman MA. Domperidone-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Biomedical and Pharmaceutical Sciences, 2025; 12(3): 250-269.
64. Alburyhi MM, Saif AA, Noman MA. Spironolactone-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmacy and Pharmaceutical Sciences, 2025; 14(3): 871-910.
65. Saif AA, Alburyhi MM, Noman MA. Ketoprofen-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmacy and Pharmaceutical Sciences, 2025; 14(4): 92-123.
66. Noman MA, Alburyhi MM, El-Shaibany A, Alwesabi NA. Preformulation and Characterization Studies of Pandanus Odoratissimus L Extract Active Ingredient in Treatment of Nocturnal Enuresis. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(2): 1603-1620.

67. Alburyhi MM, Noman MA, Saif AA. Metronidazole-Excipient Compatibility Studies for Medicated Chewing Gum Delivery Systems Development. European Journal of Pharmaceutical and Medical Research, 2025; 12(4): 567-589.
68. Alburyhi MM, Saif AA, Noman MA, AlGhoury ABA. Compatibility Studies of Chloroquine Phosphate with Pharmaceutical Excipients for the Development of Suppositories Novel Drug Delivery Systems. World Journal of Pharmaceutical Research, 2025; 14(14): 1325-1360.
69. Alburyhi MM, Saif AA, Noman MA, Al-Ghorafi MA. Comparative Study of Certain Commercially Available Brands of Paracetamol Tablets in Sana'a City, Yemen. European Journal of Pharmaceutical and Medical Research, 2018; 5(12): 36-42.
70. Saif AA, Alburyhi MM, Noman MA. Evaluation of Vitamin and Mineral Tablets and Capsules in Yemen Market. Journal of Chemical Pharma Research, 2013; 5(9): 15-26.
71. Alburyhi MM, Saif AA, Noman MA, Al Khawlani MA. Bisoprolol-Excipient Compatibility Studies for Advanced Drug Delivery Systems Development. World Journal of Pharmaceutical and Medical Research, 2024; 10(10): 304-324.
72. Noman MA, Alburyhi MM, Yahya TAA, Saif AA. Evaluation and Drug Stability Studies of Different Brands of Clopidogrel Tablets Available in Sana'a City Market, Yemen. European Journal of Biomedical and Pharmaceutical Sciences, 2025; 12(7): 181-191.
73. Alburyhi MM, Saif AA, Noman MA. Compatibility Studies of Sulfadoxine with Pharmaceutical Excipients for the Development of Suppositories Novel Drug Delivery Systems. World Journal of Pharmaceutical and Life Sciences, 2025; 11(9): 189-207.
74. Alburyhi MM, Saif AA, Noman MA. Compatibility Studies with Pharmaceutical Excipients of Clopidogrel for the Development of Novel Delivery Systems. World Journal of Pharmaceutical Research, 2025; 14(06): 1448-1486.
75. Saif AA, Alburyhi MM, Noman MA, Abudunia A. Amoxicillin-Excipient Compatibility Studies for Advanced Drug delivery Systems Development. European Journal of Pharmaceutical and Medical Research, 2025; 12(6): 530-562.
76. Noman MA, Alburyhi MM, Saif AA, Yahya TAA. Assessment of Knowledge, Attitude, and Practice of Pharmacovigilance Among Pharmacists and Health care Professionals in Four Government Hospitals at Sana'a City, Yemen. European Journal of Biomedical and Pharmaceutical Sciences, 2025; 12(5): 250-267.
77. Alburyhi MM, Saif AA, Noman MA. Compatibility Studies of Pyrimethamine with Pharmaceutical Excipients for the Development of Suppositories Novel Drug Delivery Systems. European Journal of Pharmaceutical and Medical Research, 2025; 12(9): 394-

412.

78. Noman MA, Alburyhi MM, Saif AA. Effect of Chewing Khat on Nutritional Status Among Female Students at Undergraduate Level in Sana'a, Yemen. World Journal of Pharmaceutical Research, 2023; 12(20): 75-88.
79. Noman MA, Alburyhi MM, Saif AA. Knowledge, Attitude and Practice Regarding the Proper Use, Risks and Resistance of Antibiotics Among Undergraduate Level Medical and Health Sciences Students in Sana'a, Yemen. European Journal of Pharmaceutical and Medical Research, 2025; 12(12): 414-425.
80. Alburyhi MM, Mohamed YAS, Saif AA, Noman MA. Compatibility Studies with Pharmaceutical Excipients of Amlodipine for the Development of Novel Delivery Systems. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(11): 95-136.
81. Chauhan I, Yasir M, Verma M, Singh AP. Nanostructured Lipid Carriers: A Groundbreaking Approach for Transdermal Drug Delivery. Advanced Pharmaceutical Bulletin., 2020; 10(2): 150.
82. Pereira MN, Schulte HL, Duarte N, Lima EM, Sá-Barreto LL, Gratieri T, Cunha-Filho MS. Solid effervescent formulations as new approach for topical minoxidil delivery. European Journal of Pharmaceutical Sciences, 2017; 96: 411-419.
83. Bharadwaj Sudhir, Gupta G.D, Sharma VK. Topical Gel: A Novel approach for drug delivery. Journal of Chemical Biological and Physical Sciences, 2012; 2(2): 856-866.
84. Suchithra AB, S Jeganath, E Jeevitha. Pharmaceutical Gels and Recent Trends –A Review, Research J. Pharm. And Tech., 2019; 12(12): 6181-6186.
85. Tafuro G, Costantini A, Baratto G, Busata L, Semenzato A. Rheological and Textural Characterization of Acrylic Polymer Water Dispersions for Cosmetic Use. Ind. Eng. Chem. Res., 2019; 58: 23549–23558.
86. Prem Samundre, Surendra Dangi, Teena Patidar, Shubham Maroti Shende. a review on topical gel, International Journal of Creative Research Thoughts., 2020; 8(4): 3951-3954.
87. Venkatesh MP, Kumar TP, Pai DR. Targeted drug delivery of Methotrexate in situ gels for the treatment of Rheumatoid Arthritis. Saudi pharmaceutical journal: SPJ: the official publication of the Saudi Pharmaceutical Society, 2020; 28(12): 1548–1557. https://doi.org/10.1016/j.jsps.2020.10.003
88. Vasave Ranjit D, Valvi Dinesh R, Prof. Dusane Prachee K, Dr. Pawar Sunil P. A Formulation & Evaluation of Mucoadhesive Benzocaine Gel, European Journal of Biomedical AND Pharmaceutical sciences, 2019; 6(13): 5.

89. Niyaz BB. "Formulation and evaluation of Gel containing Fluconazole-Antifungal agent". International Journal of Drug Development and Research, 2011; 3.4: 109-128.
90. Abhishek Soni, Dr. Amit chaudhary, Dr.shivali singla, Dr. sachin goyal. Review on novel approach in pharmaceutical gel, 2019; 8(6): 429-435.
91. Patel RR, Patel KR, Patel MR. Formulation and Characterization of Microemulsion based Gel of Antifungal Drug, Pharma Tutor., 2014; 2(2): 79-89.
92. Vijay Kumar Singh, Praveen Kumar Singh, Purnendu Kumar Sharma, Peeyush Kumar Srivastava, Ashutosh Mishra. Formulation and evaluation of topical gel of Acelofenac containing piperine Indo American journal of pharmaceutical research, 2013; 3(7): 5266-5280.
93. Nishiganda SG, Shivappa NN, Sakhare RS, Gaware RG. A review on gel as a recent approach for novel drug delivery. Eur J Biomed Pharm Sci., 2019; 6(2): 189-96.
94. Sharma B, Singh LR. Pharmaceutical gels for topical drug delivery: An overview. Int J Pharm PharmSci., 2018; 3(2): 19-24.
95. Patil PB, Datir SK, Saudagar RB. "A Review on Topical Gels as Drug Delivery System." Journal of Drug Delivery & Therapeutics., 2019; 9(3): 989-994.
96. Kumari N, Verma S, Kumar S. "Microsponge: An Advanced Drug Delivery System", Journal of Clinical and Scientific Research, 2021; 10(2): 108-111.
97. Nagaria RK., Puranik SB. "Evaluation of Gel Formulations by Quality by Design concept", International Journal of Pharmacy & Pharmaceutical Research, 2019; 14(4): 130-151.
98. Raj H, Sharma S, Sharma A, Verma K, Chaudhary A. "A Novel Drug Delivery System: Review on Microspheres", Journal of Drug Delivery & Therapeutics, 2021; 11(2): 156-161.
99. Sharma GS, Lankala A, R Shireesh Kiran, Rao RT. A Review on pharmaceutical Gels, YMER Digital., 2022; 21(12): 1338- 1351.
100. Parihar N, Saini M, Soni SL, Sharma V. Emulgel: A Topical Preparation, Asian Journal of Pharmaceutical Research and Development, 2020; 8(3): 196-201.
101. Rode RJ, Dixit GR, Upadhye KP, Bakhle SS, Durge RT. A Comprehensive Review on Emulgel: A New Approach for Enhanced Topical Drug Delivery, International Journal of Modern Pharmaceutical Research, 2021; 5(3): 222-233.
102. Kullar R, Saini S, Steth N, Rana AC. Emulgel a Surrogate Approach for Topical Used Hydrophobic Drugs. Int J Pharm Biol Sci., 2011; 1: 117-28.

103. Kosmadaki M, Katsambas A. Topical Ttreatments for Acne. Clin Dermatol., 2017; 35(2): 173-178.
104. Single V, Saini S, Joshi B, Rana AC. Emulgel: a New Platform for Topical Drug Delivery. Int J Pharm Biol Sci., 2012; 3: 485-98.
105. RdCecv G, Mazgareanu S, Rother M. Preclinical Characterisation of NSAIDs in Ultra Deformable Carriers or Conventional Topical Gels. Int J Pharm., 2008; 360: 29-39.
106. Ayub AC, Gomes AD, Lima MV, Vianna-Soares CD, Ferreira LA.Topical Delivery of Fluconazole: In-vitro Skin Penetration and Permeation Using Emulsions as Dosage Forms. Drug Dev Ind Pharm., 2007; 33: 273-80.
107. Light k, Karboune S. Emulsion, hydrogel and Emulgel system and novel application in cannabinoid delivery: a review. Taylor & Francis Group, 2021; 22: 1-31.
108. Satya Lakshmi S, Divya R, Srinivasa Rao Y, Kamala Kumari PV, Deepthi K. Emulgel Novel Trend in Topical Drug Delivery System - Review Article. Research J Pharm Tech., 2021; 14(5): 2903-2906.
109. Anand K, Ray S, Rahman M, Shaharya M A, Bhowmik R, Bera R. Nano-Emulgel: Emerging as a Smarter Topical Lipidic Emulsion-based Nanocarrier for Skin Health Care Applications, 2019; 14(1): 16-35.
110. Shiva Kumar Yellanki, Jeet Singh, Manvi FV. Formulation, Characterization and Evaluation of Metronidazole Gel for Local Treatment of Periodontitis. International Journal of Pharma and Biosciences, 2010; 1: 2, 14.
111. Charoenrein S, Tatirat O, Rengsutthi K, Thongngam M. Effect of Konjac Glucomannan on Syneresis, Textural Properties and The Microstructure of Frozen Rice Starch Gels. Carbohydr Polym., 2011; 83: 291-6.
112. Pathan IB, Setty CM. Chemical Penetration Enhancers for Transdermal Drug Delivery Systems. Tropical Journal of Pharmaceutical Research, 2009; 8: 173-179.
113. Kapadiya B, Gohil D, Patel D, Patel S, Aundhia C, Shah N, Pandya K, Shah C. Formulation and Evaluation of Spironolactone Loaded Emulgel for Topical Application. J Pharm Sci Bioscientific Res., 2016; 6(5): 740-752.
114. Anchal, S., Swarnima, P., Arpita, S., Aqil, S. and Nitish, P. Cream: A Topical Drug Delivery System (TDDS). drug delivery system, 2021; 4: 5.
115. Nunse, D.K., Jadhav, R.N. and Deshmukh, A.S. Cream as a Drug Delivery System for Topical Diseases. Research Journal of Topical and Cosmetic Sciences, 2022; 13(1): 35-43.

116. Valarmathi DS, Admuthe JA, Pimpalshende DPM, et al. Formulation and Optimization of Topical Creams for Dermatological Disorders. Educ Adm Theory Pract., 2024; 30(5): 10653-10659. doi:10.53555/KUEY.V30I5.4793.
117. Devi D, Mishra A, Mishra S. Formulation, Development and Characterization of Herbal Cream. Asian J Pharm Res Dev., 2025; 13(4): 42-46. doi:10.22270/AJPRD.V13I4.1590.
118. P Pranaya, Tadikonda Rama Rao, Guthpala Mahesh, Rekulapally Nikhitha Reddy and Cheerla Sai Babu. A comprehensive review on herbal creams. Journal of Pharmacognosy and Phytochemistry, 2025; 14(3): 115-119.
119. Verma A, Ahuja D. Formulation and Evaluation of an herbal cream containing extract of Curcuma longa and Trigonella Foenum seeds Powder. Pakistan Heart Journal, 2023; 56(3): 598-600.
120. Pratikcha R, Adarsh P, Sujit Das, Pharmaceutical Creams and their use in wound healing: A Review, Journal of Drug Delivery & Therapeutics, 2019; 9(3-s): 907-912.
121. Bary AA, El-Gazayerly ON, Alburyhi MM. A Pharmaceutical Study on Lamotrigine. Ph.D. Thesis, Faculty of Pharmacy, Cairo University, 2009.
122. Alburyhi MM, Yahya TAA, Saif AA, Noman MA. Formulation and Evaluation of Lornoxicam Microsponge-Based Gel as A Transdermal Drug Delivery Systems. World Journal of Pharmaceutical and Life Sciences, 2025; 11(5): 200-217.
123. Alburyhi MM, Hamidaddin MA, Noman MA, Saif AA. Recent Innovations of Novel Drug Delivery Systems for Formulation, Development and Evaluation of Metronidazole Medicated Chewing Gum Tablets. European Journal of Biomedical and Pharmaceutical Sciences, 2025; 12(6): 353-370.
124. Noman MA, Alburyhi MM, Saif AA, Yahya TAA. Formulation and Evaluation of Polyherbal Extract for Skin Hyperpigmentation as Gel Advanced Delivery Systems. World Journal of Pharmaceutical Research, 2024; 13(22): 1260-1280.
125. Alburyhi MM, Noman MA, Saif AA, Al-Ghorafi MA, Al Khawlani MA, Yahya TAA. Formulation and Evaluation of Anti-acne Spironolactone Emulgel Novel Trend in Topical Drug Delivery System. World Journal of Pharmaceutical Research, 2023; 12(22): 96-119.
126. Saif AA, Noman MA, Alburyhi MM. Formulation and Evaluation of Salicylic Acid and Kojic Acid as Gel Novel Drug Delivery Systems for Treatment of Acne and Whitening Skin Effect. World Journal of Pharmaceutical and Medical Research, 2025; 11(9): 538-548.
127. Alburyhi MM, Saif AA, Noman MA, Abudunia A, Yassin SH, Abdullah JH. Formulation, Development and Evaluation of Amoxicillin Fast Dissolving Tablets. World

Journal of Pharmaceutical and Life Sciences, 2025; 11(7): 183-197.

128. Raweh SM, Noman MA, Alburyhi MM, Saif AA. Formulation and Evaluation of Anti-acne Gel of Azadirachta Indica Extract Herbal Product. European Journal of Pharmaceutical and Medical Research, 2024; 11(2): 427-433.
129. Alburyhi MM, Noman MA, Saif AA. Formulation and Evaluation of Natural Herbal Anti-acne as Gel Delivery Systems. World Journal of Pharmaceutical Research, 2024; 13(21): 1447-1467.
130. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Aloe Vera Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Controlling Diabetes. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(4): 1408-1423.
131. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Curcuma Longa Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Cancer. European Journal of Biomedical and Pharmaceutical Sciences, 2024; 11(6): 37-43.
132. Hamidaddin MA, Alburyhi MM, Noman MA, Saif AA. Formulation and Evaluation of Rosuvastatin Fast Dissolving Tablets. World Journal of Pharmacy and Pharmaceutical Sciences, 2023; 12(9): 2293-2303.
133. Bary AA, El-Gazayerly ON, Alburyhi MM. Formulation of Immediate Release Lamotrigine Tablets and Bioequivalence Study. Journal of Chemical Pharm Research, 2013; 5(10): 266–271.
134. Alburyhi MM, El-Shaibany A. Recent Innovations of Novel Drug Delivery Systems for Formulation, Development and Evaluation of Aloe Rubroviolaceae Extract Capsules as Naturaceutical for Hepatoprotective. European Journal of Biomedical and Pharmaceutical Sciences, 2024; 11(4): 53-61.
135. Alburyhi MM, Saif AA, Noman MA, Yahya TA. Formulation, Development and Evaluation of Famotidine Orodispersible Tablets. European Journal of Pharmaceutical and Medical Research, 2023; 10(10): 56-62.
136. Alburyhi MM, Saif AA, Noman MA, Salim YA, Hamidaddin MA. Formulation and Evaluation of Lisinopril Orally Disintegrating Tablets. World Journal of Pharmacy and Pharmaceutical Sciences, 2023; 12(9): 357-369.
137. Alburyhi MM, Hamidaddin MA, Saif AA, Noman MA. Formulation and Evaluation of Rivaroxaban Orodispersible Tablets. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(2): 2066-2092.

138. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Aloe Vera Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Cancer. World Journal of Pharmaceutical Research, 2024; 13(8): 1052-1072.
139. Alburyhi MM, Saif AA, Noman MA, Saif RM. Recent Innovations of Delivery Systems for Antimicrobial Susceptibility Study of Ciprofloxacin Biodegradable Formulations for Post-Operative Infection Prophylaxis. European Journal of Pharmaceutical and Medical Research, 2023; 10(9): 32-36.
140. Alburyhi MM, Noman MA, Saif AA. Formulation and Evaluation of Acyclovir Gel as Novel Drug Delivery Systems for Topical Antiviral Applications. World Journal of Pharmacy and Pharmaceutical Sciences, 2026; 15(6): 1336-1377.
141. Alburyhi MM, Noman MA, Aboghanem A. Effect of Different Excipients on Formulation of Immediate Release Artemether/Lumefantrine Tablets. Journal of Chemical Pharm Research, 2013; 5(11): 617-625.
142. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Dictyota Dichotoma Extract Medicinal Seaweed Capsules Delivery System as an Advanced Phytotherapy Approach for Cancer. European Journal of Biomedical and Pharmaceutical Sciences, 2024; 11(4): 63-70.
143. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Celery Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Gout. World Journal of Pharmaceutical Research, 2024; 13(11): 2383-2404.
144. Othman AM, Alburyhi MM, Al-Hadad GH. Formulation and Evaluation of Captopril Mouth Dissolving Tablets. European Journal of Pharmaceutical and Medical Research, 2024; 11(1): 18-28.
145. Alburyhi MM, Saif AA, Noman MA. Formulation and Evaluation of Ticagrelor Orodispersible Tablets. World Journal of Pharmaceutical Research, 2024; 13(5): 26-55.
146. Alburyhi MM, Saif AA, Noman MA, Yahya TA, Al-Ghorafi MA. Formulation and Evaluation of Drotaverine Orally Disintegrating Tablets. World Journal of Pharmaceutical Research, 2023; 12(18): 66-79.
147. Alburyhi MM, Saif AA, Noman MA. Formulation and Evaluation of Acyclovir and Chlorhexidine Oral Emulgel as Novel Drug Delivery Systems. World Journal of Pharmaceutical Research, 2026; 15(11): 2298-2341.
148. Alburyhi MM, El-Shaibany A. Formulation and Evaluation of Effervescent Granules of Artemisia Arborescence Herbal Product for Foodborne Illness. World Journal of Pharmacy and Pharmaceutical Sciences, 2023; 12(12): 1429-1444.

149. Alburyhi MM, Noman MA, AA Saif. Formulation and Evaluation of Meloxicam Emulgel Delivery System for Topical Applications. World Journal of Pharmaceutical Research, 2025; 14(4): 1324-1337.
150. Bary AA, El-Gazayerly ON, Alburyhi MM. A Pharmaceutical Study on Methocarbamol. MSc Thesis, Faculty of Pharmacy, Cairo University., 2006.
151. Alburyhi MM, Noman MA, Saif AA, Alemad AF. Dispersible and Orodispersible Tablets Delivery Systems for Antibacterials Development. World Journal of Pharmaceutical Research, 2025; 14(1): 1229-1257.
152. Alburyhi MM, Saif AA, Noman MA, Saif RM. Recent Innovations of Delivery Systems for Antimicrobial Susceptibility Study of Ceftriaxone Biodegradable Formulations for Post-Operative Infection Prophylaxis. European Journal of Pharmaceutical and Medical Research, 2023; 10(8): 95-99.
153. Alburyhi MM, Saif AA, Noman MA, Yassin SH. Formulation and Evaluation of Simvastatin Orodispersible Tablets. World Journal of Pharmaceutical Research, 2023; 12(16): 1033-1047.
154. Alburyhi MM, El-Shaibany A. Formulation and Evaluation of Anti-peptic Ulcer Capsules of Curcuma Longa Herbal Product. World Journal of Pharmaceutical Research, 2023; 12(22): 76-96.
155. Alburyhi MM, Saif AA, Noman MA, Al Ghoury AA. Formulation and Evaluation of Antimalarial Drugs Suppositories. World Journal of Pharmaceutical Research, 2023; 12(20): 89-108.
156. Alburyhi MM, Saif AA, Noman MA, Saeed SA, Al-Ghorafi MA. Formulation and Evaluation of Diclofenac Orodispersible Tablets. European Journal of Pharmaceutical and Medical Research, 2023; 10(9): 01-06.
157. Saif AA, Alburyhi MM, Noman MA. Formulation and Evaluation of Ketoprofen Fast Dissolving Tablets. International Journal of Sciences, 2018; 7(09): 27- 39.
158. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Chamomile Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Gout. World Journal of Pharmaceutical and Life Sciences, 2025; 11(04): 215-228.
159. Alburyhi MM, Saif AA, Noman MA, Alkhawlani MA. Formulation and Evaluation of Bisoprolol Fast Dissolving Tablets. World Journal of Pharmaceutical Research, 2023; 12(16): 01-10.
160. Alburyhi MM, El-Shaibany A. Formulation and Evaluation of Antitumor Activity of Artemisia Arborescence Extract Capsules as Dietary Supplement Herbal Product Against

Breast Cancer. World Journal of Pharmaceutical Research, 2024; 13(3): 95-114.

161. Noman MA, Alburyhi MM, El-Shaibany A, Alwesabi NA. Formulation and Evaluation of Pandanus Odoratissimus L Extract for Treatment of Nocturnal Enuresis as Orodispersible Tablets Delivery System. World Journal of Pharmaceutical Research, 2024; 13(5): 56 -71.
162. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Tribulus Terrestris Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Controlling Diabetes. World Journal of Pharmaceutical Research, 2024; 13(7): 1264-1282.
163. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Pandanus Odoratissimus Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Hepatoprotective. European Journal of Pharmaceutical and Medical Research, 2024; 11(4): 06-13.
164. Alburyhi MM, Noman MA, Saif AA, Salim YA, Abdullah JH. Formulation and Evaluation of Domperidone Orodispersible Tablets. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(3): 49-68.
165. Alburyhi MM, Saif AA, Noman MA, Hamidaddin MA. Formulation and Evaluation of Clopidogrel Orodispersible Tablets. World Journal of Pharmaceutical Research, 2024; 13(6): 42-64.
166. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Plicosepalus Acacia Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Hepatoprotective. World Journal of Pharmaceutical Research, 2025; 14(8): 1309-1334.
167. Alburyhi MM, El-Shaibany A. Formulation and Evaluation of Oral Pharmaceutical Solution of Pandanus Odoratissimus L Extract Herbal Product in Treatment of Nocturnal Enuresis. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(1): 1840-1851.
168. Alburyhi MM, El-Shaibany A. Formulation and Evaluation of Antibacterial Orodispersible Tablets of Artemisia Arborescence Extract Herbal Product. European Journal of Pharmaceutical and Medical Research, 2024; 11(2): 409-417.
169. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Acalypha Fruticosa Extract Tablets Delivery System as an Advanced Phytotherapy Approach for Controlling Diabetes. World Journal of Pharmaceutical Research, 2024; 13(8): 1073-1091.
170. Alburyhi MM, Mohamed YAS, Saif AA, Noman MA, Abdullah JH, Yahya TAA. Recent

Innovations of Novel Drug Delivery Systems for Formulation, Development and Evaluation of Amlodipine and Furosemide Orodispersible Tablets. World Journal of Pharmaceutical and Medical Research, 2025; 11(5): 358-378.

171. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Ginger Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Controlling Diabetes. World Journal of Pharmaceutical and Medical Research, 2025; 11(6): 400-415. Alburyhi MM, Mohamed YAS. Formulation, Development and Evaluation of Cosmeceutical Natural Pigmented Lipstick from Opuntia Dillenii Fruit Extract. European Journal of Biomedical Pharmaceutical and Medical Sciences, 2025; 12(9): 466-479.
172. Alburyhi MM, Moharram BA. Formulation and Evaluation of Aloe Niebuhriana Extract as Naturaceutical Effervescent Granules Novel Drug Delivery Systems for Antidiabetic Activity. World Journal of Pharmaceutical Research, 2025; 14(18): 1147-1175.
173. Alburyhi MM, Moharram BA. Formulation and Evaluation of Jatropha Variegata Extract as Antibacterial Naturaceutical Cream Novel Drug Delivery Systems for Wound Healing Activity. World Journal of Pharmaceutical and Life Sciences, 2025; 11(10): 177-190.
174. Noman MA, Alburyhi MM, Saif AA. Formulation and Evaluation of Skin Whitening Naturaceutical Composition Gel as Advanced Drug Delivery Systems. World Journal of Pharmaceutical and Medical Research, 2025; 11(10): 400-414.
175. Mohamed YAS, Alkhawlani MA, Faisal A, Alburyhi MM. Modern Analytical Techniques Used in Authentication of Yemeni Sider Honey. World Journal of Pharmacy and Pharmaceutical Sciences, 2025; 14(6): 1414-1429.
176. Saif AA, Alburyhi MM, Noman MA. Formulation and Evaluation of Sildenafil Citrate as Pharmaceutical Reconstitutable Oral Suspensions Advanced Drug Delivery Systems for Management of Pediatric Pulmonary Arterial Hypertension. World Journal of Pharmacy and Pharmaceutical Sciences, 2026; 15(5): 965-992.
177. Alburyhi MM, Moharram BA. Formulation and Evaluation of Aloe Inermis Extract for Wound Healing Activity as Antibacterial Naturaceutical Cream Novel Drug Delivery Systems. European Journal of Pharmaceutical and Medical Research, 2025; 12(10): 297-308.
178. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Plicosepalus Acacia Extract Capsules as Naturaceutical Novel Drug Delivery Systems for Controlling Diabetes. World Journal of Pharmaceutical and Life Sciences, 2025; 11(6): 323-337.
179. Alburyhi MM, Raweh SM, AlGhoury ABA, Alkhawlani MA, Noman MA, Saif AA.

Recent Innovations of Novel Drug Delivery Systems for Formulation, Development and Evaluation of Grewia Tenax Extract Naturaceutical Ointment for Antimicrobial Activity. World Journal of Pharmaceutical and Medical Research, 2025; 11(7): 413-426.

180. Alburyhi MM, Raweh SM, Al-Ghorafi MA, Saif AA, Noman MA. Formulation and Evaluation of Argemone Ochroleuca Extract Cream Naturaceutical Delivery Systems as Antimicrobial and Wound Healing Activity. European Journal of Pharmaceutical and Medical Research, 2025; 12(7): 445-459.
181. Alburyhi MM, El-Shaibany A. Recent Innovations of Novel Drug Delivery Systems for Formulation, Development and Evaluation of Pandanus Odoratissimus Extract Capsules as Naturaceutical for Breast Cancer. World Journal of Pharmaceutical Research, 2024; 13(8): 1092-1112.
182. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Tribulus Terrestris Extract Capsules as Naturaceutical Novel Drug Delivery Systems for Kidney Stones. World Journal of Pharmacy and Pharmaceutical Sciences, 2024; 13(5): 1425-1443.
183. Alburyhi MM, El-Shaibany A. Formulation, Development and Evaluation of Capsicum Extract Capsules Delivery System as an Advanced Phytotherapy Approach for Tonic and Natural Stimulant. European Journal of Pharmaceutical and Medical Research, 2025; 11(6): 323-337.
184. Hagavane, S., Sonawane, S., Katkale, A., & Kunde, V. Review on cream as topical drug delivery system. International Journal of Research in Pharmacy and Pharmaceutical Sciences, 2022; 7(1): 21-30.
185. Mukund M, Shete SS, Jain S. Preparation and Evaluation of Herbal Turmeric Cream. International Journal of Innovative Research in Technology, 2023; 10(1): 182 187.
186. Rabade VS, Pawar MS, Titarmare GK. Formulation and Evaluation of Polyherbal Cold Cream. International Journal for Pharmaceutical Research Scholars, 2020; 9(4): 25-31.
187. Prachi DA, Mr.DM Waghmode, Santhosh J. Review on pharmaceutical creams. International journal of creative research thoughts, 2023; 11(3): 49-70.
188. Sujata PC, Rahul MD, Vikrant VW, Arun AP. Formulation and evaluation of herbal antifungal cream of zingiber officinale. Research journal science and technology, 2023; 15(3): 129-134.
189. Diksha KN, Rohini NJ, Amol SD. Cream as a drug delivery system for topical disease. Research journal topical and cosmetic science, 2022; 13(1): 35-43.

190. Lalita C, Shalini G. Creams; A review on classification, preparation methods, evaluation and its application. Journal of drug delivery and therapeutic, 2020; 10(5.5): 281-289.
191. Mandal S, Bhattacharya R, Kumar G, Gupta K, Saifullah SM. Formulation and evaluation of herbal antifungal cream of garlic oil and clove oil. International journal of pharmaceutical research and applications, 2021; 6(5): 799-805.
192. Pradeepa T, Kumar MA, Murali A. A pharmaceutical cream. World journal of pharmaceutical research, 2023; 12(14): 110-121.