

FORMULATION AND EVALUATION OF ALOE INERMIS EXTRACT FOR WOUND HEALING ACTIVITY AS ANTIBACTERIAL NATURACEUTICAL CREAM NOVEL DRUG DELIVERY SYSTEMS**Prof. Dr. Mahmoud Mahyoub Alburyhi^{1*}, Prof. Dr. Bushra Moharram²**¹Professor Dr. of Pharmaceutics and Industrial Pharmacy, Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Sana'a University, Sana'a, Yemen.²Professor Dr. of Pharmacognosy, Department of Pharmacognosy, Faculty of Pharmacy, Sana'a University, Sana'a, Yemen.***Corresponding Author: Prof. Dr. Mahmoud Mahyoub Alburyhi**Professor Dr. of Pharmaceutics and Industrial Pharmacy, Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Sana'a University, Sana'a, Yemen. DOI: <https://doi.org/10.5281/zenodo.17277353>

Article Received on 25/08/2025

Article Revised on 14/09/2025

Article Accepted on 04/10/2025

ABSTRACT

Aloe inermis is a non-African species native to western Yemen and grow in dry stone hills at around 1000-2000 m in elevation. *Aloe inermis* belongs to family Aloeacea and is used traditionally in skin care for burns, rashes, allergic irritation, wounds and infections. According to previous study that reported the wound healing activity of *Aloe inermis* latex. In the current study, the dry latex of *Aloe inermis* was formulated in seven formulations to study the variant characteristics of cream. The present study is aimed to formulate the methanolic extract into a suitable herbal cream and evaluate for its physiochemical, and stability parameters. Among the seven formulations (F1-F7), F7 showed good spreadability, good consistency, homogeneity, appearance, pH; there is no proof of a separation phase and ease of washability. The compositions of formulation F7 were *Aloe inermis* extract, Cetomacrogol, Cetostearyl alcohol, Liquid paraffin, white soft paraffin, Propylene glycol, Chlorocresol, Beeswax, Sodium dihydrogen phosphate, Titanium dioxide, Lavender oil, Methylparaben, and Purified water. It was concluded that the best formulation selected F7 was safe in respect to natural herb offer diverse benefits in cream preparations, as evidenced by this study, highlighting the safety compared to commercial semisolid products. The study showed that the extract of *Aloe inermis* could be used as an alternative for wound healing activity as cream NDDS formulation.

KEYWORDS: *Aloe inermis*, Cream Formulation, Antimicrobial agent, Wound Healing Activity, Novel Drug Delivery Systems.**INTRODUCTION****Background of The Genus *Aloe Inermis*^[1,30]**

Aloe inermis is a non-African species native to western Yemen and grow in dry stone hills at around 1000 - 2000 m in elevation. *Aloe inermis* (Figure 1) a suckering small shrubby aloe that forms clumps to 2 feet tall of open rosettes of long narrow decurved pale olive-green leaves on short stems that are smooth to the touch with a deep central channel and toothless margins. In fall into winter

appear the 2- to 3-foot-tall branching inflorescence with salmon red flower buds that are purple green at the tip and open with green stripped cream petal lobes, Plant in full sun in a well-drained soil and irrigate occasionally to very little -quite drought tolerant and hardy to around 25 °F, this is an attractive and unusual aloe as a garden or pot specimen with no teeth or other sharp pointed appendages.

**Fig. 1: Leaves and Flowers of *Aloe Inermis*.**

Traditional Uses of Aloe Species

Aloe Vera has been used for over five thousand years. The ancient Egyptians used *Aloe* to heal battle wounds and cure infections. The Greeks used *Aloe* for relieving blisters, burns, leg ulcer and bowel and stomach disorders. In pervious study reviewed the traditional uses of *aloe*; in India the traditional medicine of Aloe is used internally as a laxative, antihelminthic, hemorrhoid remedy, and uterine stimulant (menstrual regulator); it is also used topically, often in combination with licorice root, to treat eczema or psoriasis. In Arabian medicine, the fresh gel is rubbed on the forehead as a headache remedy or rubbed on the body to cool it in case of fever, as well as being used for wound healing, conjunctivitis, and as a disinfectant and laxative. The Chinese describe aloe's skin and the inner lining of its leaves as a cold, bitter remedy which is downward and used to clear constipation due and the gel is considered cool and moist.^[6]

Pharmacological Action

Antibacterial, antioxidant, and wound healing activities of *Aloe inermis* was reported previously.^[6]

Active Constituents

phytochemical screening of the latex, methanol extracts of *Aloe inermis* revealed the presence of alkaloids, carbohydrates, phytosteroids, anthraglycosides, phenolic and tannins.^[6]

Wound Healing^[6-64]

Wounds can be major causes of physical disability and may lead to loss of many productive hours. Essentially, wounds are the disruption of functional continuity and anatomical structure of cells and tissues at the sites of injury. They can be caused by insults to the tissue by physical, chemical, microbiological or immunological processes. It has been estimated that 14 million people suffer from wounds and burns annually with over 80 percent of these living in low- and middle-income countries.

Wound healing is a complex and dynamic process in which cellular structure and tissue layer of the damaged tissue are restored to its normal state as closely as possible. Synthetic chemical moieties are the present treatment regimens for the management of under healing of wound but they possess a wide range of side effects. Therefore, research has prompted into herbal and natural products which known to increase the healing of different types of wounds and which can eliminate the side effects that were associated with the synthetic chemical moieties.

WHO encourages, recommends and promotes traditional herbal medicines in national health care programs because these drugs are easily available at low cost, and people have faith in them. Plants and their extracts have immense potential for the management and treatment of wounds. These natural agents induce healing and

regeneration of the lost tissue by multiple mechanisms. Herbal treatment for wounds provides fibro-genetic and concentration of collagen resulting in faster wound healing. *Aloe Vera* is an excellent remedy for minor burns, cuts and sunburns. Both juice and aqueous extract from the leaves shows significant healing properties. It is also reported that it not only speeds up healing but also prevents injured surface from getting infected.

Aloe inermis is one of the non-African species, is native to western Yemen. *Aloe inermis* was evaluated for the potential of latex extract to accelerate the rate of wound healing. Wounds dressed with latex showed remarkably less scar width at wound, less inflammatory cell, and more fibroblast wounds.^[6]

Semisolid Drug Delivery Systems^[15,145]

Semisolid constitute a significant portion of pharmaceutical dosage form. They serve as carriers for drugs that are topically delivered by way of skin, cornea, rectal tissue, nasal mucosa, vagina, buccal tissue, urethral membrane, and external ear lining. Because of their peculiar rheological behavior, semisolid can adhere to the application surface for sufficiently long periods before they are washed off. This property helps prolong drug delivery at the application site.

Semisolids are available as a wide range of dosage forms, each having unique characteristics. Topical semisolid dosage forms are normally presented in the form of creams, gels, ointments, or pastes. They contain one or more active ingredients dissolved or uniformly dispersed in a suitable base and any suitable excipients such as emulsifiers, viscosity increasing agents, antimicrobial agents, antioxidants, or stabilizing agents. The advantages of semisolid dosage form are: It is used external, probability of side effect can be reduced, local action, first pass gut and hepatic metabolism is avoided and patient compliance is increased; the drug termination is problematic cases is facilitated as compared with other routes of drug administration. The disadvantage of semisolid dosage form is; there is no dosage accuracy in this type of dosage form, the base which is used in the semisolid dosage form can be easily oxidized, and if we go out after using semisolid dosage form problems can occur. Semisolid are available as wide range of dosage form, each having unique characteristic.

Creams are the topical preparations which can be applied on the skin. Creams are defined as "viscous liquid or semisolid emulsions of either the oil-in-water or water-in-oil type" dosage forms which consistency varies by oil and water. Creams are used for cosmetic purposes such as cleansing, beautifying, improving appearances, protective or for therapeutic function.

Cream Novel Drug Delivery Systems

Cream is defined as semisolid emulsions which are oil in water (o/w) or water in oil (w/o) type and these semisolid emulsions are intended for external application. It is

applied on outer part or superficial part of the skin and its main ability to remain for a longer period of time at the site of application. The function of a skin cream is to protect the skin against different environmental conditions, weather and gives soothing effect to the skin. There are different creams like cleansing, cold, foundation, night, massage, vanishing creams. Herbal cosmetics are also known as “natural cosmetics”. So, they are oldest products used by mankind. Some common cosmetics include creams, face packs, shampoos, soaps, hair oils etc., The formulation of all these cosmetics products include addition of oils, waxes, natural colors, and parts of leaves, flowers etc. by specific formulation methods. Herbal formulations are receiving more concentration in public because of their high-quality properties and less side effects. The main aim of herbal cream is to give multipurpose effects, like moisturizer, reduces acne and skin irritation, reduce skin diseases like eczema, psoriasis, dry skin, wrinkles, prevents aging additionally adds glow to the face.

Research Paths^[65-145]

Scientific research that is organized in the form of Research Paths is characterized by the fact that, it is the most effective in achieving an idea, innovation, and development. It is linking the inductive plan, steps, goals, research methods, results, conclusion, materials, and equipment required to achievement scientific research. Research Paths are distinguishing that by build on each other and link the common relationship between them.

Pharmaceutical Research Paths

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 Pharmaceutical Research Paths include: Pharmacognosy deals with natural sources of drug, Pharmaceutical Chemistry specializes in synthetic sources of drug, Pharmaceutics specializes in designing of pharmaceutical dosage forms and drug delivery systems from natural and synthetic sources of active pharmaceutical ingredients and excipients that help in developing dosage forms and drug delivery systems.

The Pharmaceutical Research Paths link steps are manufacturing and development of drug according to the standard parameters evaluation such as physicochemical properties, preformulation, formulation, evaluation, drug stability, Pharmaceutical analysis, pre-clinical, post-clinical stages, pre-marketing, post-marketing, Pharmacovigilance, Pharmacoeconomics, Pharmacy Management, Pharmacology, Toxicology, Therapeutics, Pharmaceutical Care, Health Care, Advanced Industrial Pharmacy, Biopharmaceutics and Pharmacokinetics, Advanced Clinical Pharmacokinetics, Pharmaceuticals Cosmetics, Pharmaceutical Biotechnology, Drug Design, Pharmacy Law and Ethics, Pharmacogenomics, Good

Manufacturing Practice, and Good Pharmacy Practice etc.

All of these Pharmaceutical Research Paths are interconnected, and whenever the link between them is made in a scientific relationship and the goal of pharmaceutical care is achieved gradually according to plan of a scientific pharmaceutical research path.

Pharmaceutical Research Paths are the scientific methods through which the scientific relationship between the pharmaceutical team, research, supervisor or specialist researcher, the scientific research materials, equipment's, scientific institution, pharmaceutical companies, reference standards, and the goals of pharmaceutical research improve and development of community services of pharmaceutical care and health care.

Pharmaceutical Scientists are considering natural sources and medicinal herbs in the pharmaceutical industry an important part of drug development because natural sources of drugs have properties that are greater than industrial sources of drugs in NDDS. And the pharmaceutical industry strategies depend on the development of different pharmaceutical dosage forms and recent novel drug delivery systems. Using medicinal herbs and natural sources as important goals of drug development. It is part of the art of innovation in drug development with different of novel drug delivery systems and pharmaceutical care for patients and society, it's the basic of development of the new pharmaceutical industry by developing different novel drug delivery systems from different sources.

The present study has been designed to formulate and evaluate of *Aloe inermis* extract as oil-in-water cream NDDS which has been widely used as topical application for antimicrobial and wound healing activity.

MATERIALS AND METHODS

MATERIALS

The extract of *Aloe inermis* was prepared and gift from (Prof. Dr. Bushra Moharram Professor Dr. of Pharmacognosy, Department of Pharmacognosy, Faculty of Pharmacy, Sana'a University, Sana'a, Yemen). Materials used in the cream formulation from *Aloe inermis* extract as shown in Table 1.

Wound Healing Activity

The antibacterial and wound healing activity of *Aloe inermis* extract was studied in a previous study.^[6]

Equipment's

FT-IR Spectrometer (Scimitar 2000 FT-IR, Varian, USA), Sonicator bath (SCT-SONIC-6, ScichemTech, USA), pH Conductometer 914 (Metrohm, China); Balance (Sartorius, Germany); Mixer (Labtech, Korea), Water bath (Scichemtech, USA), Autoclave (Shanghai.5117.Co, China).

Table 1: Materials Used in Cream Formulation with *Aloe Inermis* Extract.

No.	Materials	Country	Company
1	Stearic Acid	Germany	Merk
2	Di-basic Sodium Phosphate	Germany	Merk
3	Propylparaben	Germany	Merk
4	Chlorocresol	China	Benzo chemind
5	EDTA	Germany	Merk
6	Methylparaben	Germany	Merk
7	Cetostearyl Alcohol	China	Zhongbac
8	Cetomacrogol 1000	China	Zhongbac
9	Beeswax	China	Yuyu
10	Triethanolamine	Germany	Merk
11	Glycerol	Germany	Merk
12	Liquid Paraffin	Germany	Merk

Formulation and Evaluation of *Aloe Inermis* Cream Novel Drug Delivery Systems^[31,151]

Formulation of *Aloe Inermis* Cream Novel Drug Delivery Systems

Begin the process by heating liquid paraffin, white soft paraffin, cetomacrogol in a borosilicate glass beaker at 75 °C, maintaining this temperature (Oil phase). In a separate beaker, dissolve dibasic sodium phosphite, and chlorocresol in distilled water at 75°C using a thermostatic water bath. Stir the solution with a glass rod until solid particles are dissolved (Aqueous phase). Now carefully add the heated aqueous phase to the heated oily

phase by stirring. Once both the phases are mixed, then add measured amount of butterfly *Aloe inermis* extract. Then continue mixing with glass rod until smooth cream formation takes place. Finally add few drops of lavender oil as a fragrance, mix the cream in geometric manner to mix all the ingredients properly. Adjust the consistency of the cream once it reaches smooth texture transfer it into container labelled. The cream was cooled with stirring to room temperature. Prepared creams were storage at the room temperature (25 ± 2°C) in tubes. As shown in Table 2.

Table 2: Composition of *Aloe Inermis* Cream NDDS Formulations.

Ingredients	Formulation Code						
	F1	F2	F3	F4	F5	F6	F7
Aloe Inermis	1	1	1	1	1	1	20
White Soft Paraffin	---	1.5	1.5	1.5	1.48	1.6	30
Cetostearyl Alcohol	0.4	0.7	0.5	0.7	0.7	0.8	14
Cetomacrogol 1000	---	0.5	0.4	0.5	0.5	0.6	10
Chlorocresol	---	0.02	0.02	0.02	0.02	0.02	0.4
Liquid Paraffin	0.3	0.8	0.8	0.8	0.8	0.9	26
Propylene Glycol	0.5	1.2	1.2	1.2	1.2	1.3	24
Sodium Dihydrogen Phosphate	---	0.1	0.1	0.1	0.1	0.2	2
Beeswax	---	---	---	0.2	0.2	0.3	4
Titanium Dioxide	---	---	---	1	1	---	2
Tween	---	---	---	---	0.02	0.3	---
Lavender oil	---	---	---	---	---	---	Drops
Stearic Acid	0.15	---	---	---	---	---	---
Glycerol	0.3	---	---	---	---	---	---
EDTA	0.002	---	---	---	---	---	---
Methylparaben	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Propylparaben	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Triethanolamine	0.2	---	---	---	---	---	---
Purified Water	Q.S	Q.S	Q.S	Q.S	Q.S	Q.S	Q.S

Evaluation of *Aloe Inermis* Cream Novel Drug Delivery Systems

All the formulated creams were evaluated for following parameters

Physical Evaluation

Physical evaluation: In this test, the cream was observed for color, odor, texture, state.

pH Determination

pH: 0.5g cream was taken and dispersed in 50ml distilled water and then pH was measured by using digital pH meter.

Viscosity Test

Viscosity: Viscosity of the formulation was determined by viscometer at 100 rpm.

Washability Test

Washability: A small amount of cream was applied on the hand and it is then washed with tap water.

Irritancy test

Irritancy: Mark the area (1cm²) on the left-hand dorsal surface. Then the cream was applied to that area and the time was noted. Then it is checked for irritancy, erythema, and edema if any for an interval up to 24 h and reported.

Phase Separation

Phase separation: Prepared cream was kept in a closed container at a temperature of 25 -100°C away from light. Then phase separation was checked for 24h for 30d. Any change in the phase separation was observed/checked.

Spreadability Test

Spreadability: The spreadability test was expressed in terms of time in seconds taken by two slides to slip off from the cream, placed in between the slides, under certain load. Lesser the time taken for Separation of the two slides better the spreadability. Two sets of glass slides of standard dimension were taken. Then one slide of suitable dimension was taken and the cream formulation was placed on that slide. Then other slide was placed on the top of the formulation.

Then a weight or certain load was placed on the upper slide so that the cream between the two slides was pressed uniformly to form a thin layer. Then the weight was removed and excess of formulation adhering to the slides was scrapped off. The upper slide was allowed to slip off freely by the force of weight tied to it. The time taken by the upper slide to slip off was noted.

Determination of Greasiness

The ease of removal of the cream applied was examined by washing the applied part with tap water.

Packaging of Finished Product

The optimized cream formulations were prepared; packed in aluminum collapsible tubes.

Stability Study

The herbal cream was prepared and subjected to various parameters to be evaluated.

RESULTS AND DISCESION

Evaluation results of the seven formulations are gives below.

Physical evaluation: In this test color, odor, texture and state of the formulations were examined. As shown in Table 3.

Table 3: Physical Evaluation Observations.

NO	Formulation Code	Color	Odor	Texture	State
1	F1	---	---	---	---
2	F2	Yellow	Pleasant	Smooth	Semisolid
3	F3	Brown	Pleasant	Smooth	Semisolid
4	F4	Yellow	Pleasant	Smooth	Semisolid
5	F5	---	---	---	---
6	F6	Brown	Pleasant	Smooth	Semisolid
7	F7	Yellow	Pleasant	Smooth	Semisolid

Phase separation: Prepared cream was kept in a closed container at a temperature of 25-100°C away from light. Then phase separation was checked. Any change in the phase separation was observed/checked. According to

the results phase separation was observed in F1 and F5. While the F2, F3, F4, F6 and F7 no phase separation. As shown in Table 4.

Table 4: Phase Separation Observations.

NO	Formulation Code	Phase Separation
1	F1	Phase Separation
2	F2	No Phase Separation
3	F3	No Phase Separation
4	F4	No Phase Separation
5	F5	Phase Separation
6	F6	No Phase Separation
7	F7	No Phase Separation

pH: According to the results, the pH of the six formulations that is F2, F3, F4, F5, F6 and F7 were found

to be nearer to skin pH so it can be safely used on the skin. As shown in Table 5.

Table 5: pH Observations.

NO	Formulation Code	pH
1	F1	---
2	F2	4.14
3	F3	4.7
4	F4	4.68
5	F5	5.23
6	F6	4.9
7	F7	4.5

Washability: Washability test was carried out by applying a small amount of cream on the hand and then

washing it with tap water. The formulations F2, F3, F4, F6 and F7 were easily washable. As shown in Table 6.

Table 6: Washability Observations.

NO	Formulation Code	Washability
1	F1	---
2	F2	Easily Washable
3	F3	Easily Washable
4	F4	Easily Washable
5	F5	---
6	F6	Easily Washable
7	F7	Easily Washable

Irritancy: Mark the area (1cm²) on left hand dorsal surface. Then the cream was applied to that area and the time was noted. Then it is checked for irritancy, erythema, and edema if any for an interval up to 24h.

According to the results the formulations that are F2, F3, F4, F6 and F7 showed no sign of irritancy, erythema and Edema. As shown in Table 7.

Table 7: Irritancy Study Observations.

NO	Formulation Code	Irritant Effect	Erythema	Edema
1	F1	---	---	---
2	F2	Nil	Nil	Nil
3	F3	Nil	Nil	Nil
4	F4	Nil	Nil	Nil
5	F5	---	---	---
6	F6	Nil	Nil	Nil
7	F7	Nil	Nil	Nil

Spreadability: The spreadability of the formulations that are F2, F3, F4, F6 and F7 were carried out the time taken by the 2 slides to separate is less so as said in the description of evaluation test lesser the time taken for

separation of the two slides better the spreadability so according to this results F2, F4, F6 and F7 showed better spreadability. As shown in Table 8.

Table 8: Spreadability Observations.

NO	Formulation Code	Spreadability
1	F1	---
2	F2	Good
3	F3	Low
4	F4	Good
5	F5	---
6	F6	Good
7	F7	Good

Greasiness: Here the cream was applied on the skin surface in the form of smear and checked if the smear was oily or grease-like. According to the results, we can

say that F2, F3, F4, F6 and F7 formulations were non-greasy. As shown in Table 9.

Table 9: Greasiness Observations.

NO	Formulation Code	Greasiness
1	F1	---
2	F2	Non-greasy
3	F3	Non-greasy
4	F4	Non-greasy
5	F5	---
6	F6	Non-greasy
7	F7	Non-greasy

According to the results of viscosity test, we can say that F2, F4, F6 and F7 formulations were good viscosity. As shown in Table 10.

Table 10: Viscosity Observations.

NO	Formulation Code	Viscosity
1	F1	---
2	F2	Good
3	F3	Low
4	F4	Good
5	F5	---
6	F6	Good
7	F7	Good

Stability Study

The herbal cream was prepared and subjected to various parameters to be evaluated. The results shown that the cream maintained the same appearance and good feel on application after the accelerated stability study performed. The initial viscosity of formulations showed constant stability in comparison with after accelerated stability study performed.

The formulated creams were evaluated for pH, viscosity, washability, irritability, color and spreadability in this study, *Aloe inermis* cream was successfully formulated, packaged in aluminum tubes of 20g net weight, and labeled. The type of cream of the formulations used was o/w base. The formulated cream exhibited the desired properties of consistency, spread ability, physicochemical stability and its appearance may make it cosmetically acceptable.

CONCLUSION

In the current study, the dry extract of *Aloe inermis* was formulated in seven formulations to study the variant characteristics of cream. Among the seven formulations (F1-F7), F7 showed good spread ability, good consistency, homogeneity, appearance, pH; there is no proof of a separation phase and ease of washability. The compositions of formulation F7 were *Aloe inermis* extract, Cetomacrogol, Cetostearyl alcohol, Liquid paraffin, white soft paraffin, Propylene glycol, Chlorocresol, Beeswax, Sodium dihydrogen phosphate, Titanium dioxide, Lavender oil, Methylparaben, and Purified water. It was concluded that the best formulation selected F7 was safe in respect to natural herb offer diverse benefits in cream preparations, as evidenced by this study, highlighting the safety compared to commercial semisolid products. The study showed that

the extract of *Aloe inermis* could be used as an alternative for wound healing activity as cream NDDS formulation.

ACKNOWLEDGEMENT

The authors are thankful to Global Pharmaceutical Industry Company (Sana'a, Yemen) for providing all necessary support and facilities to carry out the research work.

REFERENCES

1. Ghosh AK, Abdul A, McDonald S. The Role of Lymphocytes in wound healing. *Br J Plast Surg.*, 1990; 43: 655-662.
2. WHO. WHO Warns Against 'Post-Antibiotic' Era: Nature- International Weekly Journal of Science. Nature Publishing Group., 2014.
3. Gavimath CC, Sudeep HV, Sujana Ganapathy PS, Padmalatha Rai S, Ramachandra YL. Evaluation of wound healing activity of *Butea Monosperma* Lam. extracts on rats. *Pharmacologyonline.*, 2009; 2: 203-216.
4. Sudeendra BR, Shankrappa J, Shivakumal HG, et al. Formulation and Evaluation of Polyherbal Wound Treatments. *Asian Journal of Pharmaceutical Sciences.*, 2007; 2: 11-17.
5. Chitra V, Dharani Prasad P, Pavan Kumar K, Narayana RA. Wound Healing Activity of Alcoholic Extract of *Buchanania lanzan* in Albino Rats. *Int J ChemTech Res.*, 2009; 1: 1026-1031.
6. Moharram BA, Al-Mahbashi, HM, Al-Maqtari T, Al-Doaiss AA. Phytochemical, antibacterial, antioxidant and wound healing properties of *Aloe inermis* latex extract obtained from Yemen. *Asian Journal of Pharmacy and Pharmacology.*, 2019; 5(6): 1191-1201.

7. Vinchure BD, Kokate R, Patil SP. Formulation and evaluation of cream containing curcumin and lycopene for the antioxidant and antibacterial activity. *European journal of pharmaceutical and medical research.*, 2017; 4(05): 394-399.
8. Raju M, Virajaji K, Bonagiri S, Mohammed RS, Ch M. Formulation of herbal hydrogels for wound healing activity by using Vitis seeds extract. *Indo American Journal of Pharmaceutical Research.*, 2014; 4(10): 3941-3942.
9. El-Bazzal R. Antimicrobial and anti-inflammatory properties of Aloe vera. *Phytotherapy Research.*, 2020.
10. Huang Y. Aloe vera in cosmetic formulations: Skin benefits and applications. *Journal of Cosmetology.*, 2015.
11. Oluwatoyin A. Formulation and evaluation of Aloe vera cold cream. *Journal of Cosmetic Science.*, 2020.
12. Surjushe A. Aloe vera: A short review. *Indian Journal of Dermatology, Venereology and Leprology.*, 2008.
13. Sánchez M, González-Burgos E, Iglesias I, GómezSerranillos MP. Pharmacological update properties of Aloe vera and its major active constituents. *Molecules.*, 2020; 25(6): 1324.
14. Rathod V, Sul SA, Jain S. Aloe vera research and applications. *Aditya Institute of Pharmaceutical Beed, Dr. Babasaheb Ambedkar Technological University Lonere.*, 2023; 8(6).
15. Hake AH. Aloe vera research in pharmaceutical sciences. *World Journal of Pharmaceutical Research.*, 2024; 13.
16. Kumar KK, Sasikanth K, Sabareesh M, Dora Babu N. Formulation and evaluation of diacerein cream. *Asian Journal of Pharmaceutical and Clinical Research.*, 2011; 4(2): 95-97.
17. Maan AA, Nazir A, Khan MKI, Ahmad T, Zia R, Murid M, Abrar M. The therapeutic properties and applications of Aloe vera: A review. *Journal of Herbal Medicine.*, 2018; 12: 1-10.
18. Reynolds T, Dweck AC. Aloe vera leaf gel: A review update. *Journal of Ethnopharmacology.*, 1999; 68: 3-37.
19. West DP, Zhu YF. Evaluation of Aloe vera gel gloves in the treatment of dry skin associated with occupational exposure. *American Journal of Infection Control.*, 2003; 31: 40-2.
20. Barnes PM, Bloom B, Nahin RL. Complementary and alternative medicine use among adults and children: United States, 2007. *National Health Statistics Reports.*, 2008; 12: 1-23.
21. Borra SK, Lagisetty RK, Mallela GR. Aloe vera and its therapeutic applications. *African Journal of Pharmacy and Pharmacology.*, 2011; 5: 1867-1871.
22. Kirby-Smith C, Steenkamp J, Steyn D, HaasbroekPheiffer A, Hamman H, Hamman J. Intranasal insulin delivery: Microparticle formulations consisting of Aloe vera polysaccharides for advanced delivery across excised olfactory and respiratory nasal epithelial tissues. *Applied Sciences.*, 2023; 13: 4822.
23. Singh RP, Dhanalakshmi S, Rao AR. Chemomodulatory action of Aloe vera on the profiles of enzymes associated with carcinogen metabolism and antioxidant status regulation in mice. *Phytomedicine.*, 2000; 7(3): 209-219.
24. Al-Salman NTS, Al-Gharawi JK. The effect of locally extracted Aloe vera oil on the productive performance of ISA Brown laying hens. *IOP Conference Series: Earth and Environmental Science.*, 2023; 1225: 012041.
25. Foote C. A history of Aloe vera: From the Arabian desert to that cream, you use on your hand. *BMC Series Blog, BioMed Central.*, 2015.
26. Baby J, Justin SR. Pharmacognostic and phytochemical properties of Aloe vera Linn-an overview. *International Journal of Pharmaceutical Sciences Review and Research.*, 2010; 4: 106.
27. Surjushe A, Vasani R, Saple DG. Aloe vera: A short review. *Indian Journal of Dermatology.*, 2008; 53(4): 163- 166.
28. Jangra A, Sharma G, Sihag S, Chhokar V. The dark side of miracle plant-Aloe vera: A review. *Molecular Biology Reports.*, 2022; 49: 5029-5040.
29. Habeeb F, Shakir E, Bradbury F, Cameron P, Taravati MR, Drummond AJ, Ferro VA. Screening methods used to determine the antimicrobial properties of Aloe vera inner gel. *Methods.*, 2007; 42(4): 315-20.
30. Chandegara VK, Varshney AK. Aloe vera L processing and products: A review. *International Journal of Medicinal and Aromatic Plants.*, 2013; 3(4): 492-506.
31. Campestrini L H, Kuhnen S, Lemos P M M, Bach D B, Dias P F, Maraschin M. Cloning protocol of Aloe Vera as a study-case for "tailormade" biotechnology to small farmers. *J. Technol. Manag. Innov.*, 2006; 5(1): 76-79.
32. Agarry O O, Olaleye M T, Bello M C O. Comparative antimicrobial activities of Aloe Vera gel and leaf. *African Journal of Biotechnology.*, 2005; 4 (12): 1413-1414.
33. Xiu Z, Hong W, Yuan S, Li N, Lan W, Bin L, Ping S, Yang L. Isolation, structure elucidation, antioxidative and immunomodulatory properties of two novel dihydrocoumarins from Aloe Vera. *Bioorganic & Medicinal Chemistry Letters.*, 2006; 16: 949-953.
34. Seongwon C, Myung HC. A review on the relationship between Aloe Vera components and their biologic effects. *Seminars in Integrative Medicine.*, 2003; 1: 53-62.
35. Karodi R, Jadhav M, Rub R, Bafna A. Evaluation of the wound healing activity of a crude extract of *Rubia cordifolia* L. (Indian madder) in mice. *Int J Applied Research Nat Prod.*, 2009; 2(2): 12-18.
36. Rajinder Raina, Shahid Pravez, Verma PK, Pankaj NK. Medicinal plants and their role in wound healing. *Vet Scan.*, 2008; 3(1): 1-7.
37. Swati Rawat, Akhilesh Gupta. Development and

- study of wound healing activity of an Ayurvedic formulation. *Asian J. Res. Pharma. Sciences.*, 2011; 1(1): 2628.
38. Pawan K, Padmanabh D, Mangesh B, Vishal T, Sonali S. Formulation and evaluation of herbal wound healing Formulation of centella asiatica ,*World Journal of Pharmaceutical Research.*, 2017; 6(6): 1335-1345.
 39. Kumari M, Eesha BR, Amberkar M, babu S, Rajshekar KN. Wound healing activity of aqueous extract of *Crotalaria verrucosa* Wistar albino rats. *Asian Pac J Trop Med.*, 2010; 3(10): 783-787.
 40. Uddandu Saheb*, Aduri Prakash Reddy, K Rajitha, B Sravani, B Vanitha. Formulation and Evaluation of Cream from containing plant extracts, *World Journal of Pharmacy and Pharmaceutical Sciences.*, 2018; 7(5): 851-862.
 41. Dandasi Jayachandra Dev, Jayaprakash S, Kulkarni PK, Akhila A R, Namratha, S Saraf. Formulation and evaluation of different topical dosage forms for wound healing properties *International Journal of Research in Pharmaceutical Sciences.*, 2020; 11(1): 730-746.
 42. Manimaran S, Nithya, Praveen TK. Development and screening of topical Herbal cream formulation for antimicrobial and Wound healing activity *International Journal of Biological & Pharmaceutical Research. A.*, 2014; 5(5): 383-388.
 43. Vamsi S, Satish C, Nagaveni K, Jyothi M Joy, Latha P. Formulation and Evaluation of Polyherbal Wound Healing Ointment. *International Journal of Pharma Research & Review.*, 2014; 3(4): 66-73
 44. Manoj D. Jadhav, Mangesh P. Ubale, Shubham V. Kadam, and Ansari M. Ehtesham. Formulation and Evaluation of Herbal Skin Cream for Wound Healing Activity. *International Research Journal of Pharmacy and Medical Sciences (IRJPMS).*, 2023; 6(4): 8-12.
 45. SP Ekhande KS, Rathi MP, Patil SJ. Kshirsagar. Review Article Wound Healing with Medicinal Plants. *International Journal of Pharmaceutical and Medicinal Research.*, 2020; 8(3): 18-22.
 46. Prafulla Sabale, Bhargav Bhimani, Chirag Prajapati, Vidya Sabale. an Overview of medicinal plants as wound healers. *Journal of Applied Pharmaceutical Science.*, 2012; 2(1): 143-150.
 47. Nilani P, Pranavi A, Duraisamy B, Damodaran P, Subhashini V, Elango K. Formulation and evaluation of wound healing dermal patch. *African Journal of Pharmacy and Pharmacology.*, 2011; 5(9): 1252-1257.
 48. Kokane DD, More RY, Kale MB, Nehete MN, Mehendale PC, Gadgoli CH. Evaluation Of wound healing activity of root of *mimosa pudica*. *J Ethnopharmacol.*, 2009; 124: 311-15.
 49. Reddy AKG, Saranya SC, Kumar ACK. The wound healing potential of Indian medicinal Plants. *Int J Pharm Rev Res.*, 2012; 2(2): 75-87.
 50. Kumar B, Kumar VM, Govindarajan R, Pushpangadan P. Ethnopharmacological approaches to wound healing- exploring medicinal plants of India. *J Ethnopharmacol.*, 2007; 114: 103-13.
 51. Rajsekhar S. Unseen aspects of wound healing: an overview. *Int J Pharm Biol Sci.*, 2011; 2(4): 275-87.
 52. Chithra P, Sajithlal GB, Chandrakasan G. Influence of Aloe vera on the healing of dermal wounds in diabetic rats. *Journal of Ethnopharmacology.*, 1998; 59(3): 195-201.
 53. Hegggers JP, Pelley RP, Robson MC. Beneficial effect of Aloe on wound healing in an excisional wound healing model. *Journal of Alternative and Complementary Medicine.*, 1993; 3(4): 422-430.
 54. Karalashvili MM, amukashvili N, Sharashenidze I. The significance of Aloe Vera in the treatment of burn injuries: Formulation and evaluation. *European Journal of Pharmaceutical and Medical Research.*, 2017; 4(9): 132-138.
 55. Tiwari S. Formulation and evaluation of herbal wound healing cream. *Journal of Drug Delivery and Therapeutics.*, 2016; 6(5): 28-30.
 56. Gupta A, Kaur CD, Saraf S. Topical delivery of levofloxacin-loaded chitosan nanoparticles in the treatment of infected burn wounds. *J Pharm Pharmacol.*, 2010; 62(1): 63-69.
 57. Kumar A, Kumar S, Kumar S. Design and evaluation of herbal wound healing gel formulation containing *Allium sativum* and *Punica granatum*. *Int J Pharm Pharm Sci.*, 2014; 6(7): 125-131.
 58. Nayak BS, Sandiford S, Maxwell A. Evaluation of the wound-healing activity of ethanolic extract of *Morinda citrifolia* L. leaf. *Evid Based Complement Alternat Med.*, 2009; 6(3): 351-356.
 59. Nayak BS, Pinto Pereira LM. *Catharanthus roseus* flower extract has wound-healing activity in Sprague Dawley rats. *BMC Complement Altern Med.*, 2006; 6: 41.
 60. Bashir S, Teckwani K, Sheikh IA, et al. Antibacterial activity of ZnO nanoparticles prepared via non-hydrolytic solution route. *Appl Microbiol Biotechnol.*, 2010; 87(5): 1917-1925.
 61. Imtiaz S, Qamar F, Irfan M, et al. Phytochemical analysis, antioxidant potential, and wound healing activity of an ethanol extract of *Euphorbia hirta* L. *J Ethnopharmacol.*, 2020; 258: 112846.
 62. Nayak BS, Isitor G, Davis EM, Pillai GK. The evidence-based wound healing activity of *Lawsonia inermis* Linn. *Phytother Res.*, 2007; 21(9): 827-831.
 63. Jayaraman R, Gopinath V, Manoharan M. *Rhus parviflora* (Roxb.) and *Rhododendron arboreum* Smith. leaves accelerated the wound healing process in Wistar albino rats. *Int J Pharm Sci Res.*, 2010; 1(9): 102-109.
 64. Medhi B, Puri A, Upadhyay S, Kaman L, Topno RK, Padhi MM. Comparative study of wound healing in rats: Panchavalkala formulation versus framycetin ointment. *J Altern Complement Med.*, 2012; 18(6): 558-562.
 65. Bary AA, El-Gazayerly ON, Alburyhi MM. A Pharmaceutical Study on Lamotrigine. Ph.D. Thesis,

- Faculty of Pharmacy, Cairo University., 2009.
66. 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.
 67. 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.
 68. 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.
 69. 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.
 70. 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.
 71. 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.
 72. 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.
 73. Mohamed YAS, Alkhawlan 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.
 74. Alburyhi MM, Raweh SM, AlGhoury ABA, Alkhawlan 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.
 75. 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.
 76. 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.
 77. Al-Ghorafi MA, Alburyhi MM, Muthanna MS. Effect of Rosemary and Myrtus Extracts Combination on Androgenetic Alopecia: A Comparative Study with Minoxidil. *European Journal of Pharmaceutical and Medical Research.*, 2023; 10(10): 35-39.
 78. Mohamed YAS, Alkhawlan MA, Wadi ZAS, Yahya TAA, Faisal A, Alburyhi MM. Modern Analytical Techniques for Authentication of Yemeni Ambergris. *World Journal of Pharmacy and Pharmaceutical Sciences.*, 2025; 14(8): 686-697.
 79. Al Ghoury AA, Al-Ghorafi MA, Alburyhi MM, Noman MA. Antimicrobial Susceptibility Patterns of *Staphylococcus Aureus* to Different Antimicrobial Agents Isolated as Clinical Samples at Certain General Hospitals in Sana'a City, Yemen. *World Journal of Pharmaceutical Research.*, 2024; 13(16): 35-47.
 80. Noman MA, Alburyhi MM, Yahya TAA, Saif AA. Evaluation and Drug Stability Studies of Different Brands of Clopidogrel Tablets Available in Sanaa City Market, Yemen. *European Journal of Biomedical and Pharmaceutical Sciences.*, 2025; 12(7): 181-191.
 81. 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.
 82. 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.
 83. 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.
 84. 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.
 85. 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.
86. 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.
87. 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.
88. 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.
89. 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.
90. 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.
91. 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.
92. 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.
93. 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.
94. 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.
95. 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.
96. 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.
97. 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.
98. 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.
99. Alburyhi MM, Saif AA, Noman MA. Stability Study of Six Brands of Amoxicillin Trihydrate and Clavulanic Acid Oral Suspension Present in Yemen Markets. *Journal of Chemical Pharm Research.*, 2013; 5(5): 293-296.
100. 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.
101. 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.
102. Aboghanem A, Alburyhi MM, Noman MA. Effect of Different Excipients on Formulation of Immediate Release Artemether/Lumefantrine Tablets. *Journal of Chemical Pharm Research.*, 2013; 5(11): 617-625.
103. 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.
104. 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.
105. Alburyhi MM, Saif AA, Noman MA. Formulation and Evaluation of Ticagrelor Orodispersible Tablets. *World Journal of Pharmaceutical Research.*, 2024; 13(5): 26-55.
106. 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.
107. 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.
108. 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.
109. 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.
 110. 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.
 111. 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.
 112. 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.
 113. 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.
 114. 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.
 115. 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.
 116. 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.
 117. 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.
 118. 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.
 119. 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.
 120. 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.
 121. Alburyhi MM, Saif AA, Noman MA, Alkhwilani MA. Formulation and Evaluation of Bisoprolol Fast Dissolving Tablets. *World Journal of Pharmaceutical Research.*, 2023; 12(16): 01-10.
 122. 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.
 123. 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.
 124. 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.
 125. Bary AA, El-Gazayerly ON, Alburyhi MM. A Pharmaceutical Study on Methocarbamol. MSc Thesis, Faculty of Pharmacy, Cairo University., 2006.
 126. Saif AA, Alburyhi MM, Noman MA. Formulation and Evaluation of Ketoprofen Fast Dissolving Tablets. *International Journal of Sciences.*, 2018; 7(09): 27- 39.
 127. 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.
 128. Othman AM, Alburyhi MM, Al-Hadad GH. Captopril-Excipient Preformulation Studies for Mouth Dissolving Tablets Development. *World Journal of Pharmaceutical Research*, 2025; 14(10): 1398-1420.
 129. 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.
 130. 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.
 131. 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.
 132. 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.
 133. 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.
134. 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.
135. 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.
136. 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.
137. 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.
138. 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.
139. 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.
140. 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.
141. 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.
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, Al-Wajih AM, Almlhani AN, Alqadhi AA. Innovative Approaches in Herbal Drug Delivery Systems Enhancing Efficacy and Reducing Side Effects. *World Journal of Pharmacy and Pharmaceutical Sciences*, 2025; 14(1): 919-929.
144. Alburyhi MM, El-Shaibany A, Al-Wajih AM, Alqadhi AA, Almlhani AN. Advancements in Nano-Formulation Systems for Enhancing the Delivery of Herbal Ingredients. *European Journal of Pharmaceutical and Medical Research*, 2025; 12(1): 212-231.
145. 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): 1147-1157.
146. Ugandar RE, Deivi KS. Formulation and evaluation of natural palm oil based vanishing cream. *International Journal of Antonio V, Elsa U, Roberto L, Margarita M. Hot-air drying characteristics of Aloe Vera (Aloe barbadensis Miller) and influence of temperature on kinetic parameters. LWT*, 2007; 40: 1698–1707.
147. Jackie L, Howard M. The correlation between transepidermal water loss and percutaneous absorption: an overview. *Journal of Controlled Release*, 2005; 103: 291–299.
148. Pounikar J, Jain P, Khurana N, Omray KL, Patil S, Gajbhiye A. Formulation and Characterization of Aloe Vera cosmetic herbal hydrogel. *Int J Pharm Pharm Sci*, 2012; 4(4): 85-86.
149. Lalifa Chauhan and Shalini Gupta. Creams: A Review on Classification, Preparation Methods, Evaluation and its Applications. *Journal of Drug delivery & therapeutics*, 2020; 10(5): 281-289.
150. Ravindra RP, Muslim PK. Comparison of physical characteristics of vanishing Cream base, cow ghee and shata- dhautaghrita as per pharmacopoeial standards. *International Journal of Pharma and Bio Sciences*, 2013; 4(4): 14-21.