

Formulation and Evaluation of norfloxacin gel for wound healing activity.

Mrs Roshan Zehra

Asst. Professor, Mrs Arati Devi Asst. professor

IMT College Of Pharmacy ,Plot No. 19 & 20, Knowledge Park III, Greater Noida, Uttar Pradesh 201310

Submitted: 05-02-2022

Accepted: 20-02-2022

ABSTRACT

This research paper is about formulation and evaluation of norfloxacin gel for wound healing activity. In the current work an endeavour was made up to set up a gel of norfloxacin utilizing polymer sodium alginate alone and with chitosan[2-Amino-2-deoxy-(1,4)-b-D-glucopyranan], turmeric [Indian saffron], glycerine [propane-1,2,3-triol] as copolymers. Permeability & Solubility of drug was enhanced. We use soaking method for preparation of gel. The ultimate goal of formulating gel with enhanced pharmacokinetic with ideal discharge of drug was prepared.

I. INTRODUCTION

In this paper i.e., norfloxacin gel was prepared by soaking method. It has normal features and benefits over conventional dosage in better form. Gel rapidly get discharge on skin without giving friction. honey and turmeric were used for wound healing.

Gel is a semi solid formulation that has a pair of components which is liquid phase in rich. It has a character the continuous structure show like slid properties. After the application of gel, the liquids are drying by the evaporation and, gels of drug are covering the skin

As compare to the creams and other ointments gel give better drug release. These are highly bio-compatible that's why minimum risk of adverse reaction and inflammation. The dermatological use of gels has many properties as thixotropic, easily remove, non- greasy, desirable spreadable, non-staining, emollients, compatible with the many excipients.

Gels are semisolid systems that are a polar phase is constrained within a 3dimensional polymeric matrix in which high degree of physical and sometimes chemical cross linking has been introduced. The polymers apply in the preparation

of pharmaceutical gels including natural gum semi synthetic and synthetic materials.

Skin is the outermost part of our body. It is the largest organ which makes a barrier on the surface of the body. Skin is defending the internal organ damage through the external atmosphere, external microbes and other elements. Skin is maintained the body temperature and water loss through the sweat gland, also provide the touch sensation, hot, cold, and pinch

The epidermal cells are consisting five types of layers as stratum basal, stratum spinosum, stratum granulosum, stratum lucidum, and stratum corneum. These layers of epidermal cells are responsible for the thick and thin skin.

Dermis is composed connective tissue, blood vessels, nerve, hair follicles, and gland. Dermis is categorized in to papillary region and reticular region. The papillary region is made up the one fifth part of total layer. It is also composed of connective tissue. The dermis surface area is increased by a little finger like structure that's called dermal papillae.

Wound is defined as the any damage or mechanism failure in the defensive mechanism of the skin due to external condition as surgery, cuts, and accidental. Due to damage condition the loss of consistent existence and change the anatomy of the epithelial tissue or epithelium, may or may not loss of the latent connective tissue as like muscles, bone, and nerve. Types of the wound are also required for the diagnosis of these.

Wound healing is the fundamental process that response to connective tissue. The Process of wound healing is the recovery of normal cells or tissue from the injured or damage tissue. Wound size and shape are also important for the incision or medication.

II. METHODOLOGY

Procedure for preparation of norfloxacin gel

2% of sodium alginate was wet for one night + Triethanolamine [to neutralize]

Drug was separated dissolved in methanol
 Weighed amount of turmeric was dissolved in distilled water
 Transfer in to neutralized sodium alginate solution
 Drug solution was also transfer in to sodium alginate solution
 Finally, the 50ml of volume made up

- 100 mg of norfloxacin was accurately weighed and dissolved in a respective solvent. The volume of solution was made up to 100ml. the solution was marked as stock solution.
- from stock solution dilution having concentration, 2µg/ml, 4µg/ml, 6µg/ml, 8µg/ml, 10µg/ml, were prepared.
- Prepared solution was observed in double beam UV-Spectrophotometer to measure the absorbance, in increasing order of concentration.

Preparation of calibration curve of norfloxacin in aqueous & non-aqueous media like water and phosphate buffer pH 7.4.

III. METHOD

Composition of norfloxacin gel-

Ingredients	F1	F2	F3	F4	F5	F6
Drug (norfloxacin)	2	2	2	2	2	2
Sodium alginate	2	2	2	2	2	2
Chitosan	-	2	2	2	-	2
honey	-	-	2	-	2	1
Turmeric	-	-	-	2	1	2
Ethanol	2.6	2.6	2.6	2.6	2.6	2.6
Glycerin	2.6	2.6	2.6	2.6	2.6	2.6
Triethanolamine	Q. S	Q.S.	Q.S.	Q.S.	Q. S	Q.S.
Methyl paraben	0.049	0.049	0.049	0.049	0.049	0.049
Propyl paraben	0.07	0.07	0.07	0.07	0.07	0.07
Water	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.

EVALUATION

pH the pH of gel formulation was determined by digital pH meter. Each formulation was done by triplet. At last, the value was calculated.

1. Viscosity study

Viscosity of this prepared formulation was determined by the using of rotational viscometer (fungi lab) with the spindle no. PA, PC, PB, PD, PE, PF

2. Spread ability

The evaluation of Spread ability of norfloxacin gel was detected by measured the diameter 2gm of gel placed between the plates for 3 minutes.

calculated that by using of bellowing formula.

$$S=M \times L/T$$

S= Spread ability (gcm⁻¹/sec)

M=weight of tied gel on the upper plate

L=length of glass slide

T= Time

3. Extrudability study

The Extrudability was determine by the extruded the gel from tube. 1cm gel extruded out in 30sec.

MELTING POINT

Melting point of the drug was determined by Theil's melting point apparatus and temperature at which the drug melt was noted. Melting point was found to be **252-253n**

IV. RESULT AND DISCUSSION

Evaluation parameter of norfloxacin gel prepared for wound healing:

S. no.	Evaluation	Readings
1	Melting point(°C)	252-253
2	Drug content (%)	95.422
3	pH	7.486
4	Spread ability (in cm ²)	119.595
5	Extrudability	+++
6	Absorbance (λ_{max})	0.588

V. CONCLUSION

The gel provides controlled delivery of drug with fine spread ability indicating their potential for delivery of drug through the skin the batch F3 and F6 show better result like drug release at half life of its drug content antimicrobial effects, viscosity, spread ability was observed good.

REFERENCE

- [1]. B., Preeti, G., Gnanaranjan. k., Preeti article on Additives in Pharmaceutical Gels: A Review Journal on Rx Pharma tutor.
- [2]. M, E., Parry & G, R., Sharp. Seborrheic dermatitis is not caused by an altered immune response to Malassezia yeast. Br J Dermatol139:254: -63. [1998]
- [3]. B., Gahan, M., Mahmoud, A, B., Raina Improvement of solubility and dissolution properties of ketoconazole Hay RJ and Graham Brown Ra. Dandruff and Seborrheic Dermatitis; caused and management. Cline. Dermatol.22:3-6[1997]
- [4]. V., Kareem, M, D., Norwood, The Skin human anatomy. November [2014]
- [5]. T., Gerard J., Derrickson Bryan. Principle of anatomy and physiology 11th edition on page 145-158
- [6]. J., Daley B., Pataki J., Zubin, Wound care treatment and management, article on Medscape update on march [2016].
- [7]. E., Christopher, G., Broughton, J., E, Jeffery, A Brief history of wound care, Research Gate. Article in plastic and reconstructive surgery July [2016].
- [8]. V., Kumar, A., Anubhav, Singh k., Sandeep, K., Koshy M, Concomitant delivery of norfloxacin and Diclofenac sodium via pH triggered in-situ ophthalmic gel: in-vitro and in-vivo consideration. Scholars research library, der Pharmacia lettre,8(13):233-242[2016]
- [9]. M., Gabriela, A., Silvio, M., Camila, A., Larissa, P., Jose, R., Jackson, Development and evaluation of stability of a gel formulation containing the Monoterpene Borneol, The scientific world journal, vol. article ID 7394685, 4 pages [2016]
- [10]. S, B., Gondar R., Kute. P., Saud agar Formulation, development and evaluation of norfloxacin in-situ ophthalmic gel, World journal of pharmacy and pharmaceutical sciences, vol. 4, issue 11, 800-822.