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Formulation and Evaluation of Ketoconazole Emugel

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Abstract: *Compared to other semi-solid formulations, the use of gels appears to be more advantageous in both cosmctic and pharmaceutical preparations. When gel and emulsion are used in a combined form, they are referred to as emulgel. Emulgel is a promising drug delivery system for hydrophobic drug delivery, Emulgel. an interesting system for topical drug delivery, has a dual release control system, i.e. gel and emulsion, Emulgel has several advantages, such as non-greasy, easy to spread. easy to remove, emollient and transparent, Emulgel preparation is carried out by the incorporation method, Emulgcls are commonly used to deliver analgesics, anti-inflammatory, anti-fungal, antiacne and various cosmetic products, Emulgel studies promise a brighter future in delivering more topical drugs as Emulgels due to their advantages over other drug delivery routes.*

Keywords: *Emulgel*

I. INTRODUCTION

Compared to other semi-solid formulations, the use of gels appears to be more advantageous in both cosmetic and pharmaceutical preparations. When gel and emulsion are used in a combined form, they are referred to as emulgel. Emulgel is a promising drug delivery system for hydrophobic drug delivery. Emulgel, an interesting system for topical drug delivery, has a dual release control system, i.e. gel and emulsion. Emulgel has several advantages, such as non-greasy, easy to spread, easy to remove, emollient and transparent. Emulgel preparation is carried out by the incorporation method. Emulgels are commonly used to deliver analgesics, anti-inflammatory, anti-fungal, antiacne and various cosmetic products. Emulgel studies promise a brighter future in delivering more topical drugs as emulgels due to their advantages over other drug delivery routes. A topical drug delivery system is a dosage form that is administered to the skin when other routes of drug delivery fail or for skin disorders. A topical drug delivery system has the advantage of handling first pass metabolism. It also helps to avoid the risk and inconvenience of IV treatment.

Figure no 1 (Ketoconazole Emulgel)

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FUNGAL SKIN INFECTION

- Fungal skin infections can be itchy and annoying, but they're rarely serious.
- A fungal skin infection might cause Irritation, Scaly skin, Redness, Itching, Swelling. Blisters
- Common infections such as athlete's foot, jock itch, and ringworm are caused by fungus and are easy to get and to pass around.
- In healthy people, they usually don't spread beyond the skin's surface, so they're easy to treat.

Figure no 2 (Skin infection)

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2. LITERATURE SURVAY

Table no:1

Sr.No	AUTHOR AND YEAR	TOPIC	POLYMERS	CONCLUSION
1	Raju et al. (WJPPS)2019	Formation and evaluation of ornidazole topical eulgel	Hpmc, carbopol, clove oil, mentha oil, sodium alginate, Liqparaffin,tween 80,methyl paraben,propyl paraben	Liquid paraffin and carbopol 934 has superior drug realease Than oil and polymer
2	Chavda V et. al. (pharmacie globale (IJCP)201 3,07(03)	Formulation and evaluation of napro ical emulgel for delivery by a mod ified method.	Carbapol 934, light liquid paraffin, tween 20, span 80, PG, ethanol, clove oil, methyl salisylate, methyl paraben, propyl paraben.	Naproxen emulgel formulation prepared with carbopol 934 and methyl salisylate showed good permeation.
3	Khullar R et. al. (saudi pharmaceu tical journal,20, 2012)	Formulation and evaluation of mefenamic acid emulgel for topical drug delivery.	Carbopol 940, liquid paraffin, tween 20, span 20, PG, ethanol, methyl paraben, ethyl paraben, clove oil, mentha oil, water, etc.	Topical emulgel of mefenamic acid posses an effective anti-inflammatory and analgesic activity.

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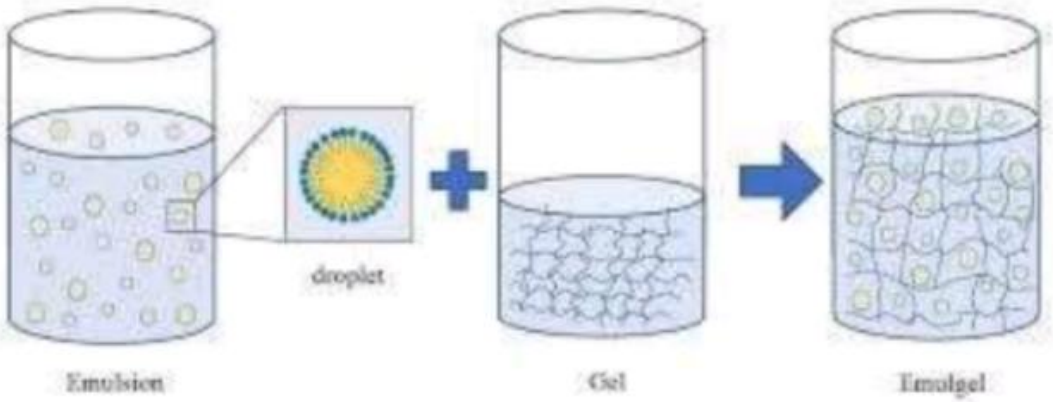
EMULGEL

WHEN GEL AND EMULSION ARE USED IN COMBINED FROM THE DOSAGE FROM ARE REFERRED AS' **EMULGEL'**.

EMULSION + GEL = EMULGEL

- When gels and emulsions are used in combined form the dosage forms are referred as emulgels.
- In spite of many advantages of gels a major limitation is in the delivery of hydrophobic drugs. So to over come this limitation emulgels are prepared and with their use the hydrophobic drugs are delivered.
- The presence of gelling agent in the water phase converts a classical emulsion into an emulgel.
- Both o/w and w/o emulsions are used as vehicles to deliver various drugs to the skin.
- Emulsion itself is a controlled release system where entrapped drug particles in internal phase pass through the external phase to the skin and slowly get absorbed. Internal phases act as reservoir of drug and slowly release drug in controlled way through the external phase to the skin. Gel forms cross linked network where it captures small drug particles and provides its release in a controlled manner
- Due to its bio adhesive property it prolongs the contact period of medication over the skin. Since emulgel possesses the property of both emulsion and gel, it act as dual control release system.
- Depending on the type of emulsion used to prepare emulgel, they are referred as macroemulgel, microalgal, nanomole.
- Various categories of drug such as NSAIDS, antifungal, antibacterial, antiviral, etc. are used for preparation of emulgel.



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IDEAL PROPERTIES OF EMULGEL

- Being greaseless
- Easily spreadable
- Easily removable
- Emollient
- Non-staining
- Longer shelf life, bio-friendly
- Pleasing appearance

ADVANTAGE OF EMULGEL

1. **Enhanced Drug Delivery:** Emulgels can improve the delivery of active pharmaceutical ingredients (APIs) through the skin due to their dual nature, which combines the benefits of both emulsions and gels.

2. **Increased Stability:** Emulgels typically have better stability compared to traditional emulsions or gels, as they are less prone to phase separation or degradation of active ingredients.

3. **Controlled Release:** They offer the ability to control the release of APIs, providing sustained or prolonged release effects, which can be beneficial for certain medications.

4. **Improved Skin Penetration**: Emulgels can penetrate the skin more efficiently than conventional formulations, facilitating better absorption of drugs and potentially enhancing their therapeutic effects.

5. **Versatility:** Emulgels can be formulated to deliver various types of drugs, including hydrophilic and lipophilic compounds, making them versatile for a wide range of pharmaceutical and cosmetic applications.

6. **Enhanced Patient Compliance**: The ease of application and pleasant sensory properties of emulgels can improve patient compliance, leading to better treatment outcomes.

7. **Cosmetically Elegant**: Emulgels have a smooth, non-greasy texture that is aesthetically pleasing and comfortable to use, making them preferred by patients for topical applications.

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9. Result

In formulating and evaluating ketoconazole emulgel, several parameters are scrutinized to ensure efficacy and stability. The concentration of ketoconazole, pH levels, viscosity, and spreadability are meticulously assessed. Drug content uniformity is crucial for dosage accuracy, while pH affects skin compatibility. Viscosity and spreadability influence application ease and uniform coverage. Stability studies ascertain the formulation's shelf life under various conditions.These evaluations collectively inform on the formulation's suitability for dermatological use, providing insights into its potential efficacy and safety for treating fungal infections.

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