A Review on Topical GEL Formulation for Psoriasis Treatment

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Abstract: According to the research Psoriasis disease is widely show in human at recent now, this is a long term disease it is triggered by the genetic issue, bed habit such as smoking, drinking, drug addiction etc. and some long term medication, insect bite etc. it can be affecting adult, child or old age people also. Now days latest research we have lot of option in drug or dosage form. In the topical dosage form GEL dosage form is the best option because of their application or improves patient compliance. It is big option for those drugs who had a problem with solubility with the dosage form. In the gel any drug can be easily incorporated. GEL can be easily applied or removed form skin by the single wash, their no extra afford need to rubbed on skin as compare other dosage form only just make single thin layer of skin. It also the problem with children dosing. Drug can be shows better effect on penetration on skin, and also increase bioavailability of drug. There is no adverse effect or using humectant cool the skin and relief form pain and itchy dry skin.

1. Introduction
Psoriasis is genetic disease that come from old affected gene. It will be triggered by some medication, atmosphere, alcohol- smoking, insect bite. In this disease symptoms are topically itchy, dry scalp skin. And the mostly affected area of body is knee, elbow, legs lower back portion, scalp, finger, near genital part. This is long term disease, their cure for need long term treatment. There is a psoriasis characterized.

* Plage psoriasis - this is common type of psoriasis in this the symptoms are usually red patchy skin, sliver scalp on skin at knee, elbow, leg, face etc.

* Nailed psoriasis – in this type symptoms are abnormal growth of nails discoloration of nail and scalp or dry formation of nail.

* Inverse Psoriasis – the mostly affecting area is skin folds, breasts, buttocks. The causes are smooth patches of red skin that inflame with friction or sweating. Fungal infection can also be triggered by this type of psoriasis.

* Pustular Psoriasis: This is rare form of psoriasis and clearly by the name in this case.
the pus-filled lesion inside the widespread patch or in smaller area of the palms of the hand and the soles of the feet.
If the person has psoriasis, then may be chances to lead a stiffness, joint pain, stress, obesity, CVD, mentally disturbance.
Treatment of Psoriasis – the psoriasis diseases are cure by the some injectable, topical, oral, light therapy is type of treatment.

A) **Oral dosage form** -
Treatment by the oral medication is pills, tablet, capsules, syrup are included
Oral dosage form usually uses some anti- allergic, anti-fungal or other drug. Included drug are Steroid, Retinoid, Methotrexate, Cyclosporine.

B) **Light Therapy** – moderate to severe treatment usually used the light therapy in this therapy commonly used Sunlight, UVB, broadband, UVB narrowband, Psoralen plus ultraviolet A, (PUVA), Excimer laser.

C) **Topical dosage form** – there is a large number of options available in this dosage form, such as Lotion, Cream, Gel, Emulgel, Solution, Ointment, Suspension.
Normally used to treatment of psoriasis the drug in topical dosage form is Corticosteroid [Halobetasol Propionate], Retinoids, Vitamin D analogue, Calcineurin inhibitors, Salicylic acid, Coat tar. Topical dosage form is best for the any skin treatment, it can be easily applied on local skin, easily removable, better result, avoid fast pass metabolism.

**Gel** is semi solid dosage form that use to topical treatment. Gel is Small or large inorganic particle enclosed interrupted by water. Gel is made up of synthetic or natural polymer that forming a three-dimensional matrix in dispersion medium and hydrophilic liquid. There is three main functions of gel
Hydrate the skin because of emollient property, direct deliver medication on skin, work for heal or relief on injured part of skin and it is also protected from the external environment.

**Gel forming agent**-

a) **Natural Polymers.** -
*Proteins – Xanthin, Gelatin, Gellum Gum.*
*Polysaccharides – Agar, Alginic acid, Tragacanth, Pectin, Guar Gum, Cassia Tora*

b) **Semisynthetic Polymers.** -
*Cellulose Derivatives – Methylcellulose, Hydroxypropyl cellulose, CMC, Hydroxypropylmethylcellulose,

c) **Synthetic Polymers.** -
*Carbomer – E.g., Carbopol -940, Carbopol-934, Carbopol-941*
*Poloxamer*
Advantages of topical Gel administration-

- It is avoiding the gestational fluid effect on drug, pH stability, drug interaction with food and fluid (Drink).
- This is easily applicable that for easy to compare with injectable dosage form,
- Avoid their relative problem, vomiting, pain.
- Improve the patient Compliance for children dosing
- It is also reducing oral dosage due to avoid fast pass metabolism,
- Enhance the bioavailability of drug with the dosage form
- Avoid the drug adverse effect like bitter test, GI fluid pH.
- It is very easily to apply or removable as compare to other topical dosage form such as cream or ointment.

Characteristics of Gels-

- Gelling agent are should be pharmaceutically or cosmetically safe or inert and non-reactive with the excipients
- it should be non-sticky or sterile for ophthalmic preparation.
- possess for anti-microbial property.
- Formulation design Topical gel may include the following components:
  a) Gel forming agent or polymer.
  b) Drug Substance.
  c) Penetration Enhancers.

2. Evaluation parameters.

I. Viscosity - Viscosity is measure by the help of Brookfield rotational viscometer.

II. Drug content - API form is extracted by the help of appropriate solvent in a gel, and measure the conc. Of the API on at. \( \lambda \) max nm on the uv spectroscopy method. And solvent is black reagents

III. Physical Examinations- By physically visualization measure texture, color, homogeneity, consistencies.

IV. pH value- pH value will be measured by the help of pH meter (digital).

V. Spread ability measurement- 0.5 gm of microemulgel drop in the glass and measure the area in 1 cm. Diameter marked on the glass and then drop 5 gm or microemulgel in glass and measure
the diameter after the 5 min and calculate in a gm-cm/sec equation.

VI. **Skin irritation** - by the help of mice. Take 5-7 shaven skin mice and apply 1mg. approx gel on skin and spread it. 3 hr after applied gel examine that part of skin as compare or check the mice activity. Same procedure repeats at least 15-30 day on same mice skin and examine the skin nature color, if no any redness or dryitchy skin found that mean gel has nonirritant with the drug or usingexcipients.

VII. **In vitro Release study** – Set assembly Franz diffusion cell, apply the gel on skin membrane and take a sample of phosphate buffer at the starting point and check the drug% by the help of UV spectrooscope. And after then every 30 min. take the reading till the 90-100% of drug

3. **Conclusion** – In the condition of psoriasis all the dosage form such as oral topical or some parenteral dosage form, there is gel dosage form is best for the patients because of easily applicable no extra afford for rubbing, it is cost effective no extra instrument use for manufacture. Reduce dose drug because of extra penetration, relief form itchy dry scalp skin due to psoriasis using humectant. Using natural polymer can help to make low side effect with the dosage form. No more extra side effect.

**References**