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A MINI REVIEW - COMBINATION CREAM FORMULATION

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Abstract:-

Creams are pharmaceutical products used to address a variety of skin conditions. Traditionally, creams were made by combining two or more ingredients with water as the solvent. As technology advances, newer methods for cream formulation are being used. These semi-solids can be used safely by the general public and society. There is also four-drug combination pharmaceutical cream having various pharmacological properties such as antibacterial, antifungal, antiprotozoal, corticosteroid, and anti-inflammatory activity. hence the cream has a multipurpose range of being used in various skin disorders such as atopic dermatitis and capillaries dermatitis.

Keywords:- Antibacterial, Antifungal, Antiprotozoal, Corticosteroid, Anti-Inflammatory.

Introduction:-

Creams are considered an important part of the cosmo products duct as topical preparations from time immemorial due to their ease of application to the skin and also their removal. From cosmetic purposes, Pharmaceutical creams have a variety of applications such as cleansing, beautifying, altering appearance, moisturizing, etc. to skin protection against bacterial, and fungal infections as well as healing cuts, burns, and wounds on the skin. The cream formulation is for treating primary and secondary skin infections such as dermatophytosis, psoriasis, eczema, and trichomoniasis. The combination is thought to be ideal for topical antibacterial, antifungal, antiprotozoal, corticosteroid, and anti-inflammatory activity.

Fungal infections (also called mycoses) represent the invasion of tissues by one or more species of fungi which may cause superficial, localized, deeper tissue infections to serious lung, blood (septicemia), or systemic diseases. Some fungi are pathogenic, causing disease whether the immune system is healthy or not. Topical treatment of fungal infections has several superiorities including, targeting the site of infection, reduction of the risk of systemic side effects, enhancement of the efficacy of treatment and, high patient compliance. Different type of topical effective antifungal compounds has been used in the treatment of a variety of dermatological skin infections. Currently, these antifungal drugs are commercially available in conventional dosage forms such as creams, gels, lotions, and sprays. The most common therapeutic options are systemic and topical antifungal agents; however, oral antifungals are associated with adverse effects that can cause patients to discontinue treatment, which may be complicated by the presence of comorbid conditions. Antifungal drugs should reach effective therapeutic levels in the viable epidermis after dermal administration. The greatest challenge for dermal delivery is stratum corneum, to improve its permeability, new formulation approaches have been investigated.

Topical antibacterials are frequently used to treat or prevent infections after small cuts, abrasions, burns, and surgical wounds as well as superficial pyodermas like impetigo. Numerous antibiotics and antiseptics can be used for various conditions. Benzoyl peroxide, either alone or in combination with antibiotics or retinoids, is the medicine of first choice for treating acne, which is one of the main uses of topical antibacterials. The two

most often used antibiotics for the treatment of superficial pyodermas and elimination of staphylococcal carrier states are mupirocin and fusidic acid. Topical antiseptics like gentian violet are receiving increasing investigation as potential alternatives as bacterial resistance to topical antibiotics is a major problem. The use of various topical medications is restricted by the prevalence of contact dermatitis.

Topical corticosteroids play a major role in the treatment of many dermatologic conditions. They are FDA-approved and indicated for the use of inflammatory and pruritic presentations of dermatologic conditions. The well-known indications are for diseases such as psoriasis, limited areas of vitiligo, eczema, atopic dermatitis, phimosis, acute radiation dermatitis, lichen planus, lichen simplex chronicus, discoid lupus erythematosus, and lichen sclerosis.[1] They are effective for conditions involving hyper-proliferation, immunological, and inflammatory properties.[2]

Product Design and Development

The drug product development process begins after the dosage form is chosen to develop a stable product that can achieve safety and efficacy [3].

Drug Substance

The properties of the drug substance have a significant effect on the drug product's performance and functionality. These characteristics must be determined to create the proper dosage form and select the appropriate concentration of drug, excipients, and process parameters. Drug characteristics such as solubility, partition coefficient (log p), particle size, pKa, permeability, melting point, and molecular weight must be identified during pre-formulation studies because they play a role in percutaneous penetration [3, 4].

Composition for preparation of skin creams

The selection of excipients should be given special attention as it has an impact on the performance, manufacturability, and stability of the final product. This decision is based on the dosage form, route of administration, safety profile, manufacturing process, and regulatory considerations. The release of the drug from the dosage form, the characteristics of the skin barrier, and the penetration/diffusion of the drug are all influenced by the nature and concentration of the excipient, affecting the duration and extent of therapeutic action. at the target skin layer. The excipients are used to enhance the solubility and entrap the drug, control the release, increase the skin permeability, and formulation stability, and inhibit microbial growth. Pharmaceutical excipients acceptable for the development of pharmaceutical products are listed in the international pharmacopeias [4].

In cream formulations, water is a fundamental ingredient. Water is often used as a liquid vehicle in skincare products. The creams are made with water free of pesticides, pollutants, viruses, and other contaminants. It can also form emulsions, depending on the amount of water used in the mixture. One of the most important components of cream is oil, fats, and waxes. Depending on the application, waxes behave as an emulsifying agent, fats act as a thickening agent, and oil acts as a preservative [4]. Mineral oil is a highly refined, clear, and odorless oil that does not solidify or clog skin pores, and it rarely causes allergic reactions. It is light in weight and inexpensive and helps to reduce water loss and keep the body hydrated. Liquid paraffin, liquid petroleum, paraffin oil, liquid petrolatum, petroleum oil, and other mineral oils are commonly used in cosmetics. Vegetable oil forms a layer on the skin's surface that helps the skin retain its fullness by slowing water loss. Vegetable oils can also be added to creams or personal care items to thicken lipid or oily components like almonds, seeds, avocados, and sunflowers [5]. Beeswax, carnauba wax, ceresin, spermaceti, and other ingredients are used to make the cream. Waxes are used in cosmetics as they facilitate the separation of oily and liquid components from emulsions. These waxes often thicken the lipid part of the skin and cause it to adhere to the surface. Creams are made up of many types of fats. Animals, trees, and minerals will provide all of these materials. Lanolin is made from the fat of sheep's wool. Lanolin is divided into two types: hydrated and non-hydrated. Hydrated lanolin contains between 25% and 30% water. The melting point of anhydrous lanolin is 38 to 42°C and it has

a slight odor. These ingredients serve as lubricants on the skin's surface, making it appear soft and smooth. Lanolin helps in the formation of emulsions and mixes well with other elements in cosmetics and personal care products. Colors were largely derived from natural substances such as turmeric, saffron, and indigo. Most skin care formulations contain these important multifunctional ingredients. Humectants are organic compounds that have high hygroscopicity. These are the materials that can absorb and hold water. These have numerous advantages, including hydration, whitening, and so on. Some examples include glycine, hydroxyethyl urea, betaine, sodium-L-lactate, and other humectants. Humectants are also used in shampoo to help hydrate hair and counter the drying effect of surfactants [6]. They also help with low-temperature stabilization and freeze/thaw, acting as antifreeze and maintaining shampoo clarity at low temperatures. A wide range of products is added to obtain a pleasant scent and mask the smell of certain ingredients. Vitamins are necessary for the proper functioning of physiological functions of the body and the skin. Vitamins A, B, C, E, and, others are commonly used in the formulation of the cream [6]. Skincare products contain preservatives to help stop microbe contamination and instability during formulation, shipping, storage, and consumer use. Antioxidants are also used to counteract the effects of oxygen exposure. Synthetic preservatives are effective in preserving products when used at low concentrations. They have a wide range of antibacterial activity [7, 8].

Conclusion:-

The creams are pharmaceutical products used to address a variety of skin conditions. Traditionally, creams were made by combining two or more active ingredients with some preservatives which are essential for the stability of cream. When there is an addition of pharmaceutical substance, which has Antibacterial, Antifungal, Antiprotozoal, Corticosteroid, and Anti-inflammatory activities. They give the additional effect of safety and are available at low cost. As the pharmaceutical industry and sector progress, Combination pharmaceutical creams are assured that they will continue in the coming years as an exciting and attractive field of research.

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