

Niosomal Formulation loaded with *Leonotis nepetaefolia* (L.) R.Br. extract for the treatment of fungal infection

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Abstract: Herbal drug loaded delivery strategies are combined with current scientific technologies, which enhance the therapeutic value of the pharmaceuticals. The objective of this research is to formulate and evaluate *Leonotis nepetaefolia* (L.) R.Br. methanolic extract-based niosomal drug delivery system. Analysis of the niosomal dispersion was conducted using particle size entrapment efficiency and in-vitro drug release study. Drug delivery through niosomal formulations is gaining success rapidly at the present time and it could be a suitable carrier for *Leonotis nepetaefolia* (L.) R.Br. methanolic extract for the treatment of fungal infection. The results indicates that most promising formulation was NFLN8, which contained Tween 40 as surfactant at ratio of 2:1 with cholesterol.

Keywords: *Leonotis nepetaefolia* (L.) R.Br., Niosomes, Fungal infection.

1. Introduction

Fungal infections have become world's leading cause of infection. In recent years, resistance to human pathogenic organisms has been frequently reported from all over the world. However situation is alarming in both developing as well as developed countries due to indiscriminate use of antibiotics. The treatment of infectious diseases in immune compromised patients has become further complicated due to the resistance of bacterial and fungal pathogens. Most common fungal infections such as candidiasis (caused by yeast like fungus *Candida albicans*), aspergillosis (caused by *Aspergillus*), blastomycosis (caused by *Blastomyces*) etc. are now a day's more prone to human and causing majority of diseases. These species grow rapidly at 25- 37⁰ C temperature. These fungal infections colonize mucosal surfaces of the oral and vaginal cavities and the digestive tract and are able to cause variety of infections depending upon the nature of the underlying host defect. Weak or immature immune system or metabolic illness such as diabetes, HIV/AIDS, stress, nutrient deficiency, mononucleosis is important predisposing factors for fungal infections. [1]

Topical formulations are intended to treat local infections on the topmost layer of the skin by effectively penetrating the drugs into the stratum corneum, thus destroying the fungi or the causative organism. Advantages associated with topical formulations include limited systemic bioavailability of the drug, which reduces the systemic adverse effects, potential self-medication, increased patient compliance, and targeted or localized therapy. However, topical preparations have disadvantages such as poor dermal bioavailability, poor penetration into the stratum corneum, variable drug levels at the site of infection, greasiness or stickiness of ointments and creams, skin irritation, allergic reactions, and uncontrolled evaporation of drugs from the preparation. [2] Therefore, there is a need for novel topical formulations to address

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