

SEMI-SOLID DOSAGE FORMS: OINTMENTS OF MULTIPLE EMULSIONS AND THEIR STABILITY

Fakih Mohamad, Yudina Yu.V.

National University of Pharmacy, Kharkiv, Ukraine

m.a.fakih@live.com

yulia_yudina78@mail.ru

Over the past decades ointments have been the center of attention of research for treatment of dermatological, ophthalmic, and even nasal pathologies. Ointment may also have a transdermal function where the skin is not the target organ, and systemic absorption is considered. Ointments serve three functions including: protectorant, emollient, and a vehicle (carrier) of medicaments.

There are four types of ointments: oleaginous (hydrocarbon) bases, adsorption bases, water removable (emulsion) ointments, and water soluble ointments each having different capabilities of withholding water. Selection of an appropriate base for an ointment or cream formulation depends on the type of activity desired (e.g., topical or percutaneous absorption), compatibility with other components, physicochemical and microbial stability of the product, ease of manufacture, pourability and spreadability of the formulation, duration of contact, chances of hypersensitivity reactions, and ease of washing from the site of application.

Of particular interest are microheterogeneous dispersed systems composed of two immiscible phases, oil and water. Our research will mainly focus on emulsions which have the ability to carry medicinal active substances, specifically multiple emulsions. Multiple emulsions are complex polydispersed systems where both oil in water and water in oil emulsion exists simultaneously that are stabilized by lipophilic and hydrophilic surfactants respectively. There are two types of multiple emulsions, water/oil/water, or oil/water/oil. These systems are also known as liquid membrane systems.

The main problem with multiple emulsions is its instability, which is represented by transformation of the complex emulsion to a simple oil/water or water/oil emulsion. The most important physical instability phenomena for multiple emulsions are: creaming, sedimentation, aggregation and coalescences of the dispersed droplets, and inversion and separation of the phases.

In our research, we will be experimenting using various techniques and materials to obtain stable multiple emulsions in accordance to the calculations and the proper methods of preparation of such medicinal dosage forms.