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Development of Physicochemical Properties of Pomegranate Extract using “Liponiosome” Encapsulation Technique

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Pomegranate extracts have been reported as biologically active having desirable properties such as antioxidant, antifungal, anticarcinogenic and anti-inflammatory capabilities. Anthocyanins found in pomegranate fruit have higher antioxidant activity than vitamin-E (α -tocopherol), β -carotene, and ascorbic acid. Although, it shows good biological activity against a variety of target, it easily decomposes and has high acidity (pH 2.90-3.75), which is not appropriate for topical treatment on human skin (pH 3.5-5.5). It is very important to improve the properties of the pomegranate extracts to obtain desirable characteristics and properties appropriate for skin treatment. In this work, the pomegranate extracts have been encapsulated in a particle, called “liponiosome”. The liponiosome is composed of phospholipids, which are the main components in liposomes, and non-ionic surfactants, which are the main components in niosomes. The combination of these encapsulation substances, liposomes and niosomes, is referred to as “liponiosome”. This encapsulation technique provides desirable properties in terms of particles sizes (~100 nm), stability (at various conditions such as at 4°C, room temperature and 40°C for 1 month and during a heating-cooling cycle for 6 cycles) and efficacy. Moreover, this process is cheap, provides a non-toxic product and is biocompatible with the human skin.

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