STORAGE STABILITY OF THE LIPOSOMAL SYSTEM WITH ENCAPSULATED *VACCINIUM MYRTILLUS* EXTRACT

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Abstract

Vaccinium myrtillus fruits and leaves show significant economic importance due to their application in food, functional food, pharmaceutical, cosmetic, and healthcare products. Bilberry leaves contain valuable components, such as phenolic acids, flavonoids, procyanidins, anthocyanins, fatty acids, and dietary fibers. The mentioned compounds possess various biological potentials, including antioxidant, anti-inflammatory, antimicrobial, regenerative, astringent, lipid-lowering, and anti-diabetic properties. With the aim of improving storage stability, biodistribution, and bioavailability, as well as providing controlled release of bioactive compounds, V. myrtillus extract was encapsulated in the liposomal vesicles, and their storage stability and stability after UV irradiation were monitored. Vesicle size, polydispersity index (PDI), and zeta potential were determined in the 60-day storage study at 4°C. The liposome size varied in a narrow range. PDI values were between 0.294 and 0.338 (for the non-treated sample) and 0.249 and 0.437 (for the UV-irradiated sample). The zeta potential was -5.02 mV on the 1st day and -9.16 mV on the 60th day for non-treated liposomes, while for UV-irritated, the zeta potential amounted to -3.93 mV on the 1st day and -8.22 mV on the 60th day. In both types of the sample, there was no significant change in the vesicle size during storage, while the zeta potential (absolute value) increased. Additionally, the PDI value increased in the UV-irradiated liposomes. The beneficial effects of bioactive principles from bilberry leaf on human health highlight the application of liposomes as a carrier for its extract and their potential implementation in food, functional food, pharmaceutical, and cosmetic formulations.

Keywords: *bilberry, liposomal particles, polydispersity index, storage stability, zeta potential.*