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THE CHARACTERISATION OF SILYMARIN AND SILIBININ LOADED LIPOSOMES

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Abstract

The aim of the present study was the characterization of silymarin and silibinin loaded liposomes *via* determination of encapsulation efficiency, particle size, polydispersity index (PDI), zeta potential, mobility, and conductivity, as well as storage stability during 28 days at 4°C and stability after UV irradiation. Encapsulation efficiency of silymarin and silibinin were 92.05±1.41% and 87.86±2.06%, respectively. Particle size and PDI of the liposomes with silymarin were changed from 3541.3±62.5 nm to 2677.0±44.2 nm and from 0.346±0.044 to 0.228±0.036, respectively, during the 28-days stability study; particle size and PDI of the liposomes with silibinin were changed from 2074.7±19.4 nm to 2704.0±35.0 nm and from 0.328±0.030 to 0.456±0.026, respectively. Zeta potential of the silymarin-liposomes and silibinin-liposomes was changed from -27.0±0.7 mV to -26.4±0.4 mV and from -29.4±0.6 mV to -9.0±0.4 mV, respectively. Mobility and conductivity of the liposomes with silymarin were changed from -2.120±0.057 μmcm/Vs to -2.067±0.028 μmcm/Vs and from 0.017±0.005 mS/cm to 0.009±0.004 mS/cm, respectively. Mobility and conductivity of the liposomal particles with silibinin were changed from -2.307±0.053 μmcm/Vs to -0.708±0.033 μmcm/Vs and from 0.018±0.003 mS/cm to 0.060±0.001 mS/cm, respectively. UV irradiation did not affect particle size and PDI of all liposomes, but it caused a decrease in zeta potential: -23.9±0.8 mV for silymarin and -24.5±0.7 mV for silibinin, in mobility: -1.874±0.064 μmcm/Vs for silymarin and -1.920±0.057 μmcm/Vs for silibinin, and in conductivity: 0.014±0.001 mS/cm for silymarin and 0.007±0.003 mS/cm for silibinin. Overall, the obtained results qualify liposomes to be used as silymarin and silibinin carriers for application in functional foods and pharmaceutical products.

Keywords: silymarin, silibinin, liposomes, characterization.