Enhancing the Bioavailability and Stability of Naringin and Naringenin through Nanoencapsulation

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This research elucidates the effectiveness of encapsulating Naringin and Naringenin, two vital natural flavonoids, in nanoliposomes and nanoemulsions to strengthen their physicochemical characteristics and antioxidant performance. Adopting ethanol injection for liposomal nanoformulations and high-speed homogenization for nanoemulsions, the process showcased significant enhancements in preserving and heightening the antioxidant activity of these polyphenols.
Evaluation metrics, including vesicle size, Zeta potential, polydispersity index (PDI), encapsulation efficiency, viscosity, and surface tension, were measured for comprehensive physicochemical characterization, accompanied by AFM for to reveal their microstructure.
Resulting nanosystems maintained Naringin and Naringenin properties and stability post 2-month storage at 4°C and 25°C. Consequently, this exploration proves that the bioactivity of Naringin and Naringenin is amplified by encapsulation in nanoformulations, presenting a viable solution for the efficient utilization of polyphenols in the food and pharmaceutical sectors.

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