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Application of nanocarrier systems for improving the bioavailability of nutraceuticals**M R Mozafari**

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Nutraceutical can be defined as a food substance, a functional food or dietary supplement, which provides Human body with medical or health benefits, including disease prevention and therapy. It consists of food supplements, herbal products, probiotics, prebiotics, and medicinal foods used for prevention and treatment of various diseases. Consumption of nutraceutical compounds is a natural way to achieve therapeutic outcome with minimal or no side effects. These compounds, however, are subject to degradation as a result of exposure to environmental factors such as humidity, oxygen, heat, and light. Nanocarrier systems are very promising encapsulation technologies for the nutraceutical industry. Protection of sensitive bioactive molecules, storage stability, high loading capacity, enhanced bioavailability, and sustained-release mechanism are among the many advantages offered by nanocarrier

technology. Nanocarrier formulations have already resulted in numerous marketed pharmaceutical products. In addition, proof-of-principle studies for nanocarrier systems providing enhanced oral bioactive uptake are available. By providing a comparatively more intimate contact with the absorption membrane, a prolonged gastro-intestinal residence time and/or exhibiting permeation enhancing properties, absorption can be strongly improved by encapsulating bioactive material using nanocarriers. This entry reviews various aspects of nanocarrier technology including their main physicochemical properties, generally employed preparation methods and their application in the nutraceutical industry.

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