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## Nano-liposomes using supercritical fluid system for nutraceuticals

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The liposomes as bioactive carriers are getting attention worldwide because of its unique stability against severe environmental, chemical changes with improved solubility and increased bioavailability. There are several methods for preparation of liposomes such as thin film evaporation, ultrasonication, high pressure homogenizer, membrane processing and supercritical CO<sub>2</sub>. Most of the techniques of encapsulation process involve use of harmful solvents and high temperature treatment which directly affects both quality and quantity of nutraceutical components. The supercritical (SC) CO<sub>2</sub> method of liposomes preparation works on the principle of Gas anti-solvent technique (GAS) which is a novel approach to produce nano-liposomes of superior characteristics in a single step. The SC-GAS method of liposomes production is more acceptable because of its favorable mild conditions and its nontoxic nature which would favor encapsulation of thermo sensitive compounds. The major advantages of this process are negligible solvent residue in final product, moderate temperature processing which prevents heat sensitive product from degradation, time saving process which involves only mixing liposome ingredients followed by depressurization, size of vesicles can be tuned with variation in depressurization rates. Many applications of GAS technique for nutraceuticals shall be briefed that include delivery of tea polyphenols in the form of nano-liposomes.

### Biography

Manohar Balaraman, currently Chief Scientist & Head at Department of Food Engineering, CSIR-Central Food Technological Research Institute, Mysore, India, has about 33 years of experience in the area of food process engineering. He has 72 research publications in peer-reviewed international journals, 50 presentations in national and international conferences, 2 book chapters. His major research interests include supercritical fluid extraction, molecular distillation and biotechnological approaches to extract bio-actives from natural materials. He has visited Korea and China. He is a recipient of UNIDO fellowship during 1991-92. He is a life member of Indian Institute of Chemical Engineers, Association of Food Scientists & Technologists, India.

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