**Protection and Safe Delivery of Nutraceuticals using Electrohydrodynamic Atomization Method: the Role of Food Hydrocolloids as the Wall Material**

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**Abstract**

Nutraceuticals, coined from ‘’ nutrition’’ and ‘’pharmaceutical’’, have always been considered as natural and safe supplements that may prevent disease, substitute prescription drugs, compensate for a poor diet or promote health. Several nutraceuticals presented in the market are antioxidants and probiotics. Different methods such as spray drying have been suggested, examined and applied to encapsulate and dry probiotics and bioactive compounds. However, the harsh processing conditions of these methods would significantly reduce the viability of bacteria or damage the structure of the target molecules. *Electrohydrodynamic atomization* or *Elecrospraying* is a potential answer to the demands of nanoparticle fabrication such as scalability, reproducibility and effective encapsulation in food nanotechnology. Electrospraying (and the related process of electrospinning) both show promise as a novel delivery vehicle for supplementary food compounds since the process can be carried out from an aqueous solution, at room temperature and without coagulation chemistry to produce matrices or particulates in the micro-and nano-range. The presentation of core materials at the nanoscale improves target ability to specific areas of the digestive tract and gives improved control of release rate. Adoption of these electrohydrodynamic atomization technologies will allow the industry to develop a wide range of novel high added value functional foods. The selection of an appropriate wall material is a critical issue in electrohydrodynamic encapsulation. Food hydrocolloids, according to their green and viable nature, are one of the best choices. The application of *Alyssum homolocarpum seed gum*, *Acacia gum*,*Guar gum*,*Tara gum*,*Inulin*,*Pectin*,*Starch*,*Alginate*,*Chitosan*, *Pullulan* and *Celloluce* in the encapsulation of nutraceuticals via electrospraying method, have recently been studied.