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NANOECAPSULATION OF NUTRACEUTICAL COMPOUNDS AND BIONANOENCAPSULATION OF PROTEINS AND NUCLEI ACIDS

Oscar E Perez[1,2,3], Rocio Corfield[1], Ana P Domínguez-Rubio[1,2], Agustina Alaimo[1,2] and Jimena Martinez[1,2]

[1]CONICET-Universidad de Buenos Aires, Argentina
[2]Ciudad Universitaria, Argentina
[3]Universidad Nacional de Lanús, Argentina

Growing attempts are being made to rationally utilize systems for human health improvement and disease prevention. In this context, this contribution is part of our interest in use nano-encapsulation strategies to construct nano-vehicles; which in turn will exert the controlled and targeted delivery of nutraceuticals. A nutraceutical can be defined as the actual substance that confers a health benefit. Our research group has carried out the nano-ecapsulation of bioactive compounds as resveratrol (Res), folic acid (FA), betanin (Bt) into different biocompatible matrices. We also studied the microvesicle production (MV) by *Lactobacillus casei* BL23 involved in its probiotic activity.We characterizes the interactions between β-lactoglobulin (β-lg) and isolated 7S and 11S globulins obtained from defeated soy flour and folic acid (FA) at different load ratio and their functional implications, in terms of colloidal behaviour and digestibility. The biological activity of nano-complexes loaded with FA was explored in terms of their capacity to enhance the biomass formation of L. casei BL23. The results concerning to nano-complexes inclusion in culture media showed higher bacterial growth. Bt loaded in a nanovehicle of 11S quinoa seed protein was designed. At this respect, we found that protein solubility was increased in the presence of Bt. 11S-Bt nano-complexes showed a synergistic effect in terms of both, antiradical or reducing power capacity in comparison to Bt as evaluated by to methods, 2,2 -azino-bis-(3-ethylbenzothiazoline-6-sulfonate) (ABTS), and by ferric reducing antioxidant power (FRAP). On the other hand, Res was included into nanoparticles of chitosan, a mucoadhesive and positive charged polysaccharide. Bioactivity of all these nanoencapsulated materials were evaluated by in-vitro assays of different human culture cells lines. These nanoencapsulated materials could have the potentiality to exert the bioactive protection and the controlled delivery in food, pharmaceutical and nutraceutical products. MV could be used as nanomachine controlling the host genes expression.

Biography

Oscar E Perez is a Professor at National Lanús University (Buenos Aires) in the Department of Productive Development and Technology. He has been trained in the field of nanoparticles, biopolymers and food colloids. He has expertise in nano and microencapsulation of bioactive compound, i.e. bioactives peptides, micronutrients, folic acid, insulin, growth factors. His research group has started the study of nanovesicle production generated by probiotic lactic acid bacteria, the purpose is exerting the bio-nano-encapsulation of nucleic acids and reporters overexpressed proteins, the so called inter-kingdom communication. He is Author and Co-author of more than 50 scientific papers in recognized journals and book chapters. He has also contributed over 120 communications in conferences.

oscarperez@qb.fcen.uba.ar