

Ciclo de conferencias “Lipid nanocarriers and proteins: applications in drug delivery”

Organizada por:

Programa de Doctorado en Investigación y Evaluación de Medicamentos. Aplicación de la Tecnología Farmacéutica al Desarrollo de Terapias Avanzadas

Grupo de investigación PharmaNanoGene

Actividad financiada por el programa Erasmus +

Resumen:

Owing to their biocompatibility and versatility, lipid nanocarriers showed many advantages over polymeric ones, and have been widely used for drug delivery. Lipid nanocarriers include nanoemulsions, vesicular systems, and different types of nanoparticles, such as solid lipid nanoparticles (SLN) and nanostructured lipid carriers (NLC). Well established methods are currently employed for the formulation and physico-chemical characterization of such nanocarriers. The most important analytical methods include particle size, Zeta potential, microscopic techniques and calorimetry. Drugs can be encapsulated within a lipid matrix by different ways: drug loading and drug encapsulation efficiency can be calculated as the ratio between the drug and the lipid matrix, and the ratio between the drug loaded in the lipid matrix and the amount weighted for nanocarriers preparation, respectively. Different administration routes can be employed for lipid nanocarriers (oral, parenteral, dermal, ocular, pulmonary, intranasal), allowing to overcome biological barriers.

Being highly vulnerable molecules, proteins usually show short in vivo half-lives, due to degradation by enzymes. Thus, many therapeutic proteins do not possess the required physicochemical properties to be absorbed and to reach target cells, needing delivery and targeting systems. In order to fulfil this requirement, lipid nanocarriers are currently under investigation. On the other side, specific proteins can act as targeting moieties for lipid nanocarriers: in this case, they are linked to the surface of nanocarriers and specifically recognized by receptors in the target cells. The interaction between lipid nanocarriers and proteins can be investigated through different techniques, such as RP-HPLC, size exclusion, electrophoresis, field flow fractionation.

Profesor:

Luigi Sebastiano Battaglia

Academic positions

- Research Associate at Dipartimento di Scienza e Tecnologia del Farmaco, Università degli Studi di Torino, since December 27th, 2006.
- Assistant Professor in Pharmaceutical Technology at Dipartimento di Scienza e Tecnologia del Farmaco, Università degli Studi di Torino, since October 1st, 2012

Scientific activity

His scientific activity has been addressed mainly on solid lipid nanoparticles (SLN), aiming to:

- develop new techniques for the preparation of SLN
- deliver peptides and proteins in SLN
- deliver anticancer and cytotoxic drugs in SLN.

In particular he developed and patented a new technology for SLN preparation, named fatty acid coacervation. The main advantages of this technology are: the low cost, it is a solvent-free process, and the mild operating temperatures.

Scientific societies membership

Already member of ADRITELF (Associazione Docenti e Ricercatori Italiani di Tecnologia e Legislazione Farmaceutica) and currently member of CRS (Controlled Release Society) Italian Chapter, from 2013 he is member of the Coordination Committee of NanoPharmaNet, the Italian Network of Pharmaceutical Nanotechnology and Nanomedicine. Currently he is also member of EASD (European Association for the Study of Diabetes). He is Speciality Editorial Board member of Webmedcentral Plus from 2012 and Editorial Board Member of International Journal of Nanomaterials, Nanotechnology and Nanomedicine from 2015.

Calendario:

| Lugar | Fechas | Horario |
|---|-----------------------|-------------|
| Salón de actos del Centro de Investigación Lascaray Ikergunea | 17/06/2019-19-06-2019 | 9,30-13,30h |

Conferencias:

| Título | Fecha | Horario |
|--|------------|-------------|
| Lipid nanoparticles for drug delivery | 17/06/2019 | 9,30-13,30h |
| Protein and peptide delivery through lipid nanoparticles | 18/06/2019 | 9,30-13,30h |
| Erasmus+ presentation and discussion | 19/06/2019 | 9,30-13,30h |

Plazas:

40

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