

Nanotechnological systems for pharmaceutical, nutraceutical and/or cosmetological applications

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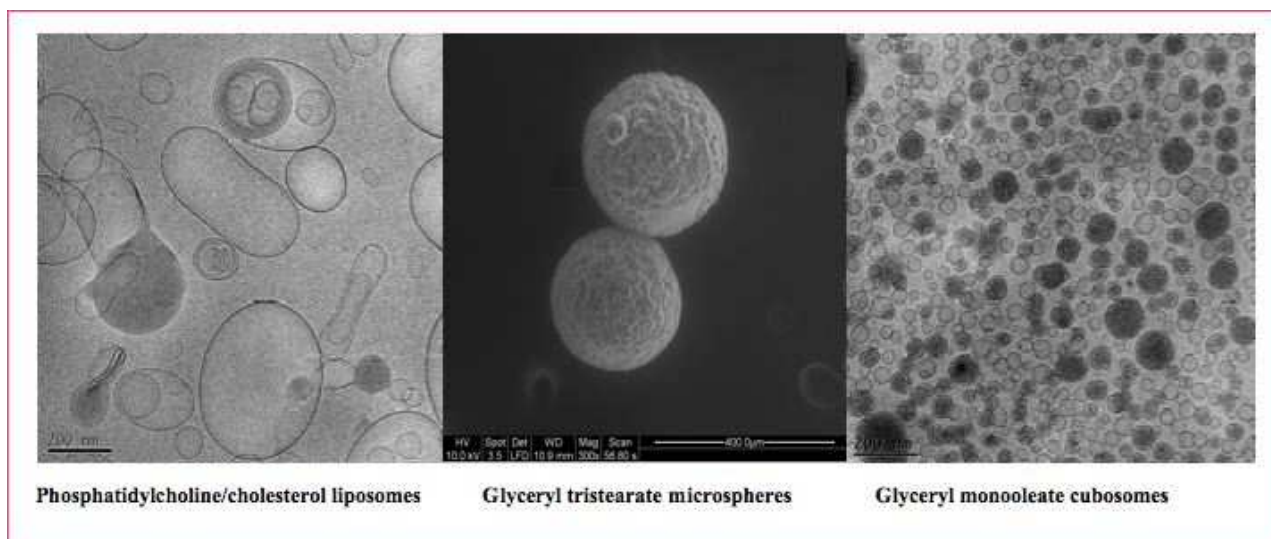
Innovative pharmaceutical, nutraceutical and cosmetological formulations, such as dispersions of solid lipid nanoparticles, solid microparticles, liposomes, cubosomes and microemulsions.

Formulations can be administered

- per os*, to preserve the molecule from gastric environment and to assure prolonged and/or targeted release

- for parenteral route*, to control molecule release, decreasing the number of administrations and side effects, increasing the patient compliance

- for cutaneous use*, to increase the percutaneous absorption of the incorporated molecules.



1. Description of the products

Our group is able to produce pharmaceutical, nutraceutical and/or cosmetological formulations such as nano- and micro- particles, liposomes, cubosomes and microemulsions.

Nano and microparticles based systems are able to deliver molecules destined to oral and parenteral way, in order to reduce number of administrations, side effects, improving the patient compliance.

Liposomes and cubosomes are systems for carrying dermatologic, mucosal and parenteral drugs.

A cutaneous usage of liposomes and cubosomes allows the increasing of the absorption of incorporated molecules, prolonging the release and pharmacological effect. Their high hydrating power makes them suitable for cosmetic uses.

Microemulsions are able to augment the solubility of insoluble drugs and stability, compared to oiliness solutions. The elegant aspect and the scarce oiliness of these products make them proper for cosmetics and dermatologic applications.

2. Innovative aspects of the product

Our pharmaceutical and cosmetic formulations, are innovative compared to conventional ones, and can be personalized, according to the different customer needs.

Thanks to our advice, nutraceutical industries would be able to increase the solubility of molecules, protecting them from degradative phenomena and modularising their release.

The inclusion of our products within traditional cosmetics can confer originality and pleasantness to finished products. Cosmetic industries could produce our innovative formulations by inside staff.

Pharmaceutical industries could commercialize new products and innovate already existing one.

3. Main advantages of the offer

The use of smart nanosystems for the delivery of molecules with therapeutic, cosmetic and nutritional activity allows the formulation of compounds poorly soluble in water. In addition, the preparation of such nanosystems requires simple instrumentation and very short formulation times leading to an easy industrial scaling-up.

4. Technology keywords

Nanotechnological systems, cubosomes, lipids, cosmetics, nutraceutics

5. Current stage of development

Work in progress –Laboratory tested (*in vivo* and *in vitro*) - Ready for demonstration - Scale up needed

6. Intellectual property rights

Products of the research are still not covered by patents

Technical and scientific publications

R. Cortesi, E. Esposito, G. Luca, C. Nastruzzi: Production of lipospheres as carriers for bioactive compounds, *Biomaterials*, 23 (11), 2283-2294, 2002.

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E. Esposito, N. Eblovi, S. Rasi, M. Drechsler, G. M. Di Gregorio, E. Menegatti, R. Cortesi: Lipid-Based Supramolecular Systems for Topical Application: A Preformulatory Study. *AAPS PharmSci*, 5 (4) 30, 2003.

E. Esposito, E. Menegatti, R. Cortesi Ethosomes and liposomes as topical vehicles for azelaic acid: a preformulation study *The Journal of Cosmetic Sciences*, 55: 253-264, 2004.

R. Cortesi, R. Romagnoli. Menegatti, F. Cervellati, C. Nastruzzi, E. Esposito Liposomes containing distamycins: preparation, characterization and antiproliferative activity *Drug Delivery*, 11:83-88, 2004.

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