

Novel drug delivery systems produced using clean technologies with application in inflammatory bowel diseases therapy

Inflammatory bowel diseases (IBD), is a debilitating chronic relapsing-remitting disorder that afflicts millions of individuals.

Patients with IBD need multiple medications and long-term up to life-long treatment. The marketed delivery systems appear to be insufficiently selective because drug release mechanisms are based on physiological parameters not related to the inflammation.

The proposed work plan aims to develop new multilayered polymer- lipid delivery systems, that can overcome adhesion and bioavailability problems.

Different techniques will be explored, including solvent evaporation, emulsion drying, spray-drying and SCF-precipitation methods.

The delivery systems produced will be physically characterized in terms of morphology, particle size, particle size distribution and solid state characterization. The drug encapsulation efficiency (EE) and in vitro drug release profiles will be assessed in order to select the systems with a better performance. The bioavailability and cellular uptake of the systems prepared will be evaluated using human culture cell models.