# POLY (LIPOIC ACID NANOPARTICLES) AS DRUG DELIVERY VECTOR

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The traditional dosage forms of medicinal products often display poor biodistribution thus leading to unsatisfactory compliance of patients. Drug delivery systems can mitigate these effects by protecting and stabilizing the drug molecule while in circulation and releasing it only at the site of action. Features required include biocompatibility and biodegradability, stability in physiological conditions and high drug loading capacity. For this purpose, several nano-delivery systems have been proposed and used in recent years, none of them however still revealed to fulfill all the necessary requisites for general application.
The goal of our research group is to design a nanoparticle featuring biodegradability, resistance to water, structural stability, and the ability to evade the immune system. With this aim, we have developed a novel class of biocompatible and biodegradable highly cross-linked polymeric nanoparticles based on derivatives of lipoic acid. Once the lipoic acid monomers are polymerized, by RODEP, they form disulfide bonds that ensure the stability of the nanoparticles in aqueous environments and during circulation. Preliminary studies have also demonstrated absence of cellular toxicity, procoagulant and hemolytic activity in vitro, low toxicity in vivo (zebrafish larvae, rats), and an interesting tendency to accumulate in the cardiovascular system.

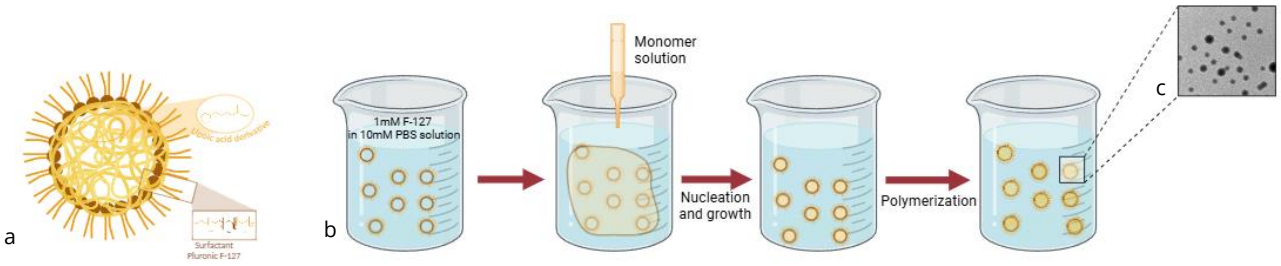


Figure 1: a) Schematic representation of Poly (lipoic acid) Nanoparticles b) Synthetic procedure for nanoparticles formation. c) TEM image of Poly (lipoic acid) nanoparticles

Key words: *drug delivery system, nanoparticles, lipoic acid, biodegradable, biocompatible*

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