



NanoHearth: Squalene-Adenosine nanoparticles for heart ischemia/reperfusion injuries treatment

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Heart failure still represents the first cause of mortality and disability in the world, with only few therapeutic options available for treatment. The NanoHearth project will develop nanoparticles loaded with adenosine to protect this molecule from rapid degradation. The conceptual approach is based on the chemical linkage of adenosine to squalene, a natural and biocompatible lipid, which triggers the spontaneous self-assembly of adenosine-squalene (SqAde) bioconjugates into nanoparticles. This enables to dramatically increase the nanoparticle drug payload and to avoid the burst release, thus overcoming the limitations of the others nanotechnologies which uses physical rather than chemical encapsulation processes. The cardioprotective effect of this nanomedicine and the mechanisms involved will be evaluated *in vitro* and *in vivo*, close to clinical conditions.

