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Sustained-release mitochondrial protonophore reverses nonalcoholic fatty liver disease in rats

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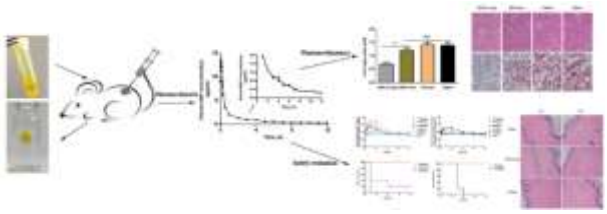
Graphical Abstract



Abstract

As a mitochondrial uncoupler, 2,4-dinitrophenol (DNP) is proven therapeutically effective against nonalcoholic fatty liver disease (NAFLD) by uncoupling oxidation and phosphorylation. However, a major factor that impedes the clinical application of DNP is the significant side effects derived from its frequent hyperthermia and even death. In this study, we developed an injectable liquid crystal gel (DNP-LC-gel) to reduce the toxicity of DNP. DNP-LC-gel achieved sustained release and maintained DNP plasma