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ERYTHROPOIETIN GENE DELIVERY FOR MYOCARDIAL INFARCTION TREATMENT

THERAPEUTICS

Intravenous administration of plasmid human erythropoietin gene by a bioreducible polymer to treat myocardial infarction.

TECHNOLOGY TYPE

Drug Delivery
Gene Therapy
Cardiovascular
Nanoparticles
Myocardial Infarction

STAGE OF DEVELOPMENT

- Bench prototype completed.

- Studies demonstrating safety and efficacy required.

IP PROTECTION

Nationalized PCT Pending in the United States

Arginine-Grafted Bioreducible Polymer Systems and Use in Treatment of Cardiac Conditions
US20160083522A1

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Reference Number: U-5602

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TECHNOLOGY SUMMARY

Myocardial infarction is the leading cause of morbidity and mortality worldwide. Although cardiac remodeling can maintain normal function initially, it gradually becomes maladaptive, leading to adverse outcomes, including heart failure. A novel approach for delivering plasmid human erythropoietin gene through an *Arginine-grafted Bioreducible Polymer* shows promise as a gene therapy tool for treating myocardial infarction. This treatment reverses post-infarct cardiac remodeling and restores heart function. Research suggests that this bioreducible delivery vector can revive the therapeutic potential of erythropoietin and other cardioprotective genes, allowing use as an effective treatment.

FEATURES AND BENEFITS

- Increases angiogenesis in cardiac tissue.
- Reduces the infarct size and protects against the expansion of the infarct and functional impairment.
- Attenuates adverse cardiac remodeling and fibrosis.
- Offers potential as a platform for a pipeline of gene therapy drugs.

RECENT PUBLICATIONS

Yang, R., Nam, K., Wan Kim, S., Turkson, J., Zuo, Y.Y, Haware, R.V., Chougule, M. (2017). Factorial design based multivariate modeling and optimization of tunable bioresponsive arginine grafted poly(cystaminebis(acrylamide)-diaminohexane) polymeric matrix based nanocarriers. *Molecular Pharmaceutics.* 14(1):252-263. doi: 10.1021/acs.molpharmacet.b00861

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