



"A two-step facile method for fabricating theranostics Poly-L-Lysine nanoparticles"

"Seeking industrial partners for co-development, production and marketing"

Preface

- Poly-L-Lysine (PLL) is a water-soluble cationic biopolymer containing the monomeric unit α -l-lysine.
- Poly-L-Lysine (PLL) possesses naturally inherent properties such as low immunogenicity, biocompatibility, high water solubility, and biodegradability which makes it an ideal delivery vehicle for APIs and contrast agent for bio-imaging.
- Trivial methods used for the preparation PLL nanoparticles often use toxic solvents and surfactants which adversely affects biocompatibility of this drug delivery vehicle.
- There is also limitation in fabricating PLL nanoparticles with characteristics desirable for targeted site specific delivery of drug or imaging contrast agents.
- **We are offering license for an efficient method for preparing PLL nanoparticles. The method overcomes abovementioned limitations.**

Market Size & Growth Projection

- The global market for nanoparticles in biotechnology, drug development and drug delivery should grow from \$83.4 billion in 2020 to \$123.6 billion by 2025, at a compound annual growth rate (CAGR) of 8.2% for the period of 2020-2025. (Source: BCC Research.com)
- The Indian pharmaceutical industry is the 3rd largest in the world by volume and valued at \$41 bn. (Source: InvestIndia.gov.in)
- Production Linked Incentive Scheme for pharmaceuticals launched by the Government of India in 2021 is set to increase demand for better drug delivery materials.
- As of 2018, cancer is the cause of 9.6 million deaths, and the number of new cases has shot up to 18.1 million worldwide. Demand for biocompatible and minimal toxicity drug delivery agents for targeted or site-specific delivery of anti-cancer drugs is set to increase with increasing incidences.

Competition

- Method has competitive edge in terms of cost, ease of implementation, time and product quality making it an ideal choice for fabricating PLL nanoparticles having characteristics highly desirable as theranostic carrier.

The Technology

A two step facile method for preparing spherical Poly-L-Lysine (PLL) nanoparticles of size 180-225 nm and zeta potential of +16.68mV

Innovator

Dr. Sharad Gupta and Ms. Anshu Kumari [Indian Institute of Technology Indore]

Value Proposition

- Method is simple, economic, and ecofriendly
- Method is facile and occurs at room temperature
- Process occurs with only water as medium
- No toxic solvent or surfactant is used, hence nanoparticles are free from toxic contaminants
- Nanoparticles are self-assembled, biodegradable, biocompatible, and are spherical (180-225 nm)
- Nanoparticles have size and surface charge tunability

Industrial Utility

- Targeted/Site specific Drug Delivery
- Bioimaging
- Theranostics
- Cosmetics
- Industrial Enzymes
- Food Additives

Intellectual Property

- Patent applied in India

Development Status

- Proof of concept established
- In vitro experiments done with Quercetin and Indocyanin Green.
- In vivo experiments and regulatory approval are in progress.

On Offer

- Right to use and have used the method
- Right to make, have made, use, import, export, sell, and offer to sale the PLL nanoparticles prepared using the method

Technical Support

- Optional Technical Consultancy on payment basis

Contact at: reema.fitt@gmail.com

i-TTO, a regional tech transfer office established at FITT with support from NBM, BIRAC



04 March, 2022