"Ultrasonic Atomizer based preparation of theranostic nanoparticles and microspheres"

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

Preface

- ***Nanomedicine involves the use of nanoscale materials, such as biocompatible nanoparticles and nanorobots, for diagnosis, delivery, sensing or actuation purposes in a living organism.***
- ***Nanomedicine has increased total particle surface area of medicine, thus accelerating absorption rate of medicine and bioavailability.***
- ***The key point of therapy using nanomedicines is whether the medicines can be essentially (or completely) absorbed, thus particle dimensions and uniformity may directly influence the therapeutic effect.***
- ***Nanomedicines based on naturally occurring polymers like PLA, Chitosan and Sodium alginate have advantages in terms of biocompatibility, biodegradability, and low toxicity.***
- ***Existing methods of fabricating nanoparticles of these natural polymers are costly, time taking, complex and do not yield particles of desired dimension.***
- ***We are offering license for an efficient method of fabricating drug or contrast agent loaded particles based on these natural polymers. The method overcomes abovementioned limitations.***

Market Size & Growth Projection

- ***The global nanomedicine market is expected to reach USD 435.08 billion by 2028. [Source: Reports and Data]***
- ***Increased global incidence of cancer coupled with growing prevalence of cardiovascular diseases is likely to be the key factors governing market growth.***
- ***Based on the WHO statistics, in 2018 around 18.07 million new cases were registered for cancer in 2018. Additionally, cancer accounted for around 9.5 million deaths in 2018. The incidence of cancer was significantly high and lied around 48.4 percent in Asia Pacific.***
- ***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.***

The Technology

Method of preparing therapeutic, diagnostic or theranostic nanoparticles, microspheres, and hybrid microparticles using an ultrasonic atomizer assembly.

Innovator

Dr. Abhijeet Joshi et al. , Indian Institute of Technology Indore

[https://abhijeetniper.wixsite.com/therasens-lab]

Value Proposition

- *Method is simple, quick, economic and eco-friendly*
- *Drug / Contrast agent/both can be loaded*
- *Particles/spheres are highly stable*
- *Chitosan nanoparticles: 20-200 nm*
- *PLA nanoparticles: 50-250 nm*
- *Sodium alginate nanoparticles: 300-800 nm*

Industrial Utility

- *Targeted/site Specific Drug Delivery*
- *MRI imaging*
- *Theranostic*
- *Industrial enzymes*
- *Food additives*
- *Cosmetics*

Intellectual Property

- *Patent applied in India*

Development Status

- *Proof of concept established through extensive experimentation.*

On Offer

- *Right to use and have used the method*
- *Right to make, have made, use, import, export, sell, and offer to sale the agent loaded particles prepared using the method.*

Technical Support

- *Optional Technical Consultancy on payment basis*

Competition

Method has competitive edge in terms of cost, ease of implementation, time and product quality making it an ideal choice for designing high performance tumor theranostic nanoparticles, microspheres and hybrid micro-particles.

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