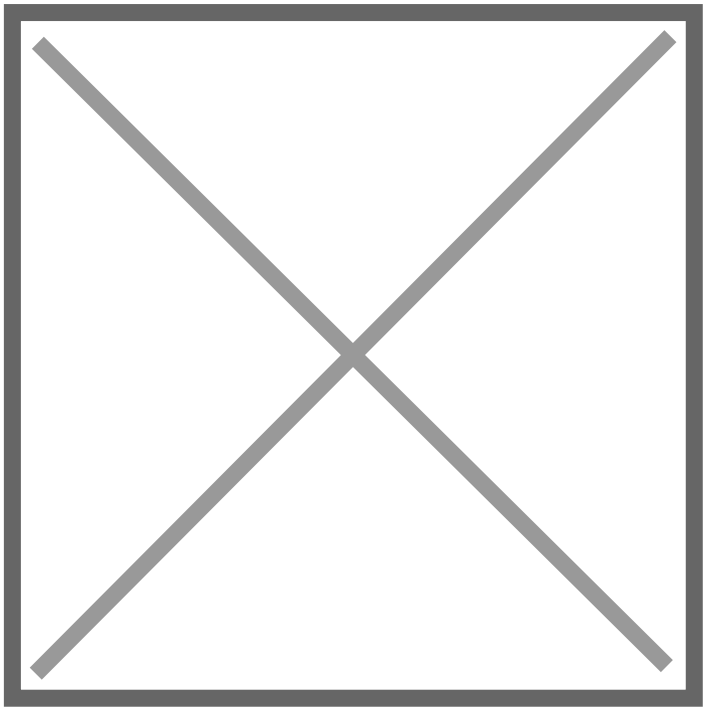
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# Mission: Enhancing drug delivery capabilities

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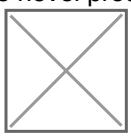


*Aiming to devise a novel formulation based on nanobiotechnology, Jupiter Bioscience along with MS Baroda University fosters a unique PPP model*



One of the crucial part of drug discovery research is the targeted and timely delivery of the drugs. Hyderabad-based Jupiter Bioscience initiated a project on the development of anti-cancer chemotherapeutic agents for effective treatment of lung cancer. The company's efforts received a major boost after it received funding worth of $303,013 (₹1.35 crore) from the Small Business Innovation Research Initiative (SBIRI) scheme of the Department of Biotechnology (DBT), Government of India.

The project is focused on the development, optimization and characterization of ligand (RGD peptides) targeted nano-constructs encapsulating anti-cancer chemotherapeutic agents (Gemcitabine) for effective treatment of lung cancer. The company combined its strength in the area of formulation with the expertise of Prof Ambikanadan Mishra, an expert from the MS Baroda University. Applying Prof Mishra's expertise in the field of nanotechnology-based drug delivery to the lung disorders, the company created an excellent mix to create novel product related to advanced formulation.



Jupiter Bioscience, which was founded by the late Mr KS Sarma, was incorporated in 1985. The company went public in 1995 and is presently led by Mr Venkat Ramana Kalavakolanu, son of Mr Sharma, who is the chairman and managing director of the company.

The company has developed and currently sells more than 600 raw materials and intermediates used in peptide research and commercial applications. With the recent introduction of peptide formulations by its subsidiary, the company has achieved the status of an integrated manufacturer of peptides.

Commenting on SBIRI funding, Mr Kalavakolanu, says, "PPP is the only way to execute projects which involve considerable risks and the impact of risks is partly borne by receiving support from the government in terms of financial assistance. Moreover, the right mix of expertise from the industry and academia is possible only through PPPs."

According to the company, formulating these nano-constructs into novel formulation will target the cancer cells without affecting the normal cells, thereby reducing the side-effects. The stabilization of lypophilized or spray-dried formulation for direct local delivery or by injection through systemic circulation is expected to improve therapeutic benefits of lung cancer treatment.

**The Way Forward**

The main goal of the project is the encapsulation of drugs inside the nano-constructs to enhance cellular uptake and reduce macrophages uptake and ciliary clearance in the lung. Since Jupiter has a strong peptide background, the company succeeded up to three stages in the development of Arginine-Glycine-Aspartate (RGD) peptide.

Recently, the company synthesized the substrate (RGD peptide), which is useful for targeting the lung cancer cells. The company made the nano-construct in partnership with Prof Mishra of the MS Baroda University. The company will also prepare the peptide conjugated nano-construct and encapsulate the gemcitabine, which is a lung cancer drug.

**Rahul Koul** in New Delhi