

Hybrid-Nanoengineering™ : A New Platform for Nanomedicine

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Abstract : Nanomedicine, a fusion of nanotechnology and medicine, is an emerging technology ideally suited to the targeted therapies. Nanoparticles overcome the low selectivity of anti-cancer drugs toward the tumor as compared to normal tissue and hence result in less severe side-effects. Our new technology, HYBRID-NANOENGINEERING™, uses a new molecule (MR007) in the creation of nanoparticles that not only helps in nanonizing the medicine but also provides synergy to the medicine. The simplified manufacturing process will result in reduced manufacturing costs. Treatment is made more convenient because hybrid nanomedicines can be produced in oral, injectable or transdermal formulations. The manufacturing process uses no protein, oil or detergents. The particle size is below 180 nm with a narrow distribution of size. Importantly, these properties confer great stability of the structure. The formulation does not aggregate in plasma and is stable over a wide range of pH. The final hybrid formulation is stable for at least 18 months as a powder. More than 97 drugs, including paclitaxel, docetaxel, tamoxifen, doxorubicin, prednisone, and artemisinin have been nanonized in water soluble formulations. Preclinical studies on cell cultures of tumors show promising results. Our HYBRID-NANOENGINEERING™ platform enables the design and development of hybrid nano-pharmaceuticals that combine efficacy with tolerability, giving patients hope for both extended overall survival and improved quality of life. This study would discuss or present this new discovery of HYBRID-NANOENGINEERING™ which targets drug delivery, synergistic, and potentiating effects, and barriers of drug delivery and advanced drug delivery systems.

Keywords : nano-medicine, nano-particles, drug delivery system, pharmaceuticals

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