

पेटेंट कार्यालय  
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पेटेंट कार्यालय का एक प्रकाशन  
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(54) Title of the invention : NANOENGINEERED BIOPOLYMERIC SYSTEMS INTEGRATING SYNTHETIC AND PHYTOCHEMICAL THERAPEUTICS FOR CONTROLLED DRUG DELIVERY SYSTEM

(51) International classification	:D04B 21/16, C09K 8/22, B01J 20/26, D21H 17/33, D06M 15/19	(71) <b>Name of Applicant :</b> <b>1)Ms. Neha Gupta</b> Address of Applicant :Assistant Professor, Sahu Onkar Saran School of Pharmacy, IFTM University Lodhipur Rajpoot, Moradabad, Uttar Pradesh, India, Pin Code- 244102 Uttar Pradesh India
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(33) Name of priority country	:NA	<b>2)Ms. Rachana Belwal</b>
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## (57) Abstract :

The present invention relates to nanoengineered biopolymeric systems that integrate both synthetic pharmaceutical agents and phytochemical therapeutics within a unified controlled drug delivery platform. The invention comprises biodegradable polymeric nanoparticles incorporating synthetic drugs and plant-derived bioactive compounds in a synergistic formulation. The system employs amphiphilic biopolymers such as polylactic-co-glycolic acid, chitosan, alginate, or cellulose derivatives as carrier matrices, modified through surface engineering to achieve targeted delivery and controlled release kinetics. The nanoparticles exhibit particle sizes ranging from 50 to 500 nanometers with high encapsulation efficiency exceeding 85 percent for both hydrophobic and hydrophilic therapeutic agents. The dual-loading architecture enables simultaneous delivery of complementary therapeutic modalities while minimizing systemic toxicity through sustained release mechanisms. The invention addresses limitations of conventional drug delivery by combining the precision of synthetic pharmaceuticals with the multitarget efficacy of phytochemicals, thereby enhancing therapeutic outcomes in oncology, inflammatory disorders, and chronic diseases requiring combination therapy approaches.

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