पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 13/2026	शुक्रवार	दिनांक: 27/03/2026
ISSUE NO. 13/2026	FRIDAY	DATE: 27/03/2026

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :06/02/2026

(21) Application No.202611013249 A

(43) Publication Date : 27/03/2026

(54) Title of the invention : FORMULATION DEVELOPMENT OF REPRESSED RELEASE ALGINATE MICROBEADS OF AMINO ACID

(51) International classification	:A61K31/198, A61K47/26, A61K47/36, A61K31/722, A61K9/16, A619/285, A61K9/20, A61K9/48
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No Filing Date	: :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The present invention relates to a repressed release pharmaceutical drug delivery system comprising alginate–chitosan based microbeads for oral administration of L-arginine. The microbeads are prepared using an ionotropic gelation technique with sodium alginate as a matrix-forming polymer and calcium chloride as a cross-linking agent, followed by chitosan coating to modulate drug release. The formulation is designed to overcome limitations of conventional immediate-release dosage forms by providing sustained and controlled drug release for up to 10 hours. The developed microbeads exhibit desirable particle size, high drug entrapment efficiency, suitable swelling behavior, and stable release characteristics under physiological conditions. The invention utilizes biocompatible and biodegradable natural polymers and offers a simple, reproducible, and scalable method of preparation, thereby improving therapeutic efficacy, patient compliance, and overall drug delivery performance.

No. of Pages : 16 No. of Claims : 8