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3.3.3 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during calendar year 2023

INDEX

Sr. No.	Calendar Year	Number of Books and Book Chapters Published
1	2023	03




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Sr. No.	Name of the teacher	Title of the book/chapter published	National / International	Calendar Year	ISBN number	Affiliating Institute at the time of publication	Name of the publisher	Link to the Source
1	S Godi, K Malviya, RE Mutha	Biochemistry and Clinical Pathology, Manual Practical Book	National	2023	978-939-11-7334-0	H. R. Patel Institute of Pharmaceutical Education and Research, Shirpur	Sankalp Publication, Bilaspur (C.G.)	https://www.flipkart.com/biochemistry-clinical-pathology/p/itmb3e1bf61d9022?otracker=product_breadCrumbs_Biochemistry+And+Clinical+Pathology+%28Paperback%2C+Pro.+Sandhya+Pal%29
2	SN Nangare, JR Pantwalawalkar, NR Jadhav, PO Nnamani, ZG Khan, PO Patil, SB Bari	Advanced hydrogel-based platform for ocular drug delivery	International	2023	978-044-31-5264-1	H. R. Patel Institute of Pharmaceutical Education and Research, Shirpur	Academic Press Publishers, Elsevier	https://www.sciencedirect.com/science/article/abs/pii/B9780443152641000117
3	RE Mutha, PS Bafna, A Dwivedi, A Dubey, R Khabiya, D Kumar, S Kumar Jha, P Ghode, K Sulakhiya, R Maru, K Shah, N Singh Chauhan, SK Maru	Role of Block Copolymers in Targeted Drug Delivery	International	2023	978-981-99-6916-6	H. R. Patel Institute of Pharmaceutical Education and Research, Shirpur	Springer International Publishing	https://link.springer.com/chapter/10.1007/978-981-99-6917-3_13



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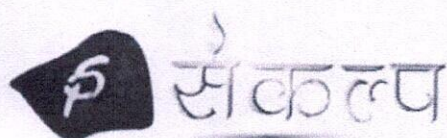
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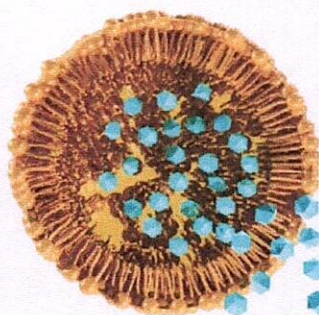
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Nanotechnology in Ophthalmology



Edited by
Mahendra Rai
Marcelo Occhiutto
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Advanced hydrogel-based platform for ocular drug delivery

Sopan N. Nangare¹, Jidnyasa R. Pantwalawalkar², Namdeo R. Jadhav², Petra O. Nnamani³, Zamir G. Khan¹, Pravin O. Patil¹ and Sanjaykumar B. Bari¹

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1. Introduction

The eye is an elegant organ that extends a gateway for drug administration chiefly to treat regiospecific eye disorders besides offering vision (Gaudana et al., 2010; Patel et al., 2013). The multiplex anatomy of the eye comprises the sclera, conjunctiva, pupil, lenses, ciliary muscles, iris, retina, macula, choroid, cornea, aqueous humor, optic nerve, and vitreous humor which work as a unit to offer eyesight. Moreover, the delicacy of the eye is protected by various accessory structures mainly eyebrows, eyelashes, eyelids, and lacrimal apparatus (Patel et al., 2013). Owing to its exquisite anatomy, the eye is concerned with many ocular disorders including cataracts, glaucoma, macular degeneration, uveitis, allergic conjunctivitis, diabetic retinopathy, etc. (Majumdar and Srirangam, 2010). Although conventional routes of administration can be employed to treat the majority of eye disorders, its application is compromised due to the requirement of high drug dose leading to systemic toxicity. Thus, considering the limitations of systemic drug delivery and the urge to treat eye disorders efficiently, ocular drug delivery has been thrust into the limelight (Gaudana et al., 2009). Interestingly, the unveiling benefits of ocular drug delivery such as smaller doses, targeted drug delivery, and consequently freedom from systemic toxicity attracted researchers to advance in conventional approaches and screen novel strategies (Sahoo et al., 2008). Reportedly, topical instillation, subconjunctival administration, and intravitreal administration are the major contributors to ocular drug delivery. Among them, topical administration is favored widely owing to ease of administration, non-invasiveness, and hence better patient compliance (Subrizi et al., 2019; Kang-Mieler et al., 2020). Apart from several advantages, the development of an ocular drug delivery system still stands critical as the complex anatomy of the eye poses substantial barriers to drug permeation and absorption. This includes static barriers especially stratified corneal epithelium, sclera, corneal stroma, conjunctiva, and dynamic barriers such as reflex blinking, nasolacrimal drainage, and tear turnover. While metabolic barriers include phase I, phase II enzymes, and efflux pumps (Suri et al., 2020). Additionally, the intraocular environment consisting of the blood–aqueous barrier and blood–retina barrier precludes drug absorption (Koduru et al., 2021).

Conventional dosage forms for ocular drug delivery encompass eye solutions, emulsions, suspensions, and ointments. Eye drops secure a magnificent share (approximately 90%) of the marketed ocular formulations corresponding to the convenience of administration. But, it releases active in a pulsatile mode which results in a sudden decline in concentration below the therapeutic level (Kuno and Fujii, 2011; Gote et al., 2019). Although permeation enhancers and viscosity modifiers have been incorporated in the formulation of eye drops to overcome this limitation, the majority of these excipients undergo local toxicity and precorneal loss (Agarwal and Rupenthal, 2016). In the context of emulsion, oil-in-water (o/w) emulsion is widely utilized compared with water-in-oil (w/o) emulsion due to low irritation potential and thus better tolerance. Various ophthalmic products are marketed in the form of emulsions including AzaSite and Restasis considering solubility and bioavailability enhancement in the emulsion form (Soni et al., 2019). Another noninvasive conventional system includes ophthalmic suspension which enhances the bioavailability of the drug by increasing the contact time of the





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Block Co-polymeric Nanocarriers: Design, Concept, and Therapeutic Applications

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