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Drug Delivery System In Opthalmic Preparations: Literature Review Article

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Abstract: *Drug delivery system or drug delivery system is a term that explains how a drug can reach a target area to achieve its effect. The preparation given in liquid form then enters the gel phase due to certain triggers such as pH, temperature and the presence of ions. The method used in this research is a literature review article (LRA). Literature search using electronic data sources published between 2013 and 2023 via Google Scholar. In the results of the literature search, 20 pieces of literature were found that met the content criteria. Based on several studies published in the literature, it shows that the drug delivery system aims to release the active substance into the circulatory system until it reaches the receptor, so that the drug provides maximum effect.*
Key Words: *Ophthalmic Preparations, Drug Delivery Systems*

INTRODUCTION

The eyes are a vulnerable sensory organ to various infectious disease systemic such as diabetes, hypertension or glaucoma , cataracts and degeneration macula . In addition , because location eyes that are on the surface body , then eyes are also easy damaged and vulnerable to infected .

The eye is an ideal target organ for treatment local . However , the eyes protected by several layer that prevents entry object or particle foreign . First petals eyes and tears flowing , then cornea , which forms barrier physical-biological . Bioavailability eye drops bad traditional caused by high tear production , which causes elimination drug in a way quickly on the cornea . (Anshul S, Renu S. 2015).

Treatment disease eye local and not can used as door enter drug to in circulation systemic . Giving drug local on site Work is a form treatment that reduces required dosage For reach effect pharmacological and also minimize effect Besides . In addition , progress in optimization system delivery drug eye such that appearance so that the path associated with technique delivery very good medicine sophisticated ; Some technique unique For seen eyes , and many found on the track delivery other .

The purpose of system delivery drug is release substance active to in system circulation blood until reach receptor so that drug can give maximum effect (Noval and Malahayati , 2021). Depending on the route and destination therapy , system delivery drug consists of from a number of types , including systems delivery drug mucoadhesive (Yusuf and Layuk , 2017), system delivery oral soluble film medication with fast (Zubaydah and Sahumena , 2021), the system delivery drug floating stomach , and still Lots Again .

METHOD

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Study This use Literature Review Article (LRA) method . Source library that is data collection was carried out through the database whose subject is System Delivery of Drug Preparations Published Ophthalmics between 2013 to 2023 , with amount articles used as many as 20 articles .

RESULTS AND DISCUSSION

Results

Writer	Title	Results
(Viviane, 2020)	System Transdermal Dissolving Drug Delivery Microneedle (DMN) and its Potential As Delivery Vaccine	DMN has succeed send a number of macromolecule like vaccines , insulin, erythropoietin , interferon-α, growth hormone , and heparin. The use of standing vaccine Alone Can more economical Because reduce waste object sharp and not need storage cold . Some testing DMN vaccine , such as flu vaccine , has done in human clinical trials .
(Diamond, 2023)	The Effect of Nanostructured Lipid Carriers (NLC) on System Drug Delivery	Based on results search a number of journal , the influence of NLC on system delivery drug have a very important role specific compared to with formulation that is not using NLC as carrier .
(oktavia, 2023)	Application Hydroxypropyl Methylcellulose (HPMC) As Substance Excipients In The System Drug Delivery	Based on results study a number of journal scientific that has explained Previously in the discussion , it was known that HPMC polymer as excipients have influence to system delivery medicine , namely increase dispersion , increase profile release , retention and tablet hardness , etc. and this influence mark reflux and increased dose volume .
(Amelia 2020)	System Delivery Preparation Ophthalmic with In Situ Gel	In situ eye gel preparation is the preparation given in form liquid Then moved to gel phase with objective For extend time contact with eyes and improve effectiveness drug .

(Melanie, 2020)	Utilization forward chaining method in diagnosis disease eye man	Application system expert It is application system sophisticated designed For diagnose disease eye through symptoms that users experience insert to in application with results certain , using method reference web -based , so that user can with easy access application consular wherever and whenever . time and make it easy user get information needed about disease eyes . Use other methods in discussion can developed For to obtain more results good and better results Good Again can optimized with use source more information experienced ..
(Day, 2021)	PROCESS AND APPLICATION OF CHITOSAN NANOPARTICLES AS DRUG DELIVERY CARRIERS	Chitosan own potential very good implementation vast and Indonesia has material standard sufficient processing many , in the form of crab and shell crab as well as Shrimp . Chitosan have very characteristic beneficial that is biocompatible , biodegradable, non-toxic toxic and cheap .
(Shiding Li1, 2023)	Nanotechnology-based eye medication delivery system: recent progress and future prospects	Although giving drug traditional has reach a number of effectiveness in treatment disease eyes , still there is a number of limitations like poor permeability , uneven distribution efficient and availability life that is not sufficient . Delivery method drug new like nanomicelles , NPs, nanosuspensions, microemulsions , dendrimers, liposomes , lenses contact , hydrogel , MN, and methods delivery drug new other can very increase effectiveness therapy moment this . At the same time , innovation sustainable in gene delivery and exosomes it seems become

		attention big in delivery drug .
(Arpita Bhattacharjee, 2017)	System delivery drug new For therapy Eyes : With reference special For delivery eye liposome	Based on results various research , can concluded that medication given in the eye with method new own a number of superiority important . Different with problem main low bioavailability related with dose ophthalmic conventional , a more modern version new can overcome matter This in a way significant .
(Carlos , 2013)	Implant as tool delivery drug For treatment disease eye	There are many challenges that must be overcome For develop biodegradable implants that can give release drug sustainable in range therapeutic For treatment disease effective eye .
(Wang, Y, 2022)	Novel Ophthalmic Drug Delivery Systems: Advances in Formulation Design Strategies Targeting the Anterior and Posterior Eye Segments	System giving eye drops new This has show greater efficacy big in treatment disorders of the anterior and posterior parts of the eye . However phenomenon negative related with him must taken into account . Prodrugs can increase lipid solubility and toxicity drug .
(Sadek Ahmed, 2022)	Ophthalmic Medication Administration: A Comprehensive Review	Treatment disease effective eye Still is difficult task Because the amount blockage eyes in the part front and back eyes . Some method giving eye used For give drug to place desired work , for example in a way topical , intraocular , periocular , or in combination with tool ophthalmic .
(Yahya., 2013)	Review about the mini tablet given in a way topical For delivery drug to anterior segment of the eye	In level production , system This feasible and implemented with method simple use cheap and easy components obtained . Technology and methodology can , for example , be applied to oral administration and also be considered For other diseases that require oral medication .
(Vica et al., 2020)	Use of Stearic Acid Lipid in the System Drug Delivery Based Nanoparticles	Use of acidic lipids stearate in formulation nanoparticles as matrix or carrier in solid lipid form can increase dissolution particles and effectiveness material active especially those of a nature lipophilic . Development system delivery drug based on formulation acidic lipid nanoparticles stearate Keep going to be continued

(Akbari, 2023)	Application system therapeutic delivery drug based on lens contact with disease eye	System delivery drug contact based on lens has studied in a way wide Because its advantages , including delivery drug term length , retention drug term length , increase bioavailability , and little effect side medicine . Measurement This No only will provide new strategies For treatment clinical disease eyes , but also will contribute to commercialization lenses containing drug .
(Shanfeng Wang et al, 2013)	Hydrogel Contact Lenses For Longer Delivery of Eye Medications	Printed hydrogel own profit big in control release drug hydrophilic and filling repeat medicine . Different hydrogel models must made based on use lens different contacts , such as lens contact very use daily , lens contact very use monthly , and lenses contact very use annual . Hydrogel special must made For reduce protein absorption and increase biocompatibility hydrogel . In addition , in vivo research is also needed For use lens contact therapeutic on the eyes .
(Ronald, 2013)	Increase Eye Medication Delivery Using Nanoemulsi Cationic , Novasorb	Novasorb now has prove that nanoemulsi cationic can in a way effective treat disease eye without toxicity (successful tested on more from 1000 patients)
(Marion, 2018)	System Eye Medication Delivery for Antibiotherapy	Giving antibiotics need efficacy optimal antimicrobial . This drug used For operation eyes , anterior and posterior diseases . Some repair currently researched and developed For limit effect dangerous antibiotics in the eye . Form latest and new make maintenance eye more effective .

(Bharta et al., 2021)	Polymer Cellulose For Increase Bioavailability of Drugs in System Eye Medication Delivery	Solving the solubility and bioavailability of ophthalmic drugs is a challenging task, which necessitates researching new polymers and adopting cutting-edge technologies. However, it is important to consider safety and toxicity when selecting drugs, polymers and other excipients. Various polymers have proven to be very helpful in the development of ocular delivery systems, of which cellulose and its derivatives have shown promising results. Cellulose derivatives have shown potential to improve the solubility and bioavailability of ophthalmic drugs.
(Daniela et al., 2015)	Nanowafer Delivery of Eye Medication with Efficacy Enhanced Therapy	System delivery drug nano wafer can to deliver various drug without look at heavy molecule or characteristic chemistry . Development system delivery drug nanodisc , which can with easy embedded in the surface eye with end finger patient without intervention clinical whatever , no only facilitate but also very wanted in treatment injury eyes , infections , and eyes dry chronic . glaucoma and others . diseases eye condition inflammation . Because of the polymers and drugs used in development nanodisc Already used in a way clinical , then polymers and drugs the can with fast moved to clinic For tested on humans .
(Ali, 2017)	MOBILE-BASED EXPERT SYSTEM FOR DIAGNOSING EYE DISEASES	Application program system expert can finish problem , namely based on symptoms entered by the user , can with fast and accurate display results diagnosis in the form of a disease and solution the treatment .

DISCUSSION

Development future therapy utilise discipline knowledge the same basic that always be the core of development medicine , namely knowledge structure biological , which informs the target biomacromolecules , chemistry . required in design and synthesis candidate medicine and pharmacology For determine effect interaction Drugs - Targets. Sciences This bring development drug to level next , which requires approach new .

Increase effectiveness medicines . In addition to modifying compound medicine , many efforts made For modify form supplies and systems delivery medicine . System delivery ideal medicine (SPO) that is currently This currently developed is system with period latency short at the moment giving that gives effect

the oldest and most productive pharmacological . Drugs are straight to the point his work (target) with safe . Therefore That various study has done , various stock drug has designed such that appearance so that have efficacy emit medication at the planned time , so that increase effectiveness drug .

Various system delivery drug conventional and new , such as emulsion , cream , suspension , aqueous gel , nanomicelles , nanoparticles , liposomes , dendrimers, implants , lenses contact , nanosuspension , microneedles, have developed For overcome obstacle delivery drug to eyes and improve bioavailability eye . gel, sensitive to hot in a way local to disease mentioned eyes . Overview This give description general about various system delivery drug eye conventional and newly developed For deliver drug to network sore eyes For treatment disease eye .

CONCLUSION

The eye is a sensitive and important organ in life , lies in circle bones , which function as protector best , good and strong protector . Eyes protect to infection Because secretion eye contain enzyme lysozyme , which can cause bacteria unravel and help clean organism from eye .

Medicine is means therapy main For handle someone who has a problem . This medicine own effect useful therapeutic . Although drug give Lots benefit for someone , some drug can cause effect the serious side or dangerous consequences If We No give drug in accordance actual recommendation .

THANK YOU

Thank You has give us a chance For review article about system delivery drug For Preparation Ophthalmic . Hopefully review articles that we have compiled can beneficial for everyone who reads it .

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