Publications Template

#	Research Title	Field	Abstract	Year of Publication Publishing	Publishing Link "URL"
1	**Hyalugel-integrated liposomes as a novel ocular nanosized delivery system of fluconazole with promising prolonged effect**	pharmaceutics	Fungal infections need long-term therapy with the proper antifungal agent. Despite effectiveness, Fluconazole (FLZ) ocular delivery is constrained by limited penetration, short residence time, in addition to the common barriers of the eye. Hyalugel-integrated liposomes were designed as novel ocular delivery systems integrating hyaluronic acid (HA) inside and surrounding vesicles by a simple preparation technique. The impact of combining HA hydrogel and liposomes was investigated in a series of different formulations. Full in-vitro optimization was performed regarding; HA and FLZ concentration, entrapment efficiency, particle size and stability to select the formula with the best characteristics. Structure elucidation of gel integration was done using polarizing and transmission electron microscopes before and after Triton-X100 addition.	2017	https://www.sciencedirect.com/journal/international-journal-of-pharmaceutics

			Corneal deposition and permeation were examined ex-vivo and in-vivo on male albino rabbits. Selected formulation (HYS7) showed gel-integrated structure, nanosize (218.50 ± 4.50 nm) and % EE 42.81% ± 1.66. Ex-vivo cumulative corneal permeation of FLZ after 6 h from HYS7, was 2.99 and 4.18 folds higher than conventional liposomes and FLZ suspension, respectively. In-vivo corneal permeation of HYS7 showed unprecedented sustained effect of FLZ reaching 24 h. In conclusion, novel hyalugel-integrated liposomes significantly enhanced corneal permeability compared to conventional liposomes and FLZ suspension. They would be promising alternates for eye drops; decreasing frequency of administration and increasing patients' compliance.		

2	**Gel in core carbosomes as novel ophthalmic vehicles with enhanced corneal permeation and residence**	Pharmaceutics	Carbopol is a good bio-adhesive polymer that increases the residence time in the eye. However, the effect of blinking and lacrimation still reduce the amount of polymer and the incorporated drug available for bioadhesion. Gel-core liposomes are advanced systems offering benefits making it a good tool for improved ocular drug delivery and residence time. Incorporation of carbopol in gel-core liposomes and their potential in ocular delivery have not so far been investigated. Fluconazole (FLZ) was selected as a challenging important ocular antifungal suffering from poor corneal permeation and short residence time. In this study, gel-core carbosomes have been elaborated as novel carbopol-based ophthalmic vehicles to solve ocular delivery obstacles of FLZ and to sustain its effect. Full in vitro appraisal was performed considering gel-core structure, entrapment efficiency, particle size and stability of the vesicles as quality attributes. Structure elucidation of the nanocarrier was performed using optical, polarizing and transmission electron	2018	https://www.sciencedirect.com/journal/international-journal-of-pharmaceutics

			microscopy before and after Triton-X100 addition. Ex-vivo ocular permeation and in vivo performance were investigated on male albino rabbits. Optimized formulation (CBS5) showed gel-core structure, nanosize (339.00 ± 5.50 nm) and not defined before (62.00% ± 1.73) entrapment efficiency. Cumulative amount of CBS5 permeated ex-vivo after 6 h, was 2.43 and 3.43 folds higher than that of conventional liposomes and FLZ suspension, respectively. In-vivo corneal permeation of CBS5 showed significantly higher AUC0-24 h (487.12 ± 74.80) compared to that of FLZ suspension (204.34 ± 7.46) with longer residence time in the eye lasts for more than 18 h. In conclusion, novel gel-core carbosomes could successfully be used as a promising delivery system for chronic ocular diseases.		

3	Gel-in-Core Liposomes encapsulating Fluconazole as potential Topical Nanotherapy for Enhanced *In-vivo* Corneal Permeation and Deposition	Pharmaceutics	Fungal infections need long-term therapy with the appropriate antifungal agent. Fluconazole ocular delivery is embarrassed by limited penetration, short residence time, in addition to the common barriers of the eye. Therefore, gel-in-core liposomes were fabricated as advanced ocular delivery systems integrating either hyaluronic acid (HA) or carbopol (CA) inside and surrounding vesicles by simple preparation technique. The impact of combining the selected polymers hydrogel and liposomes was investigated in various formulations. Full *in-vitro* characterization was performed regarding; the polymer and drug concentration, entrapment efficiency, particle size and stability to select the	2022	**Poster in the 3rd PUA International Conference (IC-IPS/2022)**

			most promising formula. Structure elucidation of gel integration was done using polarizing and transmission electron microscopes before and after Triton-X100 addition. Corneal deposition and permeation were examined *ex-vivo* and *in-vivo* on male albino rabbits. Optimized formulations (HYS7) and (CBS5) showed gel in core structure and nanosize of (218 ± 5.50 nm) & (339.00 ± 5.50 nm); respectively. Cumulative amount of HYS7 and CBS5 permeated *ex-vivo* after 6 h was 2.6 and 3.4 folds higher than that of FLZ suspension, respectively. *In-vivo* corneal permeation of AUC0-24h values for HYS5 and CBC5 were 530.62 ± 44.94 and 487.12 ± 74.80; respectively with longer		

			residence time in the eye lasts for more than 18 h. On the other hand, the AUC0-24h of FLZ suspension was 204.34 ± 7.46. In conclusion, gel in core liposomes could successfully be used as a promising delivery system for persistent ocular diseases.		