Title: Turning the screw even further to increase microparticle retention and ocular bioavailability of associated drugs: The bioadhesion goal

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Turning the screw even further to increase microparticle retention and ocular bioavailability of associated drugs: The bioadhesion goal.

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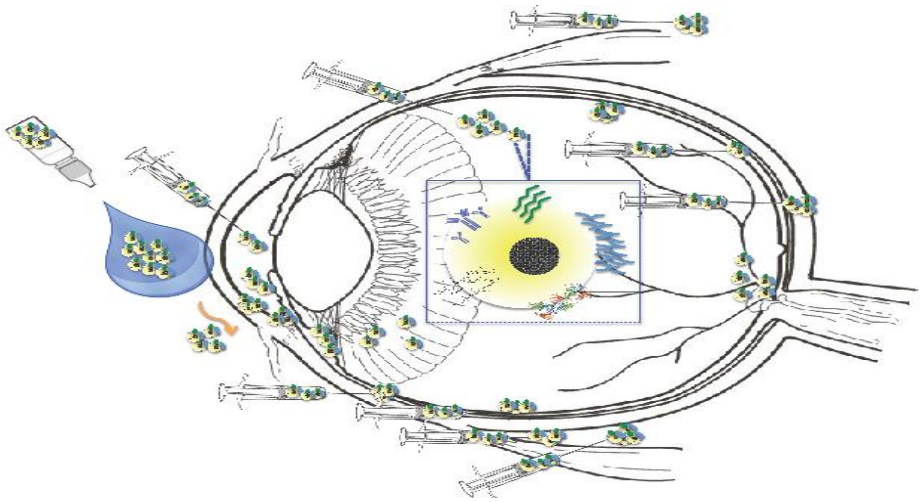
Graphical abstract



Ocular drug delivery is one of the most fascinating and challenging tasks facing pharmaceutical researchers. Improving drug ocular residence time and/or penetration is complex. Microparticles (MP) provide interesting opportunities to increase ocular bioavailability of drugs and patient compliance brought about by decreased frequency of dosing. However, sustained-release microsphere formulation would fail to accomplish the task of long-lasting drug release unless microspheres remained for a prolonged period at the site of action. Some strategies have been assessed to retain MP at the target site. Among them, improving bioadhesion properties is possibly the one that offers the best technical features to date. In this review, we present the latest scientific communications in the field of MP development and coating to increase bioavailability when MP are destined for ocular treatment. All of these are more or less useful tools that must be considered as an important part of the development process for ocular medication optimization.