CORNEAL INFECTION-PREVENTING OXYGEN LOADED NANODROPLETS

DESCRIPTION:

Oxygen-loaded nanodroplets shelled with chitosan, a natural, biodegradable and biocompatible polysaccaride exhibiting antimicrobial properties and in-situ bioadhesive capacity may be formulated as eyedrops to deliver oxygen in a sustained and controlled way on the basis of the local corneal needs.

ABSTRACT:

Chitosan-shelled oxygen-loaded nanodroplets, patented by the University of Torino, have been extensively investigated in vitro and in experimental animals proving that they:
-can be administered topically on intact mucosae;
-can sustainedly release (up to 4-6 hours) oxygen in a passive way, on the basis of the level of tissue hypoxia;
-can effectively prevent the occurrence of bacterial and fungal infections due to the antimicrobial effect of chitosan;
-have in-situ bioadhesion properties allowing their retention at ocular level.
The nanodroplets are non-toxic, biocompatible and fully biodegradable as shown in cell cultures of keratinocytes and dermal endothelial and in animals.
They can therefore be formulated as MEDICAL DEVICE for free distribution, provided a proper clinical trial is performed by professionals (opticians and ophthalmologists).
This project aims at transferring a formulation of nanodroplet- based eyedrops from laboratory-level to the market.