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(54) Title: INTRAOCULAR DELIVERY OF BIOACTIVE MOLECULES USING IONTOPHORESIS

(57) Abstract: Iontophoresis, a minimally-invasive methodology that uses a weak electric current to enhance penetration of ionized molecules into tissues, was found to be an effective technique for the intraocular delivery of large bioactive molecules, specifically lutein.



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AMENDED CLAIMS**received by the International Bureau on 09 August 2016 (09.08.2016)**

1. A method of depositing a bioactive molecule in ocular tissues, comprising the steps of formulating a liposome containing the bioactive molecule, charging an iontophoresis device with a composition of the bioactive molecule-containing liposome, applying the iontophoresis device to the eye of a subject, and operating the iontophoresis device.
2. The method of claim 1, wherein the bioactive molecule is selected from the group consisting of carotenoids.
3. The method of claim 2, wherein the carotenoid is selected from the group consisting of lutein and zeaxanthin.
4. The method of claim 1, wherein the liposome has a positive zeta potential.
5. A method of treating, ameliorating or preventing an ocular disease or dysfunction, comprising the steps of formulating a liposome containing the bioactive molecule, charging an iontophoresis device with a composition of the bioactive molecule-containing liposome, applying the iontophoresis device to the eye of a subject, and operating the iontophoresis device.
6. The method of claim 5, wherein treating, ameliorating or preventing an ocular disease or dysfunction is delaying the onset of age-related macular degeneration.
7. The method of claim 5, wherein the ocular disease or dysfunction is age-related macular degeneration.
8. The method of claim 5, wherein the ameliorating or preventing of an ocular disease or dysfunction comprises carrying out the method in healthy subjects.

9. The method of claim 5, wherein the bioactive molecule is selected from the group consisting of carotenoids.
10. The method of claim 9, wherein the carotenoid is selected from the group consisting of lutein and zeaxanthin.