CLAIMS

1. Use of a botulinum neurotoxin in the manufacture of a medicament for the treatment and/or retarding progression of dry macular degeneration in a patient, wherein the botulinum toxin is to be injected into a periorbital or a para orbital region of the patient, but not into an intra-ocular or a subconjunctival region of the patient, wherein the botulinum neurotoxin to be injected conforms with conventional dosing.

2. The use according to claim 1, wherein the patient has one or more of the following risk factors:

presence of geographic atrophy near fovea;

high numbers and volume of drusen;

presence of soft drusen or drusenoids;

cyst formation;

hyper reflective foci in the neuro retina;

pigmentation in the macula;

disorganization of continuity of the inner segment-outer segment (IS-OS) line;

genetic polymorphisms associated with severe macular degeneration;

polymorphisms involving complement;

geographic atrophy in contralateral eye; and

a genetic evaluation indicating elevated risk factors.

3. The use according to claim 1, wherein the progression of dry macular degeneration involves conversion of dry macular degeneration to wet macular degeneration.

4. The use according to claim 3, wherein wet macular degeneration is determined by OCT, OCT-A, and/or fluorescein angiography.

5. The use according to claim 1, wherein the botulinum neurotoxin is to be injected into the para orbital region and targets the pterygopalatine fossa.

6. The use according to claim 1, wherein the botulinum neurotoxin to be injected avoids diplopia and ptosis.

7. The use according to 1, wherein the conventional dosing ranges between 5-400 units.

8. The use according to 1 wherein the botulinum neurotoxin is to be administered such that the use further comprises one or more repeated injections of botulinum neurotoxin into the periorbital or the para orbital region of the patient.

9. The use according to 1, wherein treatment and/or retarding the progression of dry macular degeneration comprises delaying degeneration of the retinal pigment epithelium, preserving photoreceptors, preventing cell apoptosis, preventing retinal pigment epithelial activation and migration, reducing sheet distortion, preventing or slowing development of geographic atrophy, preventing or slowing development of retinal atrophy, and/or preventing loss of rods and cones.

10. The use according to claim 9, wherein alterations in cytoskeleton assembly within the retinal pigment epithelium occur so that barriers in the retinal pigment epithelium are maintained with attachments to basement membrane and rejuvenation of an apical portion of the retinal pigment epithelium occurs, causing cessation of degeneration within the choroid.

11. The use according to claim 1, wherein the botulinum neurotoxin is to be injected into an external portion of an inferior orbital fissure of the patient.

12. The use according to claim 1, wherein the botulinum neurotoxin is transported to the intra-ocular region of the patient by one or more of the following: axoplasmic flow within autonomic nerves and sensory nerves entering the eye, retrograde and antegrade movement of toxin along nerve fibers, and trans neural deliver to macular choroid and retinal pigment epithelium.

13. Use of a botulinum neurotoxin or a fragment thereof in the manufacture of a medicament for the treatment of age-related macular degeneration in a human or mammalian patient, suffering from or at risk for macular degeneration,

wherein the botulinum neurotoxin or fragment thereof is to be injected into the patient in an area other than an intra-ocular region or a subconjunctival region, wherein the botulinum neurotoxin or fragment thereof is injected into or near the para-orbital region of the patient,

wherein an anti-VEGF agent selected from a group consisting of: bevacizumab, aflibercept, ranibizumab, and abicipar is to be administered to the patient after the botulinum neurotoxin is to be administered,

wherein the botulinum neurotoxin or fragment thereof increases potency or duration of action of the anti-VEGF agent, and

wherein the administration of the botulinum neurotoxin mitigates wet and exudative macular degeneration.

14. The use according to claim 13, wherein the botulinum neurotoxin reduces complications from intra-ocular injection, including intra-ocular hemorrhage, endophthalmitis, retinal detachment, retinal breaks, lens dislocations, cataract formation, and increases in intra-ocular pressure.

15. The use according to claim 13, wherein the botulinum neurotoxin is to be administered as a dose that conforms with conventional dosing.

16. The use according to claim 13, wherein the botulinum neurotoxin to be administered improves and/or preserves vision of the patient.

17. The use according to claim 13, wherein the botulinum neurotoxin or fragment thereof is selected from the group consisting of: botulinum toxin A1-A5, B, C1-3, D, E, F, G and H.

18. The use according to claim 13, wherein the botulinum neurotoxin is to be administered with a polycationic protein or a macromolecule.

19. The use according to claim 13, wherein the botulinum neurotoxin is to be administered with one or more accessory proteins.

20. The use according to claim 13, wherein the botulinum neurotoxin is to be administered as a pure neurotoxin.

21. The use according to claim 13, wherein the botulinum neurotoxin or fragment thereof is to be injected into the patient with a needle positioned over a zygomatic arch of the patient and aiming the needle toward a pterygopalatine fossa of the patient and in proximity of an external portion of the inferior orbital fissure.

22. The use according to claim 13, wherein the botulinum neurotoxin or fragment thereof is to be injected into a sub-muscular region of the patient.

23. The use according to claim 13, wherein the use avoids diplopia.

24. The method of claim 13, wherein progression of dry macular degeneration to wet degeneration is reduced by enhancing barrier integrity of the retinal pigment epithelium.

25. The method of claim 13, wherein the botulinum neurotoxin or fragment thereof to be administered does not cause neuromuscular paralysis of the extra-ocular muscles.

26. Use of a botulinum neurotoxin or a fragment thereof in the manufacture of a medicament for the treatment of age-related macular degeneration in a human or mammalian patient suffering from or at risk for macular degeneration,

wherein an anti-VEGF agent selected from a group consisting of: bevacizumab and aflibercept is to be administered before the botulinum neurotoxin or a fragment thereof is to be administered to the patient,

wherein the botulinum neurotoxin is botulinum toxin type A and the botulinum neurotoxin is to be injected into in a peri-orbital or a paraorbital region of the patient,

wherein the botulinum neurotoxin is to be administered to the patient to avoid diplopia,

wherein the botulinum neurotoxin is to be administered in a dose that conforms with conventional dosing, and

wherein the botulinum neurotoxin to be administrated increases potency or duration of action of the anti-VEGF agent.

27. The use according to claim 26, wherein the peri-orbital and the paraorbital regions include one or more of: a forehead, eyelids, face, facial bones, jaw muscles, neck, nasal mucosa, scalp, sinus mucosa, mouth, palate, pterygopalatine fossa.

28. The use according to claim 26, wherein the botulinum neurotoxin is transported to the intra-ocular region by axoplasmic flow within autonomic nerves and sensory nerves entering the eye.

29. The method of claim 13, wherein the botulinum neurotoxin is to be injected into an external portion of an inferior orbital fissure of the patient.

30. The method of claim 26, wherein the botulinum neurotoxin to be administered decreases frequency of injection of the anti-VEGF agent to be administered.

31. Use of a botulinum neurotoxin in the manufacture of a medicament for the treatment of and/or retarding progression of an intra ocular disease in a patient,

wherein the botulinum toxin is to be injected into a periorbital or a para orbital region of the patient, but not into an intra-ocular or a subconjunctival region of the patient,

wherein the botulinum neurotoxin to be injected conforms with conventional dosing, and

wherein the intra ocular disease comprises one or more of central serous retinopathy, central retinal veins occlusion, diabetic retinopathy, diabetic macular edema, neovascular diabetic retinopathy, retinitis pigmentosa, retinal pigment epithelial damage associated with choroiditis, cystoid macular edema associated with intra-ocular surgery, uveitis, macular telangiectasias, proliferative vitreal retinopathy, intra-ocular pseudo exfoliation syndrome, and retinal detachment.

32. The use of claim 31, wherein the botulinum neurotoxin to be administered has intra-ocular effects comprising one or more of: neuroprotection of photoreceptors by enhancement of retinal pigment epithelium phagocytosis, removal of apical rod and cone materials, and augmented tolerance to retinal pigment epithelial toxic protein accumulation from toxic photoreceptor associated proteins.

33. The use of claim 32, wherein the photoreceptors include associated proteins comprising dysfunctional rhodopsin or an accumulation of proteins from deficient retinal pigment epithelial phagocytosis.