a botulinum toxin component in a dose of ~~100~~ 200 U to ~~450~~ 300 U, said botulinum toxin component selected from the group consisting of a botulinum toxin complex, a reduced botulinum toxin complex, or a botulinum toxin,

a positively charged carrier component having an amino acid sequence of SEQ ID NO: 4~~comprising a positively charged polylysine backbone having covalently attached thereto one or more positively charged efficiency groups having an amino acid sequence of $(gly)_p$-RGRDDRRQRRR-$(gly)_q$ (SEQ ID NO: 1), $(gly)_p$-YGRKKRRQRRR-$(gly)_q$ (SEQ ID NO: 2) or $(gly)_p$-RKKRRQRRR-$(gly)_q$ (SEQ ID NO: 3), wherein the subscripts p and q are each independently an integer of from 0 to 20~~; and

a pharmaceutically acceptable diluent for injection;

wherein the positively charged carrier is non-covalently associated with the botulinum toxin component; and

wherein said dose of the composition provides a single treatment having at least ~~about~~ a 16 week duration of effect in reducing the symptoms of cervical dystonia in the individual, thereby extending treatment interval duration for the individual.

[0017b] In one aspect, the present disclosure refers to use of a botulinum toxin component for the manufacture of an injectable composition for the treatment of cervical dystonia in an individual in need thereof, said composition comprising:

the botulinum toxin component in a dose of ~~100~~ 200 U to ~~450~~ 300 U, said botulinum toxin component selected from the group consisting of a botulinum toxin complex, a reduced botulinum toxin complex, or a botulinum toxin,

a positively charged carrier component having an amino acid sequence of SEQ ID NO: 4~~comprising a positively charged polylysine backbone having covalently attached thereto one or more positively charged efficiency groups having an amino acid sequence of $(gly)_p$-RGRDDRRQRRR-$(gly)_q$ (SEQ ID NO: 1), $(gly)_p$-YGRKKRRQRRR-$(gly)_q$ (SEQ ID NO: 2) or $(gly)_p$-RKKRRQRRR-$(gly)_q$ (SEQ ID NO: 3), wherein the subscripts p and q are each independently an integer of from 0 to 20~~; and

a pharmaceutically acceptable diluent for injection;

wherein the positively charged carrier is non-covalently associated with the botulinum toxin component; and

wherein said dose of the composition provides a single treatment having at least ~~about~~ a 16 week duration of effect in reducing the symptoms of cervical dystonia in the individual, thereby extending treatment interval duration for the individual.

[0017c] In one aspect, the present disclosure refers to a pharmaceutical composition in a sterile injectable formulation for use in treating cervical dystonia in an individual in need thereof who as been treated previously with the injectable composition, said composition comprising:

a botulinum toxin component in a dose of 200 U to 300 U, said botulinum toxin component selected from the group consisting of a botulinum toxin complex, a reduced botulinum toxin complex, or a botulinum toxin,

a positively charged carrier component having an amino acid sequence of SEQ ID NO: 4; and

a pharmaceutically acceptable diluent for injection;

wherein the positively charged carrier is non-covalently associated with the botulinum toxin component; and

wherein said inidvidual was previously treated with the dose and had a duration of effect of at least 20 weeks in reducing the symptoms of cervical dystonia in the individual and the treatment of said subject was at least 20 weeks after the previous treatment.

[0017d] In one aspect, the present disclosure refers to of a botulinum toxin component for the manufacture of an injectable composition for a treatment of cervical dystonia in an individual in need thereof who as been treated previously with the injectable composition, said composition comprising:

the botulinum toxin component in a dose of 200 U to 300 U, said botulinum toxin component selected from the group consisting of a botulinum toxin complex, a reduced botulinum toxin complex, or a botulinum toxin,

a positively charged carrier component having an amino acid sequence of SEQ ID NO: 4; and

a pharmaceutically acceptable diluent for injection;

wherein the positively charged carrier is non-covalently associated with the botulinum toxin component; and

wherein said inidvidual was previously treated with the dose and had a duration of effect of at least 20 weeks in reducing the symptoms of cervical dystonia in the individual and the treatment of said subject was at least 20 weeks after the previous treatment.

[0018] In another example, the disclosure provides effective doses and amounts of the compositions of this disclosure in the treatment of cervical dystonia that afford a long-lasting, sustained efficacy e.g., a response rate of long duration, following administration by injection to

Claims:

1. A pharmaceutical composition in a sterile injectable formulation for use in treating cervical dystonia in an individual in need thereof, said composition comprising:

a botulinum toxin component in a dose of ~~100~~ 200 U to ~~450~~ 300 U, said botulinum toxin component selected from the group consisting of a botulinum toxin complex, a reduced botulinum toxin complex, or a botulinum toxin,

a positively charged carrier component having an amino acid sequence of SEQ ID NO: 4 ~~comprising a positively charged polylysine backbone having covalently attached thereto one or more positively charged efficiency groups having an amino acid sequence of $(gly)_p$ RGRDDRRQRRR $(gly)_q$ (SEQ ID NO: 1), $(gly)_p$ YGRKKRRQRRR $(gly)_q$ (SEQ ID NO: 2) or $(gly)_p$ RKKRRQRRR $(gly)_q$ (SEQ ID NO: 3), wherein the subscripts p and q are each independently an integer of from 0 to 20~~; and

a pharmaceutically acceptable diluent for injection;

wherein the positively charged carrier is non-covalently associated with the botulinum toxin component; and

wherein said dose of the composition provides a single treatment having at least ~~about~~ a 16 week duration of effect in reducing the symptoms of cervical dystonia in the individual, thereby extending treatment interval duration for the individual.

2. Use of a botulinum toxin component for the manufacture of an injectable composition for the treatment of cervical dystonia in an individual in need thereof, said composition comprising:

the botulinum toxin component in a dose of 200 U to 300 U, said botulinum toxin component selected from the group consisting of a botulinum toxin complex, a reduced botulinum toxin complex, or a botulinum toxin,

a positively charged carrier component having an amino acid sequence of SEQ ID NO: 4; and

a pharmaceutically acceptable diluent for injection;

wherein the positively charged carrier is non-covalently associated with the botulinum toxin component; and

wherein said dose of the composition provides a single treatment having at least a 16 week duration of effect in reducing the symptoms of cervical dystonia in the individual, thereby extending treatment interval duration for the individual.

~~2. The pharmaceutical composition for use according to claim 1, wherein the composition achieves the extended duration therapeutic effect for at least about 8 months.~~

3. The ~~pharmaceutical composition for~~ use according to claim 2, wherein the composition comprises botulinum toxin of serotype A.

4. The ~~pharmaceutical composition for~~ use according to claim 2, wherein the composition comprises botulinum toxin of serotype A having a molecular weight of 150 kDa.

~~5. The pharmaceutical composition for use according to any one of claims 1 to 4, wherein the positively charged polylysine backbone has covalently attached thereto one or more positively charged efficiency groups having the amino acid sequence $(gly)_p$-RGRDDRRQRRR-$(gly)_q$ (SEQ ID NO: 1), wherein the subscripts p and q are each independently an integer of from 0 to 20.~~

~~6. The pharmaceutical composition for use according to any one of claims 1 to 4, wherein the positively charged polylysine backbone has covalently attached thereto one or more positively charged efficiency groups having the amino acid sequence $(gly)_p$-YGRKKRRQRRR-$(gly)_q$ (SEQ ID NO: 2), wherein the subscripts p and q are each independently an integer of from 0 to 20.~~

~~7. The pharmaceutical composition for use according to any one of claims 1 to 4, wherein the positively charged polylysine backbone has covalently attached thereto one or more positively charged efficiency groups having the amino acid sequence $(gly)_p$-RKKRRQRRR-$(gly)_q$ (SEQ ID NO: 3), wherein the subscripts p and q are each independently an integer of from 0 to 20.~~

~~8. The pharmaceutical composition for use according to any one of claims 1 to 7, wherein (i) the subscripts p and q are each independently an integer of from 0 to 8; or (ii) are each independently an integer of from 2 to 5.~~

~~9. The pharmaceutical composition for use according to any one of claims 1 to 8, wherein the one or more positively charged efficiency groups are attached to either end, or both ends, of the positively charged polylysine backbone of the positively charged carrier.~~

~~10. The pharmaceutical composition for use according to claim 9, wherein the positively charged carrier has the amino acid sequence RKKRRQRRRG-$(K)_{15}$-GRKKRRQRRR (SEQ ID NO: 4).~~

~~11~~5. The ~~pharmaceutical composition for~~ use according to any one of claims ~~1~~ 2 to ~~10~~4, wherein the composition does not locally diffuse from the site of injection following injection.

~~12. The pharmaceutical composition for use according to any one of claims 1 to 11, wherein the treatment dose of botulinum toxin is administered to the individual in an amount of about 100 U to 200U.~~

~~13. The pharmaceutical composition for use according to any one of claims 1 to 11, wherein the treatment dose of botulinum toxin is administered to the individual in an amount of about 200 U to 300 U.~~

~~14. The pharmaceutical composition for use according to any one of claims 1 to 11, wherein the treatment dose of botulinum toxin is administered to the individual in an amount of 300 U to 450 U.~~

~~15~~6. The ~~pharmaceutical composition for~~ use according to any one of claims ~~1~~ 2 to ~~14~~5, wherein the duration of treatment effect comprises greater than 20 weeks.

~~16~~7. The ~~pharmaceutical composition for~~ use according to any one of claims ~~1~~ 2 to ~~14~~5, wherein the duration of treatment effect comprises greater than 24 weeks.

~~17~~8. The ~~pharmaceutical composition for~~ use according to any one of claims ~~1~~ 2 to ~~14~~5, wherein the duration of treatment effect comprises greater than 5 months.

~~18~~9. The ~~pharmaceutical composition for~~ use according to any one of claims ~~1~~ 2 to ~~14~~5, wherein the duration of treatment effect comprises greater than 6 months.

~~19~~10. The pharmaceutical composition for use according to any one of claims ~~1~~–2 to ~~14~~5, wherein the duration of treatment effect comprises greater than 7 months.

~~20~~11. The pharmaceutical composition for use according to any one of claims ~~1~~–2 to ~~14~~5, wherein the duration of treatment effect comprises greater than 8 months.

~~21~~12. The pharmaceutical composition for use according to any one of claims ~~1~~–2 to ~~14~~5, wherein the duration of treatment effect comprises greater than 9 months.

~~22~~13. The pharmaceutical composition for use according to any one of claims ~~1~~–2 to ~~14~~5, wherein the duration of treatment effect comprises at least 6 months through 10 months.

~~23. Use of a botulinum toxin component for the manufacture of an injectable composition for the treatment of cervical dystonia in an individual in need thereof, said composition comprising:~~

~~the botulinum toxin component in a dose of 100 U to 450 U, said botulinum toxin component selected from the group consisting of a botulinum toxin complex, a reduced botulinum toxin complex, or a botulinum toxin,~~

~~a positively charged carrier component comprising a positively charged polylysine backbone having covalently attached thereto one or more positively charged efficiency groups having an amino acid sequence of $(gly)_p$-RGRDDRRQRRR-$(gly)_q$ (SEQ ID NO: 1), $(gly)_p$-YGRKKRRQRRR-$(gly)_q$ (SEQ ID NO: 2) or $(gly)_p$-RKKRRQRRR-$(gly)_q$ (SEQ ID NO: 3), wherein the subscripts p and q are each independently an integer of from 0 to 20; and~~

~~a pharmaceutically acceptable diluent for injection;~~

~~wherein the positively charged carrier is non-covalently associated with the botulinum toxin component; and~~

~~wherein said dose of the composition provides a single treatment having at least about a 16 week duration of effect in reducing the symptoms of cervical dystonia in the individual, thereby extending treatment interval duration for the individual.~~

14. A pharmaceutical composition in a sterile injectable formulation for use in treating cervical dystonia in an individual in need thereof who as been treated previously with the injectable composition, said composition comprising:

a botulinum toxin component in a dose of 200 U to 300 U, said botulinum toxin component selected from the group consisting of a botulinum toxin complex, a reduced botulinum toxin complex, or a botulinum toxin,

a positively charged carrier component having an amino acid sequence of SEQ ID NO: 4; and

a pharmaceutically acceptable diluent for injection;

wherein the positively charged carrier is non-covalently associated with the botulinum toxin component; and

wherein said inidvidual was previously treated with the dose and had a duration of effect of at least 20 weeks in reducing the symptoms of cervical dystonia in the individual and the treatment of said subject was at least 20 weeks after the previous treatment.

15. Use of a botulinum toxin component for the manufacture of an injectable composition for a treatment of cervical dystonia in an individual in need thereof who as been treated previously with the injectable composition, said composition comprising:

the botulinum toxin component in a dose of 200 U to 300 U, said botulinum toxin component selected from the group consisting of a botulinum toxin complex, a reduced botulinum toxin complex, or a botulinum toxin,

a positively charged carrier component having an amino acid sequence of SEQ ID NO: 4; and

a pharmaceutically acceptable diluent for injection;

wherein the positively charged carrier is non-covalently associated with the botulinum toxin component; and

wherein said inidvidual was previously treated with the dose and had a duration of effect of at least 20 weeks in reducing the symptoms of cervical dystonia in the individual and the treatment of said subject was at least 20 weeks after the previous treatment.