CLAIMS

What is claimed is:

1. Use of apoaequorin in the manufacture of a medicament for ~~preconditioning neurons to reduce neuronal injury due to brain ischemia~~preventing ischemic injury by treating a subject 48 hours before brain ischemia occurs in ~~a~~ the subject~~, wherein the medicament is to be administered to neurons in a subject, and wherein the medicament initiates a change in cytokine expression levels resulting in a reduction in neuronal injury due to brain ischemia in the subject, as compared to neurons not administered the medicament~~.

2. The use of claim 1, wherein administration of the medicament is by injection.

3. The use of claim 2, wherein the injection is an intra-hippocampal injection.

4. The use of claim 1, wherein the subject is human.

~~5. The use of claim 1, wherein the reduction in neuronal injury effect lasts at least 24 hours from the time of medicament administration.~~

~~6. The use of claim 1, wherein the reduction in neuronal injury lasts at least 48 hours from the time of medicament administration.~~

~~7. Use of apoaequorin for the manufacture of a medicament for preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia.~~

~~8. Apoaequorin for use in preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia.~~

~~9. A composition for preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia, comprising:~~

~~(a) a therapeutically effective dosage of apoaequorin to precondition neurons in a subject to reduce neuronal injury due to brain ischemia; and~~

~~(b) a pharmaceutically acceptable carrier.~~

~~10. The composition of claim 9, wherein the composition is formulated as an injectable dosage.~~

~~11. A kit for preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia, comprising:~~

~~(a) a therapeutically effective dosage of apoaequorin to precondition neurons in a subject to reduce neuronal injury due to brain ischemia; and~~

~~(b) a delivery device configured to administer said amount of apoaequorin to the subject.~~

SUMMARY

[0005] Here, the inventors demonstrate the use of apoaequorin for providing ischemic protection to neurons. Accordingly, the disclosure encompasses in a first embodiment a method of preconditioning neurons in a subject, preferably human, to reduce neuronal injury due to brain ischemia. Such a method includes the step of administering apoaequorin to neurons in a subject, wherein the apoaequorin initiates a change in cytokine expression levels in the neurons that results in a reduction in neuronal injury due to brain ischemia.

[0005a] In one aspect, there is provided a use of apoaequorin in the manufacture of a medicament for preventing ischemic injury by treating a subject 48 hours before brain ischemia occurs~~preconditioning neurons to reduce neuronal injury due to brain ischemia~~ in ~~a~~ the subject~~, wherein the medicament is to be administered to neurons in a subject, and wherein the medicament initiates a change in cytokine expression levels resulting in a reduction in neuronal injury due to brain ischemia in the subject, as compared to neurons not administered the medicament~~.

[0006] A preferred route of administration is by injection to the subject, preferably intra-hippocampal injection.

[0007] In certain embodiments, the reduction in neuronal injury effect lasts at least 24 hours from the time of apoaequorin administration. In other embodiments, the reduction in neuronal injury effect lasts at least 48 hours from the time of apoaequorin administration.

[0008] In other ~~aspects~~embodiments, there is provided the use of apoaequorin for the manufacture of a medicament for preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia.

[0008a] In another ~~aspect~~embodiment, there is provided apoaequorin for use in preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia

[0009] The disclosure further encompasses compositions for preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia. Such compositions include: (a) a therapeutically effective dosage of apoaequorin to precondition neurons in a subject to reduce neuronal injury due to brain ischemia; and (b) a pharmaceutically-acceptable carrier. Preferred compositions are formulated as injectable dosages.

[0009a] In one ~~aspect~~embodiment, there is provided a composition for preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia, comprising:

(a) a therapeutically effective dosage of apoaequorin to precondition neurons in a subject to reduce neuronal injury due to brain ischemia; and

(b) a pharmaceutically-acceptable carrier.

[0010] In another embodiment, the disclosure is directed to a kit for preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia. Such a kit includes: (a) a therapeutically effective dosage of apoaequorin to precondition neurons in a subject to reduce neuronal injury due to brain ischemia; and (b) a delivery device configured to administer the amount of apoaequorin to the subject.

[0010a] In one ~~aspect~~embodiment, there is provided a kit for preconditioning neurons in a subject to reduce neuronal injury due to brain ischemia, comprising:

(a) a therapeutically effective dosage of apoaequorin to precondition neurons in a subject to reduce neuronal injury due to brain ischemia; and

(b) a delivery device configured to administer said amount of apoaequorin to the subject.

[0011] Other objects, features and advantages of the present disclosure will become apparent after review of the specification, claims and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS