

Patent Claims

1. A method for determining the ratio of DNA-containing AAV particles to empty AAV particles in a sample, comprising the following steps:
 - 5 - determining a nuclear magnetic resonance (NMR) parameter of the protons of the water molecules in the sample, wherein the sample is an aqueous solution comprising a mixture of DNA-containing AAV particles and empty AAV particles, by applying an NMR measurement to the solution, and
 - 10 - determining the ratio of DNA-containing AAV particles to empty AAV particles with the determined NMR parameter using a calibration function.
2. The method according to claim 1, wherein the NMR parameter is the transverse nuclear magnetic spin relaxation time T_2 or the transverse nuclear magnetic spin relaxation rate R_2 of the protons of the water molecules in the aqueous solution.
- 15 3. The method according to any one of claims 1 to 2, wherein the magnetic field strength during the determination of the NMR parameter about 0.47 T.
4. The method according to any one of claims 1 to 3, wherein the resonance frequency during the determination of the NMR parameter is about 20 MHz.
- 20 5. The method according to any one of claims 1 to 4, wherein the AAV particle is of the AAV2 serotype, or the AAV6 serotype, or the AAV8 serotype.
6. The method according to any one of claims 1 to 5, wherein the calibration function is a second order polynomial function.
- 25 7. The method according to claim 6, wherein the calibration function is obtained by determining the same NMR parameter for at least three calibration samples, the first comprising DNA-containing AAV particles and empty AAV particles at a ratio in the range of 0:100 to 30:70, the second comprising DNA-containing AAV particles and empty AAV particles at a ratio in the range of 40:60 to 60:40, and the third comprising DNA-
30 containing AAV particles and empty AAV particles at a ratio in the range of 70:30 to 100:00.

- 33 -

8. The method according to any one of claims 1 to 7, wherein the total concentration of AAV particles is at least 1×10^{12} vp/mL.
9. The method according to any one of claims 1 to 8, wherein the method is an in vitro method.
- 5 10. Use of the transverse nuclear magnetic spin relaxation time T_2 for the determination of the loading status of AAV particles.
11. The use according to claim 10, wherein the loading status is the ratio of DNA-containing AAV particles to empty AAV particles.
- 10 12. The use according to claim 10, wherein the loading status is the fraction of DNA-containing AAV particles.
13. The use according to claim 10, wherein the loading status is the concentration of DNA-containing AAV particles.
14. The use according to any one of claims 10 to 13, wherein the loading status is determined in a sample.
- 15 15. The use according to any one of claims 10 to 14, wherein the determination is in an aqueous solution and the transverse nuclear magnetic spin relaxation time T_2 is the transverse nuclear magnetic spin relaxation time T_2 of the protons of the water molecules in the aqueous solution.

20