

CLAIMS

1. A method of mitigating platinum-induced ototoxicity in a subject in need thereof, the method comprising administering to the subject an effective amount of a thiosulfate salt, wherein the subject was administered a platinum-based neoplastic agent not more than 7 hours prior administering the thiosulfate salt or is scheduled to be administered a platinum-based antineoplastic agent within 4 hours.
2. The method of claim 1, wherein the subject was administered a platinum-based neoplastic agent not more than 7 hours prior administering the thiosulfate salt.
3. The method of claim 1, wherein the subject is scheduled to be administered a platinum-based antineoplastic agent within 4.5 hours.
4. The method of claim 1, wherein the subject was administered a platinum-based neoplastic agent not more than 2.5 hours prior to administering the thiosulfate salt.
5. The method of claim 1, wherein the subject was administered a platinum-based neoplastic agent not more than 1 hour prior to administering the thiosulfate salt.
6. The method of claim 1, wherein the thiosulfate salt is administered auricularly.
7. The method of claim 6, wherein the thiosulfate salt is administered intratympanically, transtympanically, or by inner ear injection.
8. The method of claim 1, further comprising administering the platinum-based antineoplastic agent.
9. The method of claim 1, wherein the thiosulfate salt is an alkaline thiosulfate salt, ammonium thiosulfate salt, or a solvate thereof.
10. The method of claim 1, wherein the effective amount of a thiosulfate salt is administered as a hypertonic pharmaceutical composition comprising the effective amount of a thiosulfate salt.
11. The method of claim 10, wherein 200-1,000 μL of the hypertonic pharmaceutical composition are administered to the round window of the subject.
12. The method of claim 10, wherein the calculated osmolarity of the hypertonic pharmaceutical composition is 500-5,000 mOsm/L.
13. The method of claim 10, wherein the concentration of the thiosulfate salt in the hypertonic pharmaceutical composition is 0.5M-2.5M.

14. The method of claim 1, wherein the effective amount is an amount that produces a plasma thiosulfate concentration that is 30 μM or less at the time the platinum-based antineoplastic agent is administered.
15. The method of claim 1, wherein the effective amount is 0.1-2.5 mmol of the thiosulfate salt.
16. The method of claim 1, wherein the effective amount is an amount that produces a maximum thiosulfate concentration of 0.6-10 mmol/L by 1 h post administration.
17. The method of claim 1, wherein the effective amount is an amount that produces a thiosulfate concentration of 0.1-2 mmol/L by 7 h post administration in the subject's cochlea.
18. A method of mitigating platinum-induced ototoxicity in a subject in need thereof, the method comprising administering to the subject an effective amount of a thiosulfate salt to produce (i) a plasma thiosulfate C_{max} that is 30 μM or less at the time of administration a platinum-based antineoplastic agent and (ii) a cochlear thiosulfate C_{max} is at least 30 times greater than a cochlear C_{max} of the platinum-based antineoplastic agent, wherein the cochlear platinum concentrations and the cochlear C_{max} are modeled by a pharmacokinetic simulation of intravenous infusion in a two compartment model.
19. The method of claim 18, wherein the effective amount of a thiosulfate salt is administered within 3 hours before administering a platinum-based antineoplastic agent or within 4 hours after administering the platinum-based antineoplastic agent.
20. The method of claim 18, wherein the effective amount of a thiosulfate salt is administered within 4.5 hours before administering a platinum-based antineoplastic agent or within 2.5 hours after administering the platinum-based antineoplastic agent.