embodiments, the alkali metal chlorite salt is sodium chlorite. In some embodiments of a medical disinfecting composition, the sodium chlorite is present in an amount ranging from about 0.0001% to about 0.1% (w/w). In some embodiments of a medical disinfecting composition, the sodium chlorite is provided as a stabilized chlorine dioxide solution. In some embodiments of a medical disinfecting composition, the stabilized chlorine dioxide is present in an amount ranging from about 0.005% to about 1.0% (w/w). In some embodiments of a medical disinfecting composition, the stabilized chlorine dioxide solution comprises chlorine dioxide. In some embodiments of a medical disinfecting composition, the quaternary ammonium salt comprises C12 or C14 alkyl chain. In some embodiments, the quaternary ammonium salt is not benzalkonium chloride. In some embodiments of a medical disinfecting composition, the quaternary ammonium salt is C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride. In some embodiments of a medical disinfecting composition, the C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride is present in an amount ranging from about 0.00005% to about 0.1% (w/w). In some embodiments of a medical disinfecting composition, the C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride is present in an amount ranging from about 0.001% to about 0.1% (w/w). In some embodiments of a medical disinfecting composition, the ammonium chloride is present in an amount ranging from about 0.001% to about 2.0% (w/w). In some embodiments of a medical disinfecting composition, the composition further comprises a buffer to maintain the pH between about 7 and about 8. In some embodiments of a medical disinfecting composition, the pH is about 7.

[0006a] Also disclosed herein is a medical disinfecting composition comprising: (a) a chlorite salt provided as a stabilized chlorine dioxide solution present in an amount ranging from 0.005% to 1.0% (w/w); (b) C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride present in an amount ranging from 0.001% to 0.1% (w/w); (c) optionally ammonium chloride present in an amount ranging from 0.001% to 2.0% (w/w); and (d) water.

[0007] Also disclosed herein is a method of disinfecting a medical device comprising contacting the medical device with a medical disinfecting composition comprising: (a) a chlorite salt; (b) a quaternary ammonium salt; (c) ammonium chloride; and (d) water. In some embodiments of a method of disinfecting a medical device, the chlorite salt is an alkali metal chlorite salt.

[0008] In some embodiments of a method of disinfecting a medical device, the alkali metal chlorite salt is sodium chlorite. In some embodiments of a method of disinfecting a medical device, the sodium chlorite is present in an amount ranging from about 0.0001% to about 0.1% (w/w). In some embodiments of a method of disinfecting a medical device, the sodium chlorite is provided as a stabilized chlorine dioxide solution. In some embodiments of a method of disinfecting a medical device, the stabilized chlorine dioxide is present in an amount ranging

from about 0.005% to about 1.0% (w/w). In some embodiments of a method of disinfecting a medical device, the stabilized chlorine dioxide solution comprises chlorine dioxide.

[0009] In some embodiments of a method of disinfecting a medical device, the quaternary ammonium salt is not benzalkonium chloride. In some embodiments of a method of disinfecting a medical device, the quaternary ammonium salt is C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride. In some embodiments of a method of disinfecting a medical device, the C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride is present in an amount ranging from about 0.00005% to about 0.1% (w/w). In some embodiments of a method of disinfecting a medical device, the C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride is present in an amount ranging from about 0.001% to about 0.1% (w/w). In some embodiments of a method of disinfecting a medical device, the ammonium chloride is present in an amount ranging from about 0.001% to about 2.0% (w/w). In some embodiments of a method of disinfecting a medical device, the method further comprises a buffer to maintain the pH between about 7 and about 8.

[0009a] Also disclosed herein is a method of disinfecting a medical device comprising contacting the medical device with a medical disinfecting composition comprising: (a) a chlorite salt provided as a stabilized chlorine dioxide solution present in an amount ranging from 0.005% to 1.0% (w/w); (b) C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride present in an amount ranging from 0.001% to 0.1% (w/w); (c) optionally ammonium chloride present in an amount ranging from 0.001% to 2.0% (w/w); and (d) water.

[0010] In some embodiments of a method of disinfecting a medical device, the medical device is in contact with a mammal tissue after contacting the medical device with a medical disinfecting composition. In some embodiments of a method of disinfecting a medical device, the medical device is selected from the group consisting of contact lenses, contact lens cases, surgical instruments, and dental instruments.

[0011] Other objects and advantages of this disclosure will become readily apparent from the ensuing description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The following drawings form part of the present specification and are included to further demonstrate certain aspects of the present disclosure. The disclosure may be better understood by reference to one or more of these drawings in combination with the description of specific embodiments presented herein.

[0013] FIG. 1 shows formulations of two multipurpose disinfection solutions (SOL01 and SOL02).

[0014] FIG. 2 shows cytotoxicity rankings of the two presently-disclosed multipurpose disinfection solutions (SOL01 and SOL02) and three commercially available multipurpose disinfection solutions: BioTrue (SOL05) < Opti-Free (SOL03) ≤ ReNu (SOL04) ≤ SOL01 < SOL02.

[0015] FIG. 3 shows the antimicrobial activity of the two presently-disclosed multipurpose disinfection solutions (SOL01 and SOL02) and three commercially available multipurpose disinfection solutions.

[0016] FIG. 4 shows the cytotoxic activity of the two presently-disclosed multipurpose disinfection solutions (SOL01 and SOL02).

[0017] FIG. 5 shows a comparison of the two presently-disclosed multipurpose disinfection solutions (SOL01 and SOL02) and three commercially available multipurpose disinfection solutions (BioTrue (SOL05), Opti-Free (SOL03), and ReNu (SOL04)).

CLAIMS

What is claimed is:

1. A medical disinfecting composition comprising:

   (a) a chlorite salt provided as a stabilized chlorine dioxide solution present in an amount ranging from 0.005% to 1.0% (w/w);

   (b) C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride present in an amount ranging from 0.001% to 0.1% (w/w);

   (c) optionally ammonium chloride present in an amount ranging from 0.001% to 2.0% (w/w); and

   (d) water.

2. The medical disinfecting composition of claim 1, wherein the chlorite salt is an alkali metal chlorite salt.

3. The medical disinfecting composition of claim 2, wherein the alkali metal chlorite salt is sodium chlorite.

4. The medical disinfecting composition of claim 1, wherein the stabilized chlorine dioxide solution comprises chlorine dioxide.

5. The medical disinfecting composition of claim 1, further comprising a buffer to maintain the pH between 7 and 8.

6. The medical disinfecting composition of claim 5, wherein the pH is 7.

7. A method of disinfecting a medical device comprising contacting the medical device with a medical disinfecting composition comprising:

   (a) a chlorite salt provided as a stabilized chlorine dioxide solution present in an amount ranging from 0.005% to 1.0% (w/w);

   (b) C12-C14-alkyl(ethylbenzyl)dimethylammonium chloride present in an amount ranging from 0.001% to 0.1% (w/w);

   (c) optionally ammonium chloride present in an amount ranging from 0.001% to 2.0% (w/w); and

   (d) water.

8. The method of claim 7, wherein the chlorite salt is an alkali metal chlorite salt.

9. The method of claim 8, wherein the alkali metal chlorite salt is sodium chlorite.

10. The method of claim 7, wherein the stabilized chlorine dioxide solution comprises chlorine dioxide.

11. The method of claim 7, wherein the medical disinfecting composition further comprises a buffer to maintain the pH between 7 and 8.

12. The method of claim 7, wherein the medical device is in contact with a mammal tissue after contacting the medical device with a medical disinfecting composition.

13. The method of claim 7, wherein the medical device is selected from the group consisting of contact lenses, contact lens cases, surgical instruments, and dental instruments.