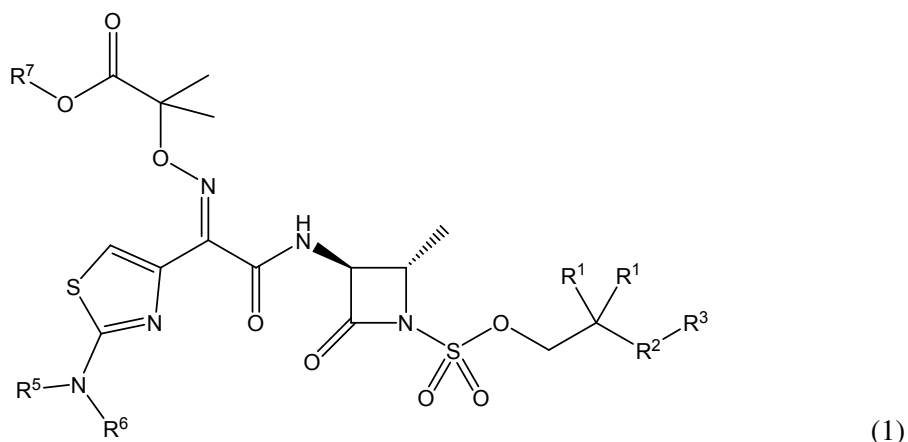


CLAIMS

1. A compound of Formula (1):



wherein,

each R^1 is independently selected from C_{1-6} alkyl, or each R^1 and the geminal carbon atom to which each R^1 is bonded forms a C_{3-6} cycloalkyl ring, a C_{3-6} heterocycloalkyl ring, a substituted C_{3-6} cycloalkyl ring, or a substituted C_{3-6} heterocycloalkyl ring;

R^2 is selected from a single bond, C_{1-6} alkanediyl, C_{1-6} heteroalkanediyl, C_{5-6} cycloalkanediyl, C_{5-6} heterocycloalkanediyl, C_6 arenediyl, C_{5-6} heteroarenediyl, substituted C_{1-6} alkanediyl, substituted C_{1-6} heteroalkanediyl, substituted C_{5-6} cycloalkanediyl, substituted C_{5-6} heterocycloalkanediyl, substituted C_6 arenediyl, and substituted C_{5-6} heteroarenediyl;

R^3 is selected from C_{1-6} alkyl, $-O-C(O)-R^4$, $-S-C(O)-R^4$, $-NH-C(O)-R^4$, $-O-C(O)-O-R^4$, $-S-C(O)-O-R^4$, $-NH-C(O)-O-R^4$, $-C(O)-O-R^4$, $-C(O)-S-R^4$, $-C(O)-NH-R^4$, $-O-C(O)-O-R^4$, $-O-C(O)-S-R^4$, $-O-C(O)-NH-R^4$, $-S-S-R^4$, $-S-R^4$, $-NH-R^4$, $-CH(-NH_2)(-R^4)$, C_{5-6} heterocycloalkyl, C_{5-6} heteroaryl, substituted C_{5-6} cycloalkyl, substituted C_{5-6} heterocycloalkyl, substituted C_{5-6} aryl, and substituted C_{5-6} heteroaryl, wherein,

R^4 is selected from hydrogen, C_{1-8} alkyl, C_{1-8} heteroalkyl, C_{5-8} cycloalkyl, C_{5-8} heterocycloalkyl, C_{5-10} cycloalkylalkyl, C_{5-10} heterocycloalkylalkyl, C_{6-8} aryl, C_{5-8} heteroaryl, C_{7-10} arylalkyl, C_{5-10} heteroarylalkyl, substituted C_{1-8} alkyl, substituted C_{1-8} heteroalkyl, substituted C_{5-8} cycloalkyl, substituted C_{5-8} heterocycloalkyl, substituted C_{5-10} cycloalkylalkyl, substituted C_{5-10} heterocycloalkylalkyl, substituted C_{6-8} aryl, substituted C_{5-8} heteroaryl, substituted C_{7-10} arylalkyl, and substituted C_{5-10} heteroarylalkyl;

R^5 is selected from hydrogen, C_{1-6} alkyl, C_{5-8} cycloalkyl, C_{6-12} cycloalkylalkyl, C_{2-6} heteroalkyl, C_{5-8} heterocycloalkyl, C_{6-12} heterocycloalkylalkyl, substituted C_{1-6} alkyl, substituted C_{5-8} cycloalkyl, substituted C_{6-12} cycloalkylalkyl, substituted C_{2-6} heteroalkyl, substituted C_{5-8} heterocycloalkyl, and substituted C_{6-12} heterocycloalkylalkyl;

R⁶ is selected from hydrogen, C₁₋₆ alkyl, C₅₋₈ cycloalkyl, C₆₋₁₂ cycloalkylalkyl, C₂₋₆ heteroalkyl, C₅₋₈ heterocycloalkyl, C₆₋₁₂ heterocycloalkylalkyl, substituted C₁₋₆ alkyl, substituted C₅₋₈ cycloalkyl, substituted C₆₋₁₂ cycloalkylalkyl, substituted C₂₋₆ heteroalkyl, substituted C₅₋₈ heterocycloalkyl, and substituted C₆₋₁₂ heterocycloalkylalkyl; and

R⁷ is selected from hydrogen, C₁₋₆ alkyl, C₅₋₈ cycloalkyl, C₆₋₁₂ cycloalkylalkyl, C₂₋₆ heteroalkyl, C₅₋₈ heterocycloalkyl, C₆₋₁₂ heterocycloalkylalkyl, substituted C₁₋₆ alkyl, substituted C₅₋₈ cycloalkyl, substituted C₆₋₁₂ cycloalkylalkyl, substituted C₂₋₆ heteroalkyl, substituted C₅₋₈ heterocycloalkyl, and substituted C₆₋₁₂ heterocycloalkylalkyl; or a pharmaceutically acceptable salt thereof.

2. The compound of claim 1, wherein each substituent is independently selected from –OH, –CN, –CF₃, –OCF₃, =O, –NO₂, C₁₋₆ alkoxy, C₁₋₆ alkyl, –COOR, –NR₂, and –CONR₂; wherein each R is independently selected from hydrogen and C₁₋₆ alkyl.

3. The compound of claim 1, wherein each of R⁵, R⁶, and R⁷ is hydrogen.

4. The compound of claim 1, wherein,
each of R⁵ and R⁶ is hydrogen; and
R⁷ is selected from hydrogen, C₁₋₆ alkyl, C₁₋₆ heteroalkyl, and 4-(yl-methyl)-5-methyl-1,3-dioxol-2-one.

5. The compound of claim 1, wherein each R¹ is independently C₁₋₆ alkyl, or each R¹ together with the geminal carbon atom to which each R¹ is bonded form a C₃₋₆ cycloalkyl ring or a substituted C₃₋₆ cycloalkyl ring.

6. The compound of claim 1, wherein R² is selected from a single bond, C₁₋₆ alkyl, C₁₋₂ alkanediyl, and substituted C₁₋₂ alkanediyl.

7. The compound of claim 1, wherein R³ is selected from –O–C(O)–R⁴, –C(O)–O–R⁴, –S–C(O)–R⁴, –C(O)–S–R⁴, –S–S–R⁴, –NH–R⁴, and –CH(–NH₂)(–R⁴); where R⁴ is defined as for Formula (1), or each R⁴ can be selected from hydrogen and C₁₋₈ alkyl.

8. The compound of claim 1, wherein R³ is –C(O)–O–R⁴, and R⁴ is selected from hydrogen and C₁₋₈ alkyl.

9. The compound of claim 1, wherein R^3 is $-C(O)-O-R^4$, wherein R^4 is selected from C_{1-8} alkyl, C_{1-8} heteroalkyl, C_{5-7} cycloalkyl, C_{5-7} heterocycloalkyl, C_6 aryl, C_{7-9} arylalkyl, substituted C_{1-8} alkyl, substituted C_{1-8} heteroalkyl, substituted C_{5-6} cycloalkyl, substituted C_{5-6} heterocycloalkyl, substituted C_6 aryl, and C_{7-9} arylalkyl.

10. The compound of claim 1, wherein,
 R^2 is a single bond;
 R^3 is C_{1-3} alkyl;
each R^1 together with the carbon atom to which each R^1 is bonded form a C_{4-6} heterocycloalkyl ring or a substituted C_{4-6} heterocycloalkyl ring
each of R^5 and R^6 is hydrogen; and
 R^7 is selected from hydrogen, C_{1-6} alkyl, C_{1-6} heteroalkyl, and 4-(yl-methyl)-5-methyl-1,3-dioxol-2-one.

11. The compound of claim 1, wherein,
each R^1 is methyl;
 R^2 is selected from a single bond, methanediyl, ethanediyl, $-CH(-OH)-$, $-CH(-O-C(O)-CH_2CH_3)-$, and 1,2-benzene-diyl;
 R^3 is selected from $-O-C(O)-R^4$, $-C(O)-O-R^4$, $-S-C(O)-R^4$, $-C(O)-S-R^4$, $-S-S-R^4$, $-NHR^4$, and $-CH(-NH_2)(-R^4)$, wherein R^4 is selected from C_{1-8} alkyl, C_{1-8} heteroalkyl, C_{7-9} arylalkyl, and C_{5-7} heterocycloalkyl;
each of R^5 and R^6 is hydrogen; and
 R^7 is selected from hydrogen, C_{1-6} alkyl, C_{1-6} heteroalkyl, and 4-(yl-methyl)-5-methyl-1,3-dioxol-2-one.

12. The compound of claim 1, wherein,
each R^1 is methyl;
 R^2 is selected from a single bond, methanediyl, ethanediyl, $-CH(-OH)-$, $-CH(-O-C(O)-CH_2CH_3)-$, and 1,2-benzene-diyl;
 R^3 is selected from $-C(O)-O-R^4$, wherein R^4 is selected from C_{1-8} alkyl, C_{1-8} heteroalkyl, C_{7-9} arylalkyl, and C_{5-7} heterocycloalkyl;
each of R^5 and R^6 is hydrogen; and
 R^7 is selected from hydrogen, C_{1-6} alkyl, C_{1-6} heteroalkyl, and 4-(yl-methyl)-5-methyl-1,3-dioxol-2-one.

13. The compound of claim 1, wherein,
each R^1 is methyl;

R^2 is selected from a single bond, methanediyl, ethanediyl, $-\text{CH}(-\text{OH})-$, $-\text{CH}(-\text{O}-\text{C}(\text{O})-\text{CH}_2\text{CH}_3)-$, and 1,2-benzene-diyl;

R^3 is selected from $-\text{O}-\text{C}(\text{O})-\text{R}^4$, $-\text{C}(\text{O})-\text{O}-\text{R}^4$, $-\text{S}-\text{C}(\text{O})-\text{R}^4$, $-\text{C}(\text{O})-\text{S}-\text{R}^4$, $-\text{S}-\text{S}-\text{R}^4$, $-\text{NHR}^4$, and $-\text{CH}(-\text{NH}_2)(-\text{R}^4)$, wherein R^4 is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, *sec*-butyl, isobutyl, *tert*-butyl, 2-methoxyethyl, methylbenzene, oxetane-3-oxy-yl, cyclopentyl, cyclohexyl, and 2-pyrrolidinyl;

each of R^5 and R^6 is hydrogen; and

R^7 is selected from hydrogen, C_{1-6} alkyl, C_{1-6} heteroalkyl, and 4-(yl-methyl)-5-methyl-1,3-dioxol-2-one.

14. The compound of claim 1, wherein,

each R^1 is methyl;

R^2 is selected from a single bond, methanediyl, ethanediyl, $-\text{CH}(-\text{OH})-$, $-\text{CH}(-\text{O}-\text{C}(\text{O})-\text{CH}_2\text{CH}_3)-$, and 1,2-benzene-diyl;

R^3 is selected from $-\text{C}(\text{O})-\text{O}-\text{R}^4$, wherein R^4 is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, *sec*-butyl, isobutyl, *tert*-butyl, 2-methoxyethyl, methylbenzene, oxetane-3-oxy-yl, cyclopentyl, cyclohexyl, and 2-pyrrolidinyl;

each of R^5 and R^6 is hydrogen; and

R^7 is selected from hydrogen, C_{1-6} alkyl, C_{1-6} heteroalkyl, and 4-(yl-methyl)-5-methyl-1,3-dioxol-2-one.

15. The compound of claim 1, wherein,

each R^1 is independently C_{1-3} alkyl;

each R^2 is a single bond; and

each of R^5 , R^6 , and R^7 is hydrogen.

16. The compound of claim 1, wherein,

each R^1 is methyl;

R^2 is a single bond;

R^3 is $-\text{C}(\text{O})-\text{O}-\text{R}^4$, wherein R^4 is selected from C_{1-10} alkyl, C_{1-10} heteroalkyl, C_{7-10} alkylarene, and C_{5-10} heteroalkylcycloalkyl;

each of R^5 and R^6 is hydrogen; and

R^7 is selected from hydrogen, C_{1-6} alkyl, C_{1-6} heteroalkyl, and 4-(yl-methyl)-5-methyl-1,3-dioxol-2-one.

17. The compound of claim 1, wherein,

each R^1 can be selected from C_{1-6} alkyl;

R⁴ can be selected from C₁₋₆ alkyl, C₁₋₆ heteroalkyl, C₅₋₆ cycloalkyl, and C₅₋₆ heterocycloalkyl; each of R⁵ and R⁶ is hydrogen; and

R⁷ is selected from hydrogen, C₁₋₆ alkyl, C₁₋₆ heteroalkyl, and 4-(yl-methyl)-5-methyl-1,3-dioxol-2-one.

18. The compound of claim 1, wherein the compound is selected from:

2-((((E)-1-(2-aminothiazol-4-yl)-2-(((2S,3S)-1-((3-methoxy-2,2-dimethyl-3-oxopropoxy)sulfonyl)-2-methyl-4-oxoazetidin-3-yl)amino)-2-oxoethylidene)amino)oxy)-2-methylpropanoic acid;

2-((((E)-1-(2-aminothiazol-4-yl)-2-(((2S,3S)-1-((3-ethoxy-2,2-dimethyl-3-oxopropoxy)sulfonyl)-2-methyl-4-oxoazetidin-3-yl)amino)-2-oxoethylidene)amino)oxy)-2-methylpropanoic acid;

2-((((E)-1-(2-aminothiazol-4-yl)-2-(((2S,3S)-1-((2,2-dimethyl-3-oxo-3-propoxypropoxy)sulfonyl)-2-methyl-4-oxoazetidin-3-yl)amino)-2-oxoethylidene)amino)oxy)-2-methylpropanoic acid;

methyl 3-((((2S,3S)-3-((E)-2-(2-aminothiazol-4-yl)-2-(((1-methoxy-2-methyl-1-oxopropan-2-yl)oxy)imino)acetamido)-2-methyl-4-oxoazetidin-1-yl)sulfonyl)oxy)-2,2-dimethylpropanoate;

ethyl 3-((((2S,3S)-3-((E)-2-(2-aminothiazol-4-yl)-2-(((1-methoxy-2-methyl-1-oxopropan-2-yl)oxy)imino)acetamido)-2-methyl-4-oxoazetidin-1-yl)sulfonyl)oxy)-2,2-dimethylpropanoate;

propyl 3-((((2S,3S)-3-((E)-2-(2-aminothiazol-4-yl)-2-(((1-methoxy-2-methyl-1-oxopropan-2-yl)oxy)imino)acetamido)-2-methyl-4-oxoazetidin-1-yl)sulfonyl)oxy)-2,2-dimethylpropanoate;

methyl 3-((((2S,3S)-3-((E)-2-(2-aminothiazol-4-yl)-2-(((1-ethoxy-2-methyl-1-oxopropan-2-yl)oxy)imino)acetamido)-2-methyl-4-oxoazetidin-1-yl)sulfonyl)oxy)-2,2-dimethylpropanoate;

ethyl 3-((((2S,3S)-3-((E)-2-(2-aminothiazol-4-yl)-2-(((1-ethoxy-2-methyl-1-oxopropan-2-yl)oxy)imino)acetamido)-2-methyl-4-oxoazetidin-1-yl)sulfonyl)oxy)-2,2-dimethylpropanoate;

propyl 3-((((2S,3S)-3-((E)-2-(2-aminothiazol-4-yl)-2-(((1-ethoxy-2-methyl-1-oxopropan-2-yl)oxy)imino)acetamido)-2-methyl-4-oxoazetidin-1-yl)sulfonyl)oxy)-2,2-dimethylpropanoate;

methyl 3-((((2S,3S)-3-((E)-2-(2-aminothiazol-4-yl)-2-(((1-(tert-butoxy)-2-methyl-1-oxopropan-2-yl)oxy)imino)acetamido)-2-methyl-4-oxoazetidin-1-yl)sulfonyl)oxy)-2,2-dimethylpropanoate;

ethyl 3-((((2S,3S)-3-((E)-2-(2-aminothiazol-4-yl)-2-(((1-(tert-butoxy)-2-methyl-1-oxopropan-2-yl)oxy)imino)acetamido)-2-methyl-4-oxoazetidin-1-yl)sulfonyl)oxy)-2,2-dimethylpropanoate;

propyl 3-((((2S,3S)-3-((E)-2-(2-aminothiazol-4-yl)-2-(((1-(tert-butoxy)-2-methyl-1-oxopropan-2-yl)oxy)imino)acetamido)-2-methyl-4-oxoazetidin-1-yl)sulfonyl)oxy)-2,2-dimethylpropanoate;

a pharmaceutically acceptable salt of any of the foregoing; and

a combination of any of the foregoing.

19. A pharmaceutical composition comprising the compound of claim 1 and a pharmaceutically acceptable vehicle.
20. The pharmaceutical composition of claim 19, wherein the pharmaceutical composition comprises an oral dosage formulation.
21. Use of the compound of any one of claims 1-18 in the preparation of a medicament for treating a bacterial infection in a patient having a bacterial infection.
22. The use of claim 21, wherein the medicament is to be administered orally.
23. The use of claim 21, wherein the medicament is to be co-administered to the patient with a therapeutically effective amount of a β -lactamase inhibitor.
24. The use of claim 21, wherein the bacterial infection is capable of being treated by co-administration of a therapeutically effective amount of aztreonam and a β -lactamase inhibitor.
25. Use of the pharmaceutical composition of claim 19 or of claim 20, in the preparation of a medicament for treating a bacterial infection in a patient having a bacterial infection.
26. The use of claim 25, wherein the medicament is to be administered orally.
27. The use of claim 25, wherein the medicament is to be co-administered to the patient with a β -lactamase inhibitor.