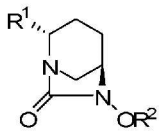
CLAIMS

1. An optically active (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative represented by the following formula (F):



（F）

wherein

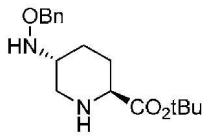
R^1 represents CO_2R, CO_2M, or $CONH_2$,

wherein R represents a methyl group, a tert-butyl group, or a 2,5-dioxopyrrolidin-1-yl group, and

M represents an inorganic cation or an organic cation wherein the inorganic cation is sodium, potassium, lithium, or calcium, and the organic cation is an ammonium salt formed from an amine selected from trimethylamine, triethylamine and dicyclohexylamine; or a quaternary ammonium salt selected from tetramethylammonium, tetraethylammonium, tetrabutylammonium and triethylbenzylammonium; and

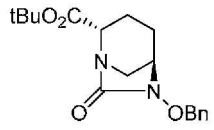
R^2 represents a benzyl group or an allyl group.

2. A process for preparing the compound represented by the formula (F) defined in claim 1, which is characterized by subjecting a compound represented by the following formula (E) to intramolecular urea formation, and then subjecting the resultant compound represented by the following formula (F1) to at least one step of the following steps:



（E）

wherein Bn represents a benzyl group, and tBu represents a tert-butyl group,



（F1）

wherein Bn represents a benzyl group, and tBu represents a tert-butyl group,

step a cleaving the ester,

step b converting the compound to the form of a salt of an inorganic cation or organic cation,

step c treating the compound with an acid to convert the compound to a free acid,

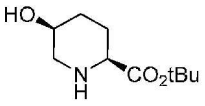
step d performing carbamoylation for the carboxylic acid,

step e converting the carboxylic acid to an ester,

step f removing the benzyl group of the benzyloxy group at the 6-position, and

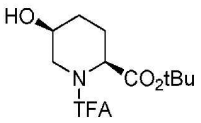
step g converting the group at the 6-position to allyloxy.

3. A process for preparing the compound represented by the formula (E) defined in claim 2, which is characterized by subjecting a compound represented by the following formula (B) to trifluoroacetylation, and reacting the resultant compound represented by the following formula (C) with benzyloxyamine in the presence of a hydroxyl group activating agent, and subjecting the resultant compound represented by the following formula (D) to detrifluoroacetylation:



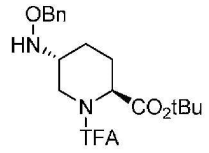
（B）

wherein tBu represents a tert-butyl group,



（C）

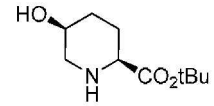
wherein tBu represents a tert-butyl group, and TFA represents a trifluoroacetyl group,



（D）

wherein Bn represents a benzyl group, tBu represents a tert-butyl group, and TFA represents a trifluoroacetyl group.

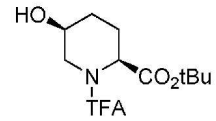
4. A compound represented by the formula (B):



（B）

wherein tBu represents a tert-butyl group.

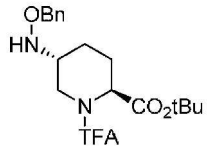
5. A compound represented by the formula (C):



（C）

wherein tBu represents a tert-butyl group, and TFA represents a trifluoroacetyl group.

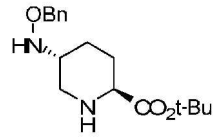
6. A compound represented by the formula (D):



（D）

wherein Bn represents a benzyl group, tBu represents a tert-butyl group, and TFA represents a trifluoroacetyl group.

7. A compound represented by the formula (E):



(E)

wherein Bn represents a benzyl group, and t-Bu represents a tert-butyl group.

8. The (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative according to claim 1, which is any one of the following compounds:
(2S,5R)-tert-butyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate,
(2S,5R)-6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid cyclohexylamine salt,
(2S,5R)-6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid,
(2S,5R)-6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxamide,
(2S,5R)-methyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate,
(2S,5R)-allyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate,
(2S,5R)-benzyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate,
(2S,5R)-2,5-dioxopyrrolidin-1-yl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate,
(2S,5R)-tert-butyl 6-(allyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate,
(2S,5R)-6-(allyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid cyclohexylamine salt,
(2S,5R)-6-(allyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid, and
(2S,5R)-benzyl 6-(allyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate.

9. A crystal of (2S,5R)-tert-butyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate, which exhibits a powder X-ray diffraction pattern having characteristic peaks appearing at lattice spacings (d) of 11.56, 10.96, 6.55, 6.00, 5.79, 5.56, 5.47, 5.25, 4.90, 4.35, 4.23, and 3.86 Å.

10. A crystal of (2S,5R)-methyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate, which exhibits a powder X-ray diffraction pattern having characteristic

peaks appearing at lattice spacings (d) of 10.39, 5.86, 5.69, 5.34, 4.81, 4.44, 3.98, 3.78, 3.11, 3.03, 2.93, and 2.77 Å.

11. A crystal of (2S,5R)-allyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate, which exhibits a powder X-ray diffraction pattern having characteristic peaks appearing at lattice spacings (d) of 14.72, 4.91, 4.46, 4.24, and 3.67 Å.

12. A crystal of (2S,5R)-6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid cyclohexylammonium salt, which exhibits a powder X-ray diffraction pattern having characteristic peaks appearing at lattice spacings (d) of 9.95, 8.45, 6.26, 5.87, 5.52, 5.22, 5.10, 4.96, 4.73, 4.54, 4.16, 3.93, and 3.55 Å.

13. A crystal of (2S,5R)-6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid, which exhibits a powder X-ray diffraction pattern having characteristic peaks appearing at lattice spacings (d) of 8.19, 7.14, 6.64, 6.29, 5.60, 5.21, 4.91, 4.60, 4.21, 3.69, 3.45, and 3.13 Å.

14. A crystal of (2S,5R)-6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxamide, which exhibits a powder X-ray diffraction pattern having characteristic peaks appearing at lattice spacings (d) of 13.06, 6.52, 5.14, 4.74, 4.63, 4.34, 3.85, and 3.72 Å.

15. A method of manufacturing a medicament for treatment of an infectious disease, the medicament comprising a β-lactamase inhibitor containing a (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative, using (2S,5R)-tert-butyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate.

16. A method of manufacturing a medicament for treatment of an infectious disease, the medicament comprising a β-lactamase inhibitor containing a (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative, using (2S,5R)-methyl 6-(benzyloxy)-7-oxo-6-diazabicyclo[3.2.1]octane-2-carboxylate.

17. A method of manufacturing a medicament for treatment of an infectious disease, the medicament comprising a β-lactamase inhibitor containing a (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative, using (2S,5R)-allyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate.

18. A method of manufacturing a medicament for treatment of an infectious disease, the medicament comprising a β-lactamase inhibitor containing a (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative, using (2S,5R)-benzyl 6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylate.

19. A method of manufacturing a medicament for treatment of an infectious disease, the medicament comprising a β-lactamase inhibitor containing a (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative, using (2S,5R)-6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid cyclohexylammonium salt.

20. A method of manufacturing a medicament for treatment of an infectious disease, the medicament comprising a β-lactamase inhibitor containing a (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative, using (2S,5R)-6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid.

21. A method of manufacturing a medicament for treatment of an infectious disease, the medicament comprising a β-lactamase inhibitor containing a (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative, using (2S,5R)-6-(benzyloxy)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxamide.

22. A method of manufacturing a medicament for treatment of an infectious disease, the medicament comprising a β-lactamase inhibitor containing a (2S,5R)-7-oxo-1,6-diazabicyclo[3.2.1]octane-2-carboxylic acid derivative, using (2S,5R)-tert-butyl 5-(benzyloxyamino)piperidine-2-carboxylate.