What is claimed is:

1. An immune composition, containing:

   polyriboinosinic-polyribocytidylic acid (PIC),

   an antibiotic or a polyamino compound,

   a positive ion, and

   an antigen derived from coronavirus, wherein

   the coronavirus is SARS-CoV-2 or a variant thereof;

   wherein the antigen derived from coronavirus is a SARS-CoV-2 spike protein of 2.5 μg/unit dose to 20 μg/unit dose, a SARS-CoV-2 spike protein multimer of 2.5 μg/unit dose to 20 μg/unit dose, a SARS-CoV-2 S1 protein of 2.5 μg/unit dose to 20 μg/unit dose, or a SARS-CoV-2 spike protein RBD region of 2.5 μg/unit dose to 20 μg/unit dose;

   preferably, the antibiotic is one selected from the group consisting of tobramycin, anthracycline, butyrosin sulfate, gentamicin, hygromycin, amikacin, kanamycin, nebramycin, β-lactam, metrzamide, neomycin, puromycin, streptomycin and streptozotocin, or a combination therefrom;

   preferably, the polyamino compound is one selected from the group consisting of spermidine acid salt, spermidine, N-(3-aminopropyl), N-(3-aminopropyl)-1,4-butanediamine, spermine, spermine, OS-dimethylamidothiophosphate, polylysine and aminoglycoside, or a combination therefrom; and

   preferably, the positive ion is a divalent positive ion, and more preferably, the positive ion is one selected from the group consisting of calcium, cadmium, lithium, magnesium, cerium, cesium, chromium, cobalt, deuterium, gallium, iodine, iron and zinc, or a combination therefrom; and most preferably, the positive ion is a calcium ion.

2. The immune composition according to claim 1, wherein

   a ratio of the antigen to the PIC is any one selected from the group consisting of:

   1 μg/10 μg , 1 μg/20 μg, 1 μg/30 μg, 1 μg/40 μg, 1 μg/50 μg, 1 μg/60 μg, 1 μg/70 μg, 1 μg/80 μg, 1 μg/90 μg, 1 μg/100 μg, 1 μg/125 μg, 1 μg/200 μg, 1 μg/250 μg, 1 μg/300 μg, 1 μg/350 μg, 1 μg/400 μg, 1 μg/450 μg, 1 μg/500 μg, 1 μg/550 μg, 1 μg/600 μg, 1 μg/700 μg, 1 μg/800 μg, 1 μg/1000 μg, 1 μg/1500 μg, 1 μg/2000 μg, 1 μg/2500 μg, 1 μg/3000 μg, 1 μg/4000 μg, 1 μg/5000 μg, 1 μg/6000 μg, 1 μg/7000 μg, 1 μg/8000 μg, 1 μg/9000 μg, 1 μg/10000 μg and a range between any two values of the foregoing.

3. The immune composition according to claim 1, wherein

a concentration of the PIC in the immune composition is 250 μg/unit dose to 5000 μg/unit dose; and

preferably, a concentration of the PIC in the immune composition is any one selected from the group consisting of 250 μg/unit dose, 500 μg/unit dose, 1000 μg/unit dose, 1500 μg/unit dose, 2000 μg/unit dose, 3000 μg/unit dose, 4000 μg/unit dose and 5000 μg/unit dose.

4. The immune composition according to claim 1, wherein

a concentration of the antigen derived from coronavirus in the immune composition is 0.1 μg/unit dose to 1000.0 μg/unit dose,

preferably, a concentration of the antigen derived from coronavirus in the immune composition is any one selected from the group consisting of 0.5 μg/unit dose, 1.0 μg/unit dose, 2.0 μg/unit dose, 3.0 μg/unit dose, 4.0 μg/unit dose, 5.0 μg/unit dose, 6.0 μg/unit dose, 7.0 μg/unit dose, 8.0 μg/unit dose, 9.0 μg/unit dose, 10.0 μg/unit dose, 15.0 μg/unit dose, 20.0 μg/unit dose, 30.0 μg/unit dose, 40.0 μg/unit dose, 50.0 μg/unit dose, 60.0 μg/unit dose, 70.0 μg/unit dose, 80.0 μg/unit dose, 90.0 μg/unit dose, 100.0 μg/unit dose, 200.0 μg/unit dose, 300.0 μg/unit dose, 400.0 μg/unit dose, 500.0 μg/unit dose, 600.0 μg/unit dose, 700.0 μg/unit dose, 800.0 μg/unit dose, 900.0 μg/unit dose, 1000.0 μg/unit dose and a range between any two values of the foregoing.

5. The immune composition according to claim 3 or 4, wherein

the unit dose is any one selected from the group consisting of 0.1 ml, 0.15 ml, 0.2 ml, 0.5 ml, 1.0 ml, 1.5 ml, 2.0 ml, 2.5 ml, 3.0 ml, 4.0 ml, 5.0 ml, 10.0 ml, 20.0 ml, 30.0 ml, 40.0 ml, 50.0 ml, 60.0 ml, 70.0 ml, 80.0 ml, 90.0 ml, 100.0 ml, 150.0 ml, 200.0 ml, 250.0 ml and a range between any two values of the foregoing.

6. The immune composition according to any one of claims 1 to 5, further containing one selected from the group consisting of:

gelatin, sucrose, white granulated sugar, lactose, maltose, trehalose, glucose, low molecular dextran, sorbitol, polysorbate 20, polysorbate 80, arginine hydrochloride, mannitol polyethylene glycol, human serum albumin, recombinant albumin, sodium caprylate, urea, aluminium hydroxide, aluminium phosphate, squalene, saponin, oligonucleotide, phenol red, magnesium chloride, potassium chloride, sodium chloride, sodium thiosulfate, potassium dihydrogen phosphate, ascorbic acid, chloroform, phenol and thimerosal, or a combination therefrom.

7. The immune composition according to any one of claims 1 to 6, further containing a physiologically acceptable buffer solution, which is one selected from the group consisting of acetate, trishydroxymethylaminomethane, bicarbonate, carbonate and phosphate buffer solution, or a combination therefrom;

preferably, the buffer solution has a concentration of 5 mM to 50 mM, preferably 5 mM to 20 mM; and

preferably, a pH value of the immune composition is 6 to 9.

8. The immune composition according to any one of claims 1 to 7, wherein the immune composition can be prepared in a solid dosage form or a liquid dosage form, wherein

the liquid dosage form is any one selected from the group consisting of injectable solution, suspension, spray, aerosol, naristillae, ointment, emulsion, drop, syrup and gel; and

the solid dosage form is any one selected from the group consisting of dry powder, lyophilized powder, tablet, capsule, suppository, granule and sugar-coated lozenge.

9. The immune composition according to any one of claims 1 to 8, wherein

the PIC is heterogeneous in molecular weight, and has a molecular weight of 50,000 daltons to 1,200,000 daltons; or

the PIC is heterogeneous in molecular weight, and has a sedimentation coefficient unit of 5.0 to 24.0.

10. The immune composition according to any one of claims 1 to 9, wherein

a concentration of the antibiotic or polyamino compound in the immune composition is 400 U/unit dose to 1200 U/unit dose, preferably, 400 U/unit dose, 500 U/unit dose, 600 U/unit dose, 700 U/unit dose, 800 U/unit dose, 900 U/unit dose, 1000 U/unit dose, 1100 U/unit dose, and 1200 U/unit dose; and

a concentration of the positive ion in the immune composition is 0.01 mg/unit dose to 0.1 mg/unit dose, preferably, 0.01 mg/unit dose, 0.02 mg/unit dose, 0.03 mg/unit dose, 0.04 mg/unit dose, 0.05 mg/unit dose, 0.06 mg/unit dose, 0.07 mg/unit dose, 0.08 mg/unit dose, 0.09 mg/unit dose and 0.1 mg/unit dose.

11. The immune composition according to any one of claims 1 to 10,

wherein the multimer is dimer, trimer, or tetramer; and

preferably, the multimer is homomultimer.

12. The immune composition according to any one of claims 1 to 11, containing:

an antigen derived from coronavirus,

0.5 mg/ml to 2 mg/ml PIC,

400 units/ml to 1200 units/ml kanamycin,

0.01 mg/ml to 0.1 mg/ml calcium chloride,

100 mM to 200 mM sodium chloride, and

5 mM to 20 mM phosphate buffer solution, and

optionally, further containing any one selected from the group consisting of 100 mM to 200 mM arginine hydrochloride, 0.005% w/v to 0.05% w/v polysorbate 80, and 0.1% w/w to 1.0% w/w aluminium phosphate, or a combination therefrom.

13. Use of the immune composition according to any one of claims 1 to 12 in preparation of a vaccine or medicament for preventing or treating coronavirus infection, wherein

preferably, the coronavirus is SARS-CoV-2 or a variant thereof; and

preferably, the vaccine or medicament is prepared in a dosage form suitable for any one of a route of administration selected form the group consisting of intramuscular, intraperitoneal, intravenous, subcutaneous, transdermal, intradermal, oral, sublingual and respiratory tract (nose, pharynx, trachea and bronchus) administration.

14. A method for preventing or treating coronavirus SARS-CoV-2 infection, comprising:

administering to a subject a prophylactically or therapeutically effective amount of the immune composition according to any one of claims 1 to 12, wherein

preferably, the immune composition is administered to the subject at a following frequency:

1 to 4 times every four years, 1 to 3 times every three years, 1 to 2 times every two years, once a year, twice a year, 3 times a year, 4 times a year, 5 times a year, 6 times a year, once a month, twice a month, 3 times a month, 4 times a month, 5 times a month, 6 times a month, 7 times a month, 8 times a month, once a week, twice a week, 3 times a week, 4 times a week, 5 times a week, 6 times a week, once every 3 days, twice every 3 days, 3 times every 3 days, once every 2 days, twice every 2 days, once a day, and twice a day;

a time interval between the administering is the same or different; and

a route of the administering is any one selected from the group consisting of intramuscular, intraperitoneal, intravenous, subcutaneous, transdermal, intradermal, oral, sublingual and respiratory tract (nose, pharynx, trachea and bronchus) administration.