Claims

1. Use of an antivirus agent in the manufacture of a medicament for preventing and inhibiting viral infection for viruses that use surface-bound GRP78 for attachment, entry and replication like SARS-CoV-2 virus, SARS-CoV virus, MER-CoV virus, Japanese Encephalitis Virus, Coxsackievirus, Dengue virus and Influenza A&B viruses.

2. Use of claim 1, wherein the antivirus agent comprising:
   a GRP78 antagonist or a pharmaceutically acceptable salt:
wherein the GRP78 antagonist is selected from a group consisting of a plasminogen kringle 5 fragment, a plasminogen kringle 5 fragment attached to immunoglobulin, an ROR1 kringle fragment, an ROR1 kringle fragment attached to an immunoglobulin, an ROR2 kringle fragment, and an ROR2 kringle fragment attached to an immunoglobulin.

3. Use of claim 2, wherein the plasminogen kringle 5 fragment comprises SEQ ID NO:1 and combinations thereof.

4. Use of claim 2, wherein the plasminogen kringle 5 fragment attached to immunoglobulin is selected from the group consisting of SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, and combinations thereof.

5. Use of claim 2, wherein the ROR1 kringle fragment is of SEQ ID NO:19, and combinations thereof.

6. Use of claim 2, wherein the ROR1 kringle fragment attached to immunoglobulin is selected from the group consisting of SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, and combinations thereof.

7. Use of claim 2, wherein the ROR2 kringle fragment is SEQ ID NO:33 and combinations thereof.

8. Use of claim 2, wherein the ROR2 kringle fragment attached to immunoglobulin is selected from the group consisting of SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, and combinations thereof.

9. Use of claim 2, wherein the GRP78 antagonist binds to the N-terminal GRP78 domain and competes with GRP78 antagonists to induce GRP78 internalization.

10. An antivirus agent comprising:

a GRP78 antagonist or a pharmaceutically acceptable salt:

wherein the GRP78 antagonist is selected from a group consisting of a plasminogen kringle 5 fragment, a plasminogen kringle 5 fragment attached to immunoglobulin, an ROR1 kringle fragment, an ROR1 kringle fragment attached to an immunoglobulin, an ROR2 kringle fragment, and an ROR2 kringle fragment attached to an immunoglobulin.

11. The antivirus agent of claim 10, wherein the plasminogen kringle 5 fragment comprises of SEQ ID NO:1 and combinations thereof.

12. The antivirus agent of claim 10, wherein the plasminogen kringle 5 fragment attached to immunoglobulin is selected from the group consisting of SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, and combinations thereof.

13. The antivirus agent of claim 10, wherein the ROR1 kringle fragment is of SEQ ID NO:19, and combinations thereof.

14. The antivirus agent of claim 10, wherein the ROR1 kringle fragment attached to immunoglobulin is selected from the group consisting of SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, and combinations thereof.

15. The antivirus agent of claim 10, wherein the ROR2 kringle fragment is SEQ ID NO:33 and combinations thereof.

16. The antivirus agent of claim 10, wherein the ROR2 kringle fragment attached to immunoglobulin is selected from the group consisting of SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, and combinations thereof.

17. The antivirus agent of claim 10, wherein the GRP78 antagonist binds to the N-terminal GRP78 domain and competes with GRP78 antagonists to induce GRP78 internalization.