and/or a C-terminus are selectively cleaved.

The pharmaceutical composition according to the present disclosure may further include one or more selected from pharmaceutically acceptable additives, particularly a buffer, a stabilizer, and a surfactant.

The pharmaceutical composition according to the present disclosure may be used in the form of an injection formulation for subcutaneous injection.

[Summary]

In one aspect, the present disclosure refers to a pharmaceutical composition comprising:

(a) pembrolizumab;

(b) a PH20 variant comprising the amino acid sequence of any one of SEQ ID NOs:5 to 50; and

(c) one or more pharmaceutically acceptable excipients.

In another aspect, the present disclosure refers to a pharmaceutical composition comprising:

(a) pembrolizumab;

(b) a PH20 variant consisting of the amino acid sequence of SEQ ID NO:44; and

(c) one or more pharmaceutically acceptable excipients.

In another aspect, the present disclosure refers to the pharmaceutical composition as disclosed herein for use in therapy.

In yet another aspect, the present disclosure refers to a use of the pharmaceutical composition as disclosed herein in the preparation of a medicament for treating cancer in a subject in need thereof.

【Description of Drawings】

The above and other objects, features and other advantages of the present disclosure will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1A illustrates size-exclusion chromatography chromatograms of trastuzumab in a stability test under harsh conditions at 45°C, and FIG. 1B illustrates a change in the purity of a trastuzumab monomeric protein according to formulation in a stability test under harsh conditions at 45°C;

FIG. 2 illustrates the results of measuring the protein aggregation temperatures of formulations including trastuzumab and a novel PH20 variant HP46;

FIG. 3A is a weak cation exchange (WCX) chromatogram of trastuzumab in a stability test under harsh conditions at

【CLAIMS】

1. A pharmaceutical composition comprising:

(a) pembrolizumab;

(b) a PH20 variant comprising the amino acid sequence of any one of SEQ ID NOs:5 to 50; and

(c) one or more pharmaceutically acceptable excipients.

2. A pharmaceutical composition comprising:

(a) pembrolizumab;

(b) a PH20 variant consisting of the amino acid sequence of SEQ ID NO:44; and

(c) one or more pharmaceutically acceptable excipients.

3. The pharmaceutical composition according to claim 2, wherein the pharmaceutical composition comprises 25 mg/ml of pembrolizumab, 2000 Units/ml of the PH20 variant,10 mM histidine buffer (pH 5.5), 7% sucrose, and 10 mM methionine.

4. The pharmaceutical composition according to claim 3, which further comprises 0.005% or 0.02% of polysorbate 80.

5. The pharmaceutical composition according to claim 2, wherein the pharmaceutical composition comprises 25 mg/ml of pembrolizumab, 2000 Units/ml of the PH20 variant, 10 mM histidine buffer (pH 5.5), 210 mM trehalose, 10 mM methionine, and 0.02% polysorbate 80.

6. The pharmaceutical composition according to any one of claims 1-5 for use in therapy.

7. The pharmaceutical composition for use according to claim 6, wherein the composition is formulated for subcutaneous injection.

8. Use of the pharmaceutical composition according to any one of claims 1-5, in the preparation of a medicament for treating cancer in a subject in need thereof.

9. The use of the pharmaceutical composition according to claim 8, wherein the medicament is formulated for subcutaneous injection.

10. The use of claim 8 or 9, wherein the cancer is skin cancer, liver cancer, hepatocellular carcinoma, gastric cancer, breast cancer, lung cancer, ovarian cancer, bronchial cancer, nasopharyngeal cancer, laryngeal cancer, pancreatic cancer, bladder cancer, colorectal cancer, colon cancer, brain cancer, prostate cancer, bone cancer, thyroid cancer, parathyroid cancer, kidney cancer, esophageal cancer, biliary tract cancer, testicular cancer, rectal cancer, head and neck cancer, cervical cancer, ureteral cancer, osteosarcoma, neuroblastoma, fibrosarcoma, rhabdomyosarcoma, astrocytoma, neuroblastoma, or glioma.

11. The use of claim 8 or 9, wherein the cancer is skin cancer, hepatocellular carcinoma, gastric cancer, breast cancer, lung cancer, bladder cancer, colorectal cancer, colon cancer, cervical cancer, kidney cancer, esophageal cancer, or head and neck cancer.