Claims

【Claim 1】 Use of a pharmaceutical composition comprising a human papillomavirus (HPV) vaccine and a checkpoint inhibitor agent in the manufacture of a medicament for combination therapy for preventing or treating a human papillomavirus (HPV)-induced cancer.

【Claim 2】 Use of a human papillomavirus (HPV) vaccine in the manufacture of a first medicament and use of a checkpoint inhibitor agent in the manufacture of a second medicament, wherein the first and second medicaments are to be used in combination therapy for preventing or treating a human papillomavirus (HPV)-induced cancer.

【Claim 3】 The use of claim 1 or 2, wherein the HPV vaccine comprises HPV vaccine comprising the polynucleotide of SEQ ID NO: 15 or a functional variant with sequence identity of 85% or more to SEQ ID NO: 15.

【Claim 4】 The use of claim 3, wherein a dose of the HPV vaccine is 0.5 mg to 5 mg.

【Claim 5】 The use of claim 3, wherein the HPV vaccine is for intramuscular injection.

【Claim 6】 The use of claim 1 or 2, wherein the checkpoint inhibitor agent is a programmed death (PD)-1/PD-L1 inhibitor.

【Claim 7】 The use of claim 1 or 2, wherein the checkpoint inhibitor agent is an anti-PD-1 antibody or anti-PD-1L antibody.

【Claim 8】 The use of claim 1 or 2, wherein the checkpoint inhibitor agent is selected from the group consisting of pembrolizumab, nivolumab, atezolizumab, avelumab, durvalumab, cemiplimab, and a combination thereof.

【Claim 9】 The use of claim 6, wherein a dose of the checkpoint inhibitor agent is 50 mg to 500 mg.

【Claim 10】 The use of claim 6, wherein the checkpoint inhibitor agent is for intravenous injection.

【Claim 11】 The use of claim 1 or 2, wherein the HPV vaccine and the checkpoint inhibitor agent is to be administered multiple times.

【Claim 12】 The use of claim 1 or 2, the HPV vaccine and the checkpoint inhibitor agent is to be administered simultaneously, separately, or sequentially.

【Claim 13】 The use of claim 1 or 2, wherein the HPV vaccine is to be administered at week 1, 2, 4, 7, 13, and 19, and further optionally at week 46.

【Claim 14】 The use of claim 1 or 2, wherein the checkpoint inhibitor agent is to be administered at an interval of three weeks.

【Claim 15】 The use of claim 1 or 2, wherein the HPV-induced cancer is cervical cancer.

【Claim 16】 The use of claim 15, wherein the cervical cancer is squamous cell carcinoma or adenocarcinoma.

【Claim 17】 The use of claim 1 or 2, wherein the HPV-induced cancer is metastatic, recurrent, or advanced cancer and the subject has been or is subject to an anti-cancer treatment.

【Claim 18】 The use of claim 1 or 2, wherein the HPV is HPV 16, HPV 18, or a combination thereof.

【Claim 19】 The use of claim 1 or 2, wherein a subject for preventing or treating the HPV-induced cancer is PD-L1 positive or PD-L1 negative.

【Claim 20】 The use of claim 1 or 2, wherein the HPV is HPV 16; and a subject for preventing or treating the HPV-induced cancer is PD-L1 positive.

【Claim 21】 The use of claim 1 or 2, wherein the HPV-induced cancer is cervical cancer being squamous cell carcinoma; the HPV is HPV 16; and/or a subject for preventing or treating the HPV-induced cancer is PD-L1 positive.