TA06

Overview

Cancer immunotherapy is an innovative method of stimulating the immune system in order to kill cancer cells. Cancer cells are able to evade the immune system by the help of a surface molecule called PD-L1, which can bind to the PD-1 and B7-1 on immune cells preventing elimination. Antibodies targeting the PD-1 or PD-L1 have been approved by the US FDA for first- and second-line treatment of certain types of cancer. However, evidence suggests that the unreliable pathological assessment of PD-L1 levels presents a clinical challenge to the usage of this type of immunotherapy. To provide better clinical outcomes, it is essential to determine if the expression levels of PD-L1 may be used as a reliable predictive biomarker.

Cell surface N-linked glycosylation represents about 52% of the observed molecular weight of the PD-L1 protein; hence, could cause its polypeptide antigens unable to reach PD-L1 antibodies. N-linked glycosylation of PD-L1 could lead to imprecise immunohistochemical (IHC) readouts in patients. By removing the glycan moieties through deglycosylation on PD-L1 to show its polypeptide antigens, an improvement can be made in its utilization as a diagnostic biomarker to predict response to anti-PD-1/PD-L1 immunotherapy.

TA06 Technology Description

TA06 is an innovative technology of enzymatic digestion, or sample deglycosylation, which significantly boosts anti-PD-L1 antibody binding affinity and signal intensity causing a more precise PD-L1 quantification and prediction of clinical outcome. This method uses recombinant glycosidase (peptide N-glycosidase F [PNGase F]) to remove global N-linked glycosylation of PD-L1. The removal of PD-L1 N-linked glycosylation increases antibody based PD-L1 detection providing a practical and timely approach to prevent false-negative readouts; thus, providing a more accurate method to quantify its expression than the conventional IHC assay in identifying patients who may receive the most benefit from cancer immunotherapy.

Efficacy and Safety

Studies done in human cancer cells in different types of bioassays (IHC, Elisa, immunofluorescence microscopy, and immunoblotting) suggested that N-linked glycosylation of PD-L1 hinders its recognition by anti-PD-L1 antibodies, and PD-L1 deglycosylation likely removes the obstructions for antibody detection, which can greatly promote the PD-L1 detection in human cancer cells and human tumor tissue samples.

The safety of the TA06 will depend greatly on the adverse effects of the medications used along with this technology.

Development Potential

The TA06 is a great license opportunity and has a huge potential in changing cancer immunotherapy. Biopharmaceutical companies may be interested in this innovative technology as a more accurate method to find patients who may receive the most benefit from immune checkpoint therapy.

Available for out-license.

Reference

1) Lee et al., Removal of N-Linked Glycosylation Enhances PD-L1 Detection and Predicts Anti-PD-1/PD-L1 Therapeutic Efficacy, Cancer Cell (2019), https://doi.org/10.1016/j.ccell.2019.06.008