IMP701

Name: IMP701
Synonyms: LAG525
Indication: Solid tumors; Cancer
Company: Immuntep; Novartis

IMP701, an antagonist (blocking) antibody targeting the LAG-3 molecule on T cells with potential applications in the treatment of cancer. It is designed to block the negative signal that may stop T cells from responding to the cancer. The product candidate was acquired through our acquisition of Immutep. Immutep licensed the development of IMP701 to CoStim Pharmaceuticals, or CoStim, under an exclusive license and collaboration agreement for development of humanized antagonist antibodies to LAG-3. Under this license, CoStim has the exclusive development rights to IMP701, in consideration for the obligation to fund all the development costs and to make milestone and royalty payments to Immutep. In February 2014, CoStim became a wholly owned subsidiary of Novartis. Novartis continues the development of IMP701, including the ongoing Phase I/II clinical trial that began in August 2015. According to certain publicly available records, the number of patients in that clinical trial was increased from 240 to 416 during fiscal year 2016 and topped up to 515 patients in November 2017.

IMP701 (anti-LAG-3, also known as LAG525) is an investigational immunotherapy being developed to potentially treat a range of solid tumors. Development of LAG525 began under Immutep S.A. and is now being continued by Novartis in collaboration with the Australian biotechnology company Prima BioMed.

As a type of immunotherapy, LAG525 works to boost the body's immune response against cancer rather than acting on a tumor itself. The immune system can identify abnormal cells, including cancer cells, and work to kill them by activating specialized immune cells called T-cells.

LAG525 is an antibody, or a protein is designed to bind to a specific target against the lymphocyte activation gene-3 (LAG-3, also known as CD223). Lymphocytes are a type of white blood cell. This gene has multiple roles in the immune system, including that of an immune system checkpoint — a signaling pathway designed to inhibit T-cells so they do not damage healthy cells.

The cell-surface protein LAG-3 is produced by activated T-cells and, when it interacts with another group of proteins called MHC class 2, inhibits the cell-killing ability of T-cells. LAG-3 can also reduce T-cell growth and activation.

When LAG525 binds to LAG-3 on T-cells present in the tumor, it blocks LAG-3 from interacting with MHC class 2. This should allow T-cells to continue proliferating and targeting the cancer cells, resulting in a reduction in tumor growth or size.

LAG525 in clinical trials

Novartis is currently running an open-label Phase 1/2 clinical trial (NCT02460224) to assess the safety and efficacy of LAG525, alone and in combination with another investigational immunotherapy called PDR001. The trial aims to recruit 421 patients with advanced solid tumors at 21 sites across North America, Europe, Australia, and Asia.

The study's Phase 1 portion consist of giving patients escalating doses to determine the maximum tolerated dose of LAG525 (alone and in combination with PDR001). Patients will be monitored for up to 30 months to record adverse events potentially caused by the treatment.

The Phase 2 portion will make a preliminary assessment of the treatment's anti-tumor activity by measuring the overall response rate over 30 months. The trial is expected to end in April 2019.