Pembrolizumab

From Wikipedia, the free encyclopedia

Pembrolizumab (formerly **MK-3475** and **lambrolizumab**, trade name **Keytruda**[1]) is a humanized antibody used in cancer immunotherapy. It targets the programmed cell death 1 (PD-1) receptor.[2] The drug was initially used in treating metastatic melanoma.[3][4]

Pembrolizumab was invented by Gregory Carven, Hans van Eenennaam and John Dulos at Organon Biosciences which later became Schering Plough Research Institute and then Merck & Co.[5] MRC Technology humanized the antibody pembrolizumab for Organon in 2006.

On September 4, 2014 the US Food and Drug Administration (FDA) approved pembrolizumab under the FDA Fast Track Development Program. It is approved for use following treatment with ipilimumab, or after treatment with ipilimumab and a BRAF inhibitor in advanced melanoma patients who carry a BRAF mutation.[6] It is marketed by Merck.

On October 2, 2015, the US FDA approved pembrolizumab for the treatment of metastatic non-small cell lung cancer in patients whose tumors express PD-L1 and who have failed treatment with other chemotherapeutic agents.[7]

Mechanism of action

Pembrolizumab is a therapeutic antibody that blocks the inhibitory ligand of programmed cell death 1 receptor. This receptor is responsible for inhibiting the immune response against cancer cells. Normally, this effect is necessary to avoid an inappropriate overreaction, such as an auto-immune disease, in healthy individuals.[8] In patients with cancer, antibody blockade against this receptor such as with pembrolizumab reinvigorates the immune system, allowing it to target and destroy cancer cells.[9] Pembrolizumab is one of a number of closely related therapies dubbed immune checkpoint blockade.

Clinical trials

A large phase I trial led to response rates of 37–38% in patients with advanced melanoma and an overall response rate of 26% in patients who had progressive disease after treatment with ipilimumab.[10]

The drug is in Phase II clinical trials for non-small-cell lung cancer (NSCLC) in patients with oligometastatic disease.[11]