Therapeutics & Vaccines

Combinatorial Androgen Deprivation With An Androgen Receptor Vaccine

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WARF: P160108US02

Inventors: Douglas McNeel, Brian Olson

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method to increase the efficacy of androgen deprivation therapy to treat prostate cancer.

It has been found that androgen deprivation therapy, used in combination with a DNA vaccine directed at the androgen receptor, represses prostate tumor growth and may delay onset or progression of metastatic disease.

Overview

The androgen receptor (AR) is a steroid hormone receptor that plays a crucial role in the development of normal prostate tissue, as well as in the progression of prostate cancer. Patients with metastatic disease are initially treated with androgen deprivation therapy (ADT), and typically it is continued indefinitely once a patient has metastatic prostate cancer. Given its use for over 60 years, androgen deprivation represents one of the first truly “targeted” therapies for a solid tumor, and there are few examples in the current arsenal of novel cancer-targeting agents with as high a response rate. However, despite the initial response to this treatment, in more than 80 percent of patients castration resistance usually emerges within about 2-3 years.

Recently, DNA vaccines have been added to the arsenal of treatments against prostate cancer. DNA vaccines are advantageous in being relatively easy and inexpensive to manufacture, and are “off-the-shelf” rather than individualized. Several DNA vaccines are being explored by academic and industry groups as novel treatments for different cancer types, and early stage clinical trials have shown DNA vaccines can augment immune responses and show evidence of clinical responses.

The laboratory of Dr. Douglas McNeel has focused recent efforts on the ligand-binding domain of the androgen receptor (AR LBD) as a biologically relevant target protein, critical for the development and progression of prostate cancer.

The Invention

The researchers now have animal data showing that the specific combination of ADT and a DNA vaccine against the androgen receptor (pTVG-AR) unexpectedly and synergistically improves the efficacy of ADT for the treatment of prostate cancer. The combination therapy results in significant decrease in tumor growth as compared to ADT alone.

The use of a PD-1 pathway inhibitor may further augment anti-tumor efficacy. This triple combination therapy results in a significant delay in prostate tumor growth and metastasis.

Applications

- Optimizing prostate cancer treatment

Key Benefits

- Increased efficacy of clinically approved androgen deprivation therapies

Stage of Development

The researchers have found *in vivo* that combining degarelix (a GnRH antagonist used clinically for ADT) with a vaccine targeting the androgen receptor significantly delayed tumor growth compared to degarelix treatment alone.

Additional Information

For More Information About the Inventors

- Douglas McNeel

Related Technologies

- For more information about a DNA vaccine for prostate cancer, see WARF reference number P05235US.

Tech Fields

- Therapeutics & Vaccines : Oncology

For current licensing status, please contact Andy DeTienne at adetienne@warf.org or 608-960-9857