Bio

The development of complement regulator CTRP6 for the treatment of autoimmune disease

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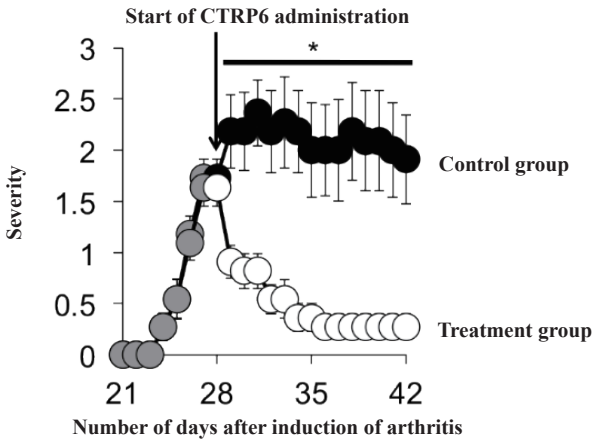
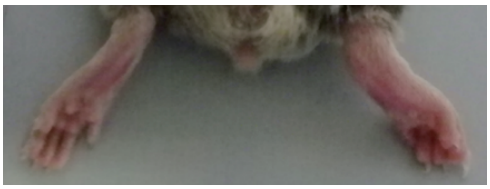
Purpose of Research

Autoimmune diseases such as rheumatoid arthritis are intractable diseases with complex involvement of environmental and genetic factors. Therefore, it is extremely difficult to establish effective therapeutic methods, and development of new therapeutic is eagerly awaited. In this research, we discovered a new regulator, CTRP6, in the complement pathway that plays a significant role in immune responses from an analysis using mouse models of rheumatoid arthritis. Currently, we are aiming to develop therapeutics for autoimmune disease using CTRP6.

Summary of Research

The complement activation pathway has been known to be a significant immune response in a host's defense against pathogens. It has also been reported in recent research that excessive activation of the second pathway results in aggravation of autoimmune diseases, so development of a therapeutic that regulates this is promising. In this research, we are developing a new drug for autoimmune diseases targeting CTRP6, identified as a regulator specific to the second complement pathway.





CTRP6 administration side

Physiological saline administration side

Comparison with Conventional or Competitive Technologies

- The influence of adverse drug reaction raised as an issue under the conventional technique is small.
- Points for improvement are devised from various angles, since a secretory protein is the target of development.

Expected Applications

- Autoimmune diseases such as rheumatoid arthritis
- Inflammatory diseases involved in the complement activation pathway

Challenges in Implementation

Currently, the therapeutic effect has been verified in the rheumatoid arthritis model. However, there are points to improve regarding administration method and stability in the body.

What We Expect from Companies

We desire joint research with companies that have development results in protein preparations. We also think that introducing our technique is effective for companies thinking of developing drugs to treat various inflammatory diseases.

POINT

- **Foresee fewer adverse reactions such as susceptibility to pathogens**
- **The activity evaluation method, genetically modified mice, and disease models have already been established**

Future Developments

We aim to develop therapeutics targeting this patented molecule, acquire POC, and conduct clinical studies.

- Awards: Award from the Japan College of Rheumatology (2009), Hideyo Noguchi Memorial Award for Medical Science (2015), Academic Award from the 13th Annual Meeting of the Japanese Society of Interferon & Cytokine Research (2016)
- Publication: Murayama et al., CTRP6 is an endogenous complement regulator that can effectively treat induced arthritis., Nature Communications, 2015, Volume 6, p.8483.