Eliminating the source of asthma-causing immune molecules

May 10 2010

Asthma and other allergic diseases are caused by inappropriate immune responses. Soluble IgE molecules, produced by immune cells known as B cells, are key immune mediators of these diseases. Therapeutic targeting of IgE in the blood can neutralize its effects and is an effective treatment for moderate-to-severe allergic asthma.

However, this approach does not halt IgE production and patients need to be treated repeatedly. But now, a team of researchers, at Genentech Inc., South San Francisco, has developed a way to specifically eliminate IgE-producing B cells, providing a potential new long-lasting therapeutic approach to treating asthma and other allergic diseases.

IgE-producing B cells express on their surface an IgE molecule that is slightly different to the IgE molecules that they secrete.

The team, led by Lawren Wu, generated a therapeutic molecule known as a monoclonal antibody that targets the portion of human IgE that is contained in IgE molecules on the surface of B cells but not in IgE molecules in the blood. When mice expressing human IgE were treated with this monoclonal antibody, their levels of IgE in the blood decreased substantially as did their numbers of IgE-producing B cells.

As the monoclonal antibody provided mice with protection in a model of allergic asthma, the authors suggest that targeting IgE-producing B cells using monoclonal antibodies similar to those described in this study might be of benefit to individuals with asthma and other allergic

diseases.

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Provided by Journal of Clinical Investigation