

Hormone therapeutics boosted by unique cow antibodies

The friendly cow, said to be blown by all the winds that pass, and wet with all the showers, may soon share the quality of steadfastness with protein therapeutics, particularly growth hormone injections, which tend to last but briefly. Hormone injections, it now appears, could acquire some of the quiet persistence demonstrated by cow antibodies.

In general, therapeutic antibodies can last for weeks in the body. And so antibodies with agonist or antagonist activities have been sought, in hopes that they could assist the development of therapeutic proteins with long plasma half-lives. Cow antibodies may be particularly useful because it has recently been demonstrated that they can be fused with human hormones. The resulting molecules are called antibody–hormone chimeras, and they have the potential for long-lasting action.

In a new study, scientists at The Scripps Research Institute (TSRI) drew inspiration from the bovine antibody, which has an unusual structure—a round base with a long amino-acid “stalk” pointing out. On the top of the stalk is a “knob region” that presumably binds to pathogens. This knob region, the scientists supposed, could be switched with DNA from a human hormone, such as hGH. And so they decided to use recombinant DNA technology to fuse hGH to a coiled version of the bovine antibody’s stalks.

This scientists described their approach February 3 in the Proceedings of the National Academy of Sciences, in an article entitled, “Functional human antibody CDR fusions as long-acting therapeutic endocrine agonists.”

“Based on the structure of a natural bovine antibody with an ultralong, well-folded heavy-chain complementarity-determining region [CDR], we have developed a strategy for the generation of functional human antibody–hormone chimeras with biological activities comparable to native hormones and significantly enhanced pharmacological properties,” wrote the authors. “This approach likely provides a general, relatively straightforward platform for generating antibody agonists and antagonists for a range of therapeutic applications.”

Read full, original article: [Cow Antibodies Inspire Beef-ed-Up Hormone Therapeutics](#)