

Researchers develop long-lasting growth hormone

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Researchers at the University of Sheffield have developed a long-acting growth hormone for use in human therapy. The new discovery could mean that children and adults with growth hormone disorders will not have to have injections as often, reducing the need for daily treatments.

Most hormones and cytokines have a short life and therefore require frequent injections as therapy. However, the new technology developed by the multidisciplinary team at Sheffield, means that scientists and clinicians are able to generate effective, long-acting hormones which promote growth over a minimum of ten days, after just one injection.

The research, published in the prestigious journal *Nature Medicine*, shows that the hormones are able to act for longer because of unique characteristics in the new molecules created in Sheffield.

Hormones normally circulate in blood attached to binding proteins that prevent their clearance from the circulation and prolong their biological action. The new molecules created by the scientists, however, are able to bind to each other in a head-to-tail configuration, doubling their molecular mass in the bloodstream. This delays their absorption and elimination from the blood and therefore generates a hormone that will last for a longer period of time.

Professor Richard Ross, from the University's School of Medicine and Biomedical Sciences, said: "We are very excited by these results and believe this technology will bring significant benefit to patients. Children

and adults with growth hormone deficiency have to give themselves daily injections and it is hoped that the new technology will reduce the number of times they have to do this to once every two weeks, or even once a month."

Professor Peter Artymiuk, a structural biologist in the University's Department of Molecular Biology and Biotechnology, added: "Although we are only in the early stages of the drug development process, and any drugs resulting from this research are several years away from approval, it's wonderful to see the science translate from the computer screen to what we hope will be real benefits for patients."

Professor Jon Sayers, from the University's School of Medicine and Biomedical Sciences, commented: "We believe that the technology can also be applied to treat inflammatory diseases such as multiple-sclerosis, cancer and metabolic diseases."

Source: University of Sheffield

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