Synthetic Peptide Mimics Growth Factor Angiogenesis and Tissue Repair

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Researchers from BioSurface Engineering Technologies, Inc. (BioSET) and the U.S. DoE's Brookhaven National Laboratory (BNL) have developed a synthetic peptide that mimics the effects of a tissue growth factor known as fibroblast growth factor, or FGF. FGFs are a family of proteins in the human body responsible for the proliferation, repair, and differentiation of cells in many tissues. BioSET has an exclusive license to develop and market these bioactive analogs.

The researchers designed the peptide to target the FGF-2 receptor molecules that occur on the surface of cells. The peptide, called F2A4-K-NS, is one of a series of synthetic analogs of naturally-occurring growth factors being developed at BioSET, and is the first of several that completely mimic the action of the parental molecule.

"Our studies show that the peptide is effective in stimulating angiogenesis and other cell responses in cell culture and in animals," said Brookhaven collaborating scientist Louis Peña. "It was active at concentrations similar to that of FGF-2 derived from recombinant DNA technology."

Dr. Peña continued, "Synthetic peptides that mimic growth factors could provide clinical benefits similar to recombinant growth factor proteins with the added benefits of reduced costs and greater chemical stability. They also allow for substantial flexibility in design and synthesis which allow addressing both medical device and pharmaceutical use."

Tom Roueché, BioSET's president said, "Our peptide technology continues to yield very promising results when combined with medical implants and more recently in experimental pharmaceutical applications. We believe that orthopedics, our initial area of focus, is just one field that will benefit from the use of the bioactive molecules we are developing."

Mr. Roueché indicated that F2A4-K-NS and other peptides like it are being developed for use on medical devices and for localized treatments of human disease. He added, "While BioSET continues to focus on medical device applications for its bioactive peptides, our research successes continue to position us well to expand the range of medical applications where our peptides can play a beneficial role. Our ongoing work on treatment of experimental ulcerative colitis, for example, may be of high interest to the medical community, and is one field we continue to examine."

Research on BioSET's F2A4-K-NS growth factor mimetic is reported in the May 2006 issue of International Journal of Molecular Medicine. A short report will be presented in May at Digestive Disease Week 2006. Another report on the peptide, expected later in the year, will appear in the Journal of Orthopedic Research. The research was funded by the U.S. Department of Energy and BioSET.

Source: BNL

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