^{186}Re and High-Specific-Activity ^{177}Lu Available in North America

MDS Nordion (Ottawa, Canada) announced on March 2 the availability of ^{186}Re and high-specific-activity ^{177}Lu in response to growing demand from the global nuclear medicine community for these isotopes used in targeted radiotherapy research. This represents the first commercial availability of these isotope products in North America. Low-specific-activity ^{177}Lu is currently supplied in North America by the University of Missouri Research Reactor and in Europe by Isotopen Dienst Benelux. ^{186}Re was previously available only in limited quantities from the Nuclear Research and Consultancy Group in The Netherlands.

"I am pleased to see that there is a reliable additional commercial source for ^{177}Lu as well as ^{168}Re," commented Stanley J. Goldsmith, MD, Director of Nuclear Medicine and Professor of Radiology and Medicine at the New York Presbyterian Hospital–Weill Cornell Medical Center, who has performed research with both radioisotopes. "Clinical trials and applications have suffered from a lack of a consistent source of these agents. Both radionuclides offer the potential for exciting applications as therapeutic labels of either peptides or antibodies."

The relatively long 6.65-day half-life of ^{177}Lu allows more sophisticated procedures to be used to purify and synthesize the radiopharmaceutical for commercial use, as well as making it easier to combine the isotope with biologically active compounds. As a low-energy β-emitter, ^{177}Lu is expected to offer a tissue penetration range appropriate for smaller tumors. "^{177}Lu is of special interest because it is similar in physical characteristics, including β-energy and physical half-life, to ^{131}I," said Goldsmith. "Data suggest that the relatively low energy and longer half-life (compared, for example, to ^{90}Y), may be advantageous in the targeted radionuclide therapy of micrometastases. At the same time, the metallic chemistry provides for more stable binding to peptides and antibodies than iodine."

^{186}Re is currently being used for bone pain palliation in metastases and is being investigated for a range of radiotherapeutic applications. Of special note is the 3.72-day half-life of the isotope, which complements the biological half-life of antibodies. "^{168}Re is exciting because it can be readily substituted in any of the radiopharmaceuticals developed for ^{99m}Tc labeling, providing a version of the molecule that can be used for therapeutic purposes," said Goldsmith. Both ^{177}Lu and ^{186}Re are also γ-emitters, allowing diagnostic imaging to trace distribution and monitor therapy.

MDS Nordion is already a key supplier of ^{90}Y and ^{131}I, for which demand has risen since approval by the FDA of their use in 2 radioimmunotherapy (RIT) regimens. "As with ^{90}Y and ^{131}I, we clearly have the capacity to increase production of ^{177}Lu and ^{186}Re as demand grows and to develop manufacturing partnerships with pharmaceutical companies as research products move through clinical trials and into commercial production," Iain Trevena, Senior Vice President, Nuclear Medicine, at MDS Nordion. The newly available isotopes are on a frequent production schedule and, as of April 1, are already shipping to hospitals and research centers. According to recent market reports, the number of RIT procedures performed annually in the United States will grow from less than 5,000 in 2002 to more than 200,000 in 2008 as more radioisotope products become commercially available.

DOE Seeks Proposals

On March 10, the U.S. Department of Energy (DOE), through its Office of Biological and Environmental Research (OBER) in the Office of Science, announced its interest in receiving grant applications for "innovative technologies for in vivo targeted radiopharmaceutical dose delivery and deposition." The specific goals of this research sponsorship effort include: (1) development of radiochemical methodologies for labeling the targeting molecules with and for site-specific delivery of therapeutic dose levels of radioactivity; and (2) development of radiobiology-based microdosimetry techniques to accurately measure and predict the potential therapeutic use, dose, and dose rate delivery of ionizing radiation. The DOE encouraged applicants to propose innovative methodologies and technologies to label biological ligands with therapeutic-level radioactivity, ensure in vivo delivery of intact radioisotopically labeled molecules to specific tumor cell types, and develop novel microdosimetry paradigms.

Potential applicants were encouraged to submit a brief preapplication by April 12, and formal applications by June 15.

For additional information, contact: Prem C. Srivastava, PhD, at prem.srivastava@science.doe.gov. The full text of Program Notice DE-FG01-04ER04-17 is available at: www.sc.doe.gov/production/grants/grants.html.