Researchers optimistic radioactive lead can beat cancer

June 10 2013, by Jean-Louis Santini

Atomic medicine has "fantastic potential" for fighting deadly, difficult to treat cancers, the head of French nuclear giant Areva's medical arm told AFP in an interview.

"We are interested in tumors against which the current therapeutic arsenal is very limited—like ovarian, gastric and pancreatic cancers—where the needs are huge and patients are waiting," explained Areva Med chief Patrick Bourdet.

Based in a Maryland suburb of the US capital, not far from the National Institutes of Health, Areva Med is pitting its hopes on a rare radioactive isotope that may be capable of selectively annihilating cancer cells.

This new weapon against these aggressive cancers is a variety of lead: the isotope Pb 212. It is extremely rare, extracted from an equally rare metal called thorium.

Only the few major nuclear powers have stocks of the radioactive metal —France, being one of them, with a considerable cache, Bourdet told AFP.

France's stock can be traced back half a decade to its nuclear subsidiary.

At that time, the Commissary of Atomic Energy, or CEA, a government-funded research group, decided to hold on to thorium after it extracted uranium—which has become the principal material used in nuclear

power plants.

In 2003, researchers had the idea of extracting the isotope Pb 212 from the thorium, with Areva's scientists among them, looking in part for possible applications against cancer.

Convinced of the great medical potential of this isotope, Areva created its medical affiliate in 2009 in the United States, which, since then, hasn't stopped growing.

Extremely targeted cancer- treatment

In 2011, Areva Med, working with researchers from the University of Alabama, got the green light from the US Food and Drug Administration to start a phase one clinical trial with Pb 212, using radioimmunotherapy.

The first patient, of 18 slated in the trial, was treated in April 2012.

"The trials are advancing in a satisfactory way," Bourdet said, adding that he couldn't be more optimistic at this point.

Backing up that optimism, Areva Med has gone into overdrive, putting in place the necessary components for the development and production of this new cancer-fighting tool, including in 2012 Areva Med inking an agreement with Swiss pharmaceutical giant Roche, the world leader in oncology.

At the same time, Areva launched the construction of a Pb 212 production laboratory, the world's first, in Bessines-sur-Gartempe, in the central French region of Limousin.

The lab, set to open at the end of 2013, will extract

nanograms—billionths of a gram—of the isotope from tonnes of thorium.

In the regime currently under in preliminary trials, each patient needs just four nanograms of Pb 212 in a single day of treatment, explained Bourdet.

The radioactive isotope is aimed at the cancer cells by chemically attaching it to an antibody crafted to recognize the tumor by it's specific antigens, or chemical signals.

"It's truly an extremely targeted anti-cancer therapy" that could fight many forms of cancer, even metastasized, emphasized Bourdet. In addition, thanks to its precision, "there are no side effects," he said.

"Everything's going well so far, we are confident and optimistic, but let's wait the results of the science," he cautioned, while adding: "I think our drug will be ready in 2016."

Martin Brechbiel, head of radioimmunotherapy research at the National Cancer Institute, is more "cautiously optimistic."

"The potential is very great" with Pb 212, he told AFP.

"If this therapy can improve survival significantly this would be extremely important," he said, but it's "far too early to tell."