Butyrylcholinesterase-Targeted Radiopharmaceuticals for the Treatment of Cancer

**Technology Fields:** Diagnostics - Cancer; Therapeutics - Cancer

**Technology ID:** 241

**Patent Status:** Application Filed

**Summary**
Researchers at the University of Nebraska Medical Center have designed novel anti-cancer compounds consisting of a radiolabeled 5′-iodo-2′-deoxyuridine (IUdR) conjugated to a butyrylcholinesterase (BChE) targeting moiety. The BChE-targeted IUdR is taken up by rapidly growing and dividing cancer cells expressing BChE. Once inside the cell, the IUdR translocates into the nucleus where it is incorporated into the DNA and induces double strand breaks in the cells DNA. Extensive studies both in vitro and in vivo have been conducted. In vivo experiments using xenografts of human ovarian adenocarcinoma cells in athymic mice demonstrated a significant decrease in tumor size in mice treated with BChE-targeted IUdR compared to control mice. These conjugates were administered safely in long term therapies and did not produce any noticeable adverse health effects in the mice. In addition to therapeutic uses, these compounds can also be used for imaging studies. The BChE-targeted IUdR can be used to label BChE positive cancer cells which will allow doctors to better diagnose and track disease progression.

**Market Value**
Butyrylcholinesterase is commonly overexpressed in many types of cancer including ovarian cancer and gliomas. These compounds provide both therapeutic and diagnostic capabilities useful in the treatment of a variety of cancers.

**Features and Benefits**
- Useful for imaging and as a therapeutic
- Useful for the treatment of a variety of cancers
- Decreased toxicity to normal tissue

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