NOVA SOUTHEASTERN UNIVERSITY
Office of Research and Technology Transfer

Compounds Promoting Cell Death and Inhibiting Growth of Cancer Tumors

Technology:

One cancer treatment approach is to inhibit receptors for VEGF (Vascular Endothelial Growth Factor), a protein which promotes growth of blood vessels and hence blood supply to tumors. Dr. Appu Rathinavelu and colleagues, using a computational pharmacology method, tested millions of compounds in public and commercially available databases for the ability to bind to constructed models of VEGF receptor structures. As a result, substituted isoindoles and their pharmaceutically acceptable salts were identified and subsequently tested *in vitro* and *in vivo*; these were found effective for treating cancers (breast, colorectal, lung, prostate and ovarian) by binding to VEGF receptors to inhibit tumor angiogenesis and growth, and promote tumor cell death.

One compound has been modified into a water soluble form (JFD-WS) to increase bioavailability and distribution; a JFD-WS dose of 100 mg/kg body weight in human breast adenocarcinoma xenograft implanted mice was found to inhibit tumor growth by 35%, and this effect was more pronounced when combined with paclitaxel (10 mg/kg). JFD-WS also appears to be less toxic to normal cells, and serum levels of key apoptotic signaling molecules indicated that apoptosis was enhanced in those animals to which the compound was administered.

Another compound, F16, is about as effective as paclitaxel in inhibiting human breast adenocarcinoma tumor growth *in vivo*; the combination of F16 and paclitaxel is up to 20% more effective in inhibiting tumor growth than each alone.

Opportunity:

In addition to their efficacy and low toxicity to non-cancerous cells, these small molecules are expected to be less expensive to manufacture, and stable in storage.

Nova Southeastern University is seeking to develop collaborative partnerships and licensing opportunities for this technology.

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Patent Status: Patent portfolio including US Patent 7,875,603 issued 25 Jan 2011, Japanese Patent 5436544 issued 20 Dec 2013 and Korean Patent 10-1538822 issued 16 Jul 2015; pending: European Patent Application 8767636.7 and Canadian Patent Application 2723233 for JFD-WS. US Patent 7,939,557 issued 10 May, 2011 for F16.