

Non-Confidential Description - PSU No. 4265 **"Triarylethylene Analogs as Breast Cancer Therapeutics"**

Field of Invention/Keywords:

breast cancer, SERMs, ER+, ER-, chemotherapeutic resistant tumors, triarylethylenes

Inventors:

Arun Sharma, Manoj Pandey, Shantu Amin, Gurleen Kaur, Mohinder Mahajan

Background

Cancer is one of the most prominent diseases worldwide, accounting for approximately 8.2 million deaths. Recent estimates have projected that new cancer cases will increase fivefold by 2025. Current breast cancer therapeutics use selective estrogen receptor modulators (SERMs) that block the effects of estrogen in breast tissue. Without estrogen attaching to a breast cell, the cell doesn't receive signals to grow and multiply. However, popular SERMs such as Ospemifene and Tamoxifen are only effective against MCF-7 (ER+) breast cancer cell lines. Currently, there are no anti-breast cancer agents that are effective against MCF-7 (ER+) and MDA-MB-231 (ER-) breast cancer cell lines.

Invention Description

This new therapeutic, compound GA-11, is effective against both ER+ and ER- breast cancers and it is anticipated it will be useful for a wider range of patients. The compound contains additional polar groups, including amines and amides, which makes GA-11 five times more cytotoxic than Tamoxifen to both cancer cell lines (ER+ & ER-) and five to eight times more effective than Ospemifene. Toxicity studies have shown that GA-11 is non-toxic to normal mouse embryonic fibroblast (MEF) cells, suggesting that the cytotoxic response of the compound is selective for cancer cells. It is anticipated that this treatment could be applicable to thousands of patients each year that suffer from chemotherapeutic resistant tumors.

- 5 times more cytotoxic than Tamoxifen against ER+ and ER- cancer cell lines
- 5-8 times more cytotoxic than Ospemifene against ER+ and ER- cancer cell lines
- Effective against both ER+ and ER- cancer cell lines
- Shown to be selective for cancer cells
- Effectively inhibits migration and invasion of ER-negative breast cancer cells

Status of the Intellectual Property

PCT/US2015/042357 filed July 2015.

IP owned jointly by The Penn State Research Foundation (US) and Apeejay Styta University (India)

Status of the Invention

Available for licensing