Lunasin Technology (10004 & 10010)

Published date: May 6, 2015

Technology description

Technology

University of Louisville researchers have created technology for the large-scale expression and purification of lunasin, a polypeptide that inhibits proliferation of specific cancer cell lines by disrupting the normal dynamics of histone acetylation-deacetylation. The expression technology includes a method of producing lunasin in plants by expressing a fusion protein containing the lunasin polypeptide and then cleaving the lunasin polypeptide from the fusion protein. This lunasin expression technology can be modified to direct the expression of lunasin to specific cancer cells. The purification technology incorporates methods to isolate lunasin from plant material resulting in highly-purified lunasin peptide. Modified lunasin can be developed by the described methods and used for nasal delivery of cancer prevention products, which bypasses digestion and greatly decreases the amount of lunasin required. Potential applications also exist for modified lunasin to be formulated as a topical gel or lotion to prevent skin cancer or as an injectable prophylactic agent for patients acutely exposed to radiation or chemical carcinogens.

Markets Addressed

Current lunasin production techniques are directed towards the purification of relatively sparse free lunasin in plant material. These techniques are limited on their ability to produce sufficient quantities of lunasin at an effective cost, and as such, progress has been slow to demonstrate the clinical relevance of lunasin as a cancer prevention agent. UofL's methods utilize plant-derived expression and purification processes that involve a lunasin-containing complex where approximately 80-90% of lunasin resides in plant material. The lunasin-containing complex is biologically active and can have a greater activity than the currently pursued wild-type lunasin. This technology meets market needs by allowing for the cost-effective, large-scale production of lunasin which can then be used for both pre-clinical and clinical trials to demonstrate lunasin's potential cancer-chemopreventive, anti-cancer and nutraceutical activities.

Fields of Use Available: All Commercial Fields.

Advantages

Methods for the cost-effective, large-scale production of highly-purified lunasin peptide.
Soybean-derived natural product with reduced toxicity.
Demonstrated pre-clinical, anti-cancer applications of lunasin.

Potential cancer-chemopreventive effect of lunasin.
Potential nutraceutical applications of lunasin.

Institution

University of Louisville

Inventors

Lauren Seber
Elizabeth McConnell
Brian Barnett
Keith Davis
Jian Cai