Identification of Cancer Biomarkers using Mammalian Chromatin Modifying Properties of Lunasin

Tech ID: 11236 / UC Case 2008-254-0

ABSTRACT

Researchers at the University of California, Davis have discovered a dietary peptide capable of reducing cancer risk by epigenetic modification of mammalian chromatin.

FULL DESCRIPTION

The mechanisms by which diet influences health and disease outcomes are not well understood. Our current understanding of how low potency dietary metabolites affect gene activity through genetic regulatory networks and signal transduction pathways cannot fully account for the expression of thousand of genes in hundreds of pathways in a comprehensive and highly coordinated fashion. Earlier research into Lunasin, a soy-peptide, has shown anti-cancer properties through its ability to affect gene expression. Lunasin up-regulates genes that are involved in tumor suppression (anti-cell proliferation), cell death and cell division (*e.g.*, mitotic checkpoint). Lunasin has been shown to promote the acetylation of chromatin leading to the transcriptional activation of chemopreventive genes necessary for guarding or protecting cells from transformation events induced either by chemical carcinogens or oncogenes. Although chemopreventive properties of the soy-peptide are well-documented, its mechanisms of action were unknown.

Researchers at the University of California, Davis have discovered that Lunasin regulates the expression of chemopreventive genes involved in cancer by modifying the acetylation of chromatin, specifically increasing histone H4 acetylation. Lunasin and the genes it modifies may serve as a biomarker for cancer risk and progression. Furthermore, inherent in Lunasin's structure and chromatin-remodeling properties may be the basis for new anti-cancer drug designs that include combination therapeutics with other chromatin remodeling bioactive agents. These findings have important implications and clinical relevance for disease prevention and long-term health outcomes.

APPLICATIONS

- Basis for new anti-cancer drug designs
- Biomarker for cancer
- Screening a test compound for anti-neoplastic activity
- Therapeutic/prophylactic treatment and monitoring neoplastic disease

FEATURES/BENEFITS

- Specific dietary factor with the ability to transcriptionally activate chemopreventive genes by chromatin modification

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,678,060	06/13/2017	2008-254

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OTHER INFORMATION

KEYWORDS

lunasin, lunasin peptide, soy, soy-peptide, cancer, anti-cancer, biomarker for cancer

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Medical**
  - Disease: Cancer
  - New Chemical Entities, Drug Leads

RELATED CASES

2008-254-0

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