Synthetic Melanin-like Nanoparticles (MelNP) Act as Intracellular UV-shields

Tech ID: 27158 / UC Case 2016-328-0

BACKGROUND

Melanin is a brown pigment that is delivered to keratinocytes in the skin after being excreted as melanosomes to form melanocytes. The primary function of melanin is to prevent UV-induced nuclear DNA damage. The biological system for induction, production, transfer and degradation of melanosomes is critical to controlling human skin health. Defects in melanin production in humans can cause diseases, such as skin cancer, vitiligo and albinism, many of which lack effective treatments due to their genetic origins. Therefore, there is an increasing interest in the production of synthetic melanin, as a substitute for natural melanin.

TECHNOLOGY DESCRIPTION

UC San Diego researchers in Professor Gianneschi's lab have synthesized melanin-like nanoparticles (MelNP) which mimic both the physiochemical properties of natural melanins, as well as a number of physiological traits, which include:

- Ability to degrade in lysosomes to form melanosomes
- Demonstrated UV absorption and photo protective attribute
- Undergo perinuclear aggregation by the keratinocytes to form a protective supranuclear cap in the same way natural melanin is arranged around epidermal cells

APPLICATIONS

Potential applications of MelNP include use as a UV protectant agent, therapeutic agent, or for cosmetic color

ADVANTAGES

MeLNP have similar chemical composition to natural melanin and demonstrates similar broad band UV absorption, which provides an opportunity for use in cosmetic applications

STATE OF DEVELOPMENT

This invention is available for licensing

INTELLECTUAL PROPERTY INFO

Provisional patent filed

RELATED MATERIALS

- Yuran Huang, Yiwen Li , Ziying Hu, Xiujun Yue, Maria T. Proetto, Ying Jones, and Nathan C. Gianneschi. Mimicking Melanosomes: Polydopamine Nanoparticles as Artificial Microparasols, ACS Cent. Sci., Article - 05/18/2017

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	2018013609	01/18/2018	2016-328
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OTHER INFORMATION

KEYWORDS

melanin, skin cancer, vitiligo, albinism, melanin-like nanoparticles, UV protection

CATEGORIZED AS

- **Medical**
  - Disease: Cancer
  - Disease: Dermatology

RELATED CASES

2016-328-0

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