New Method to Prepare Antioxidant Flavonoid Derivatives

Technology #m08-023

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Problem or Unmet Need:
Age-related macular degeneration (AMD) is the leading cause of blindness in the United States particularly among people over 65 years old. Although vitamin supplements and diet changes have been shown to slow the progression of this disease in some clinical studies, there are no effective therapies currently available for genetic or dry (non-neovascular) age related macular degeneration. The majority of patients still face progressive loss of central vision after diagnosis.

Details of the Invention:
Many studies have shown that the antioxidant quercetin has a protective effect against oxidative stress in the human retinal pigment epithelial (RPE) in vitro, which makes it a promising candidate as a food supplement in the prevention of the early pathologic changes in AMD. This invention offers a novel and convenient synthetic route to derivatize quercetin and other antioxidants for drug development by linking an antioxidant to a quercetin or a quercetin glycoside. The derivatized quercetin compounds are then shown to significantly reduce chromophore A2E photooxidation. A2E oxidation is a major factor for RPE cell damage. Methods of using the antioxidant flavonoid derivatives to prevent, treat or ameliorate macular degeneration and other diseases or conditions associated with oxidative damage are also provided.

Applications:
• Antioxidant flavonoid derivatives can be synthesized selectively for biological evaluation of pharmaceutical activities.
• Compounds synthesized by this method could potentially be used as treatments for age-related macular degeneration, cardiovascular diseases, cancer, inflammations, and neurodegenerative conditions.
• The antioxidant compounds prepared by this method could be utilized as skin care products to protect the skin from environmental damage.

Advantages:
• A diverse array of chemically stable antioxidant flavonoid derivatives can be synthesized selectively for biological testing for their activities against various diseases.
• This unique synthetic strategy is easy to execute in laboratories.


Licensing Status: Available for Licensing and Sponsored Research Support
Inventors

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