VeA, a Global Regulator of Secondary Metabolism, Can Increase Production of Secondary Metabolites

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing methods of using VeA, a newly identified global regulator of secondary metabolism, to increase or decrease production of secondary metabolites in fungi.

OVERVIEW

Microorganisms, such as fungi, produce a variety of secondary metabolites. These secondary metabolites display a broad range of activities, including antibiotic, immunosuppressant, phytotoxic and mycotoxic activities, and are useful for drug or technological development. For example, the antibiotic penicillin and the cholesterol-lowering drug lovastatin are secondary metabolites.

However, producing large amounts of secondary metabolites is difficult, and available techniques often produce unpredictable results. Because they are formed from a relatively small number of metabolic pathways, identifying the genes that control these pathways may provide an alternative method of generating secondary metabolites.

The inventors previously identified a global regulator of secondary metabolism, called LaeA, in fungi (see WARF reference number P02379US). Overexpression of the laeA gene upregulates production of secondary metabolites, greatly increasing penicillin production in Aspergillus nidulans and lovastatin production in A. terreus. On the other hand, deletion of laeA in A. fumigatus eliminates the production of gliotoxin and other secondary metabolites, decreasing the virulence of this human pathogen.

THE INVENTION

UW-Madison researchers now have identified another global regulator of secondary metabolism, called VeA. VeA is a conserved protein that interacts with LaeA in an as yet unknown mechanism. Overexpression of veA upregulates secondary metabolism in A. flavus to a greater degree than overexpression of laeA. This gene could be used to increase the production of important natural products, including novel products with medicinal value.
APPLICATIONS

• Increasing production of useful secondary metabolites, such as penicillin or lovastatin
• Decreasing production of toxic secondary metabolites, such as aflatoxin

KEY BENEFITS

• Provides a simple method of increasing or decreasing secondary metabolite production
• Upregulates secondary metabolism to a greater degree than LaeA
• May enable new treatments for fungal infections
• May be used to identify new secondary metabolite biosynthesis gene clusters

ADDITIONAL INFORMATION

Related Technologies
See WARF reference number P02379US for more information on LaeA, another global regulator of secondary metabolism.

Publications


Tech Fields
Drug Discovery - Drug production & design

CONTACT INFORMATION

For current licensing status, please contact Mark Staudt at mstaudt@warf.org or 608-960-9845.