Method for Preventing Superoxide Damage to Cells and Oxygen-Labile Proteins

INVENTORS • Diana Downs, Jeffrey Gralnick

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method of protecting cells and oxygen-labile enzymes from oxidative damage.

OVERVIEW

Oxygen ions and radicals generated during aerobic growth result in damage to DNA and ultimately, in aging. Several systems exist to reduce the potential for damage by superoxide radicals, by either preventing the damage or repairing it.

THE INVENTION

UW-Madison researchers have developed a method of protecting cells and oxygen-labile enzymes from oxidative damage. YggX is a protein identified from Salmonella enterica serovar Typhimurium. Elevated levels of the YggX protein increase the resistance of Salmonella enterica to superoxide stress and reduce damage to its DNA. Also, when high levels of this protein are present in the cell, enzymes that are normally susceptible to oxidative damage remain active. Engineering cells to overexpress the YggX protein or its homolog renders the cells more resistant to oxidative damage. The YggX protein or its homolog could also be used to protect an oxygen-labile protein from superoxide damage by co-expressing YggX with the oxygen-labile protein.

APPLICATIONS

• Preventing oxidative damage

KEY BENEFITS

• In the fermentation industry, YggX could be expressed with a product of interest to protect the product from oxidative damage during purification or growth.
• Useful as a potential target for antimicrobials
• May prevent oxidative damage and retard the aging process in eukaryotes, especially humans

ADDITIONAL INFORMATION

Tech Fields
Research Tools - Fermentation
Pharmaceuticals & Vitamin D - Metabolic disorders
Drug Discovery - Targets

CONTACT INFORMATION

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or (608) 265-9861.