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Enhanced Citric Acid Production in Aspergillus with Inactivated Asparagine-Linked Glycosylation Protein 3 (Alg3), and/or Increased LaeA Expression

SUMMARY

Researchers at PNNL have developed strains of Aspergillus that offer an opportunity for improved methods of producing citric acid in bioreactor systems. In particular, isolated fungi (such as filamentous fungi) having a gene inactivation (e.g., gene deletion) of a dolichyl-P-Man:Man(5)GlcNAc(2)-PP-dolichyl mannosyltransferase (Alg3) gene (referred to as Alg3Δ strains), a gene enhancement (e.g., overexpression) of a LaeA gene (referred to as upregulated LaeA strains), or both have been developed to improve citric acid production. Any strain of fungi can be used, such as filamentous fungi, for example Aspergillus niger (A. niger). In addition, deletion of Alg3 alters the overall N-glycosylation and further influences the spore germination, filamentous growth, sporulation and other organic acid production in A. niger.

ADVANTAGES

* Increase in production of citric acid

* Improved efficiency in citric acid production

U.S. DEPARTMENT OF ENERGY

Technology Portfolio(s)

- Biotechnology
- Bio-processing

Potential Industry Applications

- Chemicals
- Food, Beverage & Tobacco
- Healthcare, Pharma, Biotech & Medical

Ron M. Thomas
Pacific Northwest National Laboratory
(509) 372-6042
ron.thomas@pnnl.gov
http://availabletechnologies.pnnl.gov

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