

Cyanobacterial Strain and Culture Method for Photoautotrophic L- Phenylalanine Production

An engineered blue-green algae strain uses liquid waste in non-arable areas like raceway ponds to resource-efficiently produce L-phenylalanine, achieving a 7-fold increase compared to other cyanobacteria.

Researchers at Purdue University have discovered a new resource-efficient, environmentally friendly, and cost-effective method to produce L-phenylalanine. L-phenylalanine is an amino acid used in animal feed and artificial sweeteners. Currently, L-phenylalanine is produced by fermentation of glucose using *E. coli* and *C. glutamicum* bacteria. This method relies on agriculture for its supply of raw materials such as glucose thereby competing with resource availability for food production. The method developed by Purdue researchers does not rely on glucose obtained from production agriculture. Instead, it permits production of L-phenylalanine using liquid waste, in non-arable areas like raceway ponds. This method uses an engineered fast growing blue green algae strain that can produce 7-times more L-phenylalanine compared to the other cyanobacteria.

Advantages:

- Inexpensive raw material
- Environmentally friendly
- Resource-efficient

Potential Applications:

- Biochemicals
- Biofuel precursor
- Animal feed
- Aquaculture

Technology ID

2021-MORG-69501

Category

Agriculture, Nutrition, &
AgTech/Livestock & Animal
Health Solutions
Chemicals & Advanced
Materials/Specialty &
Performance Chemicals
GreenTech/Circular Economy &
Waste Reduction

Authors

Arnav Deshpande
John Morgan

Further information

Raquel Peron
rperon@prf.org

[View online](#)



Technology Validation: The researchers tested and selected the bacterial strain that produces the most L-phenylalanine.

TRL: 5

Intellectual Property:

Provisional-Patent, 2021-07-08, United States | Utility Patent, 2022-07-07, United States | CIP-Patent, N/A, United States