



Rare Earth Elements Collected from Wastewater Utilizing Cyanobacteria Now Patent Pending

SAN JOSE, CA--(March 15, 2023) - Yasheng Group, (OTC: HERB), an agricultural and biotech company with U.S. headquarters in San Jose, California today announced that HERB gained patent protection under the USPTO, entitled, "Method for Using Cyanobacteria to Collect Rare Earth Elements from Wastewater."

A new patent has been designed for a method of using cyanobacteria to collect rare earth elements (REE) from wastewater. This technology has great potential for sustainable industrial processes and supply chain independence for industrialized regions. This innovation contributes to reducing the environmental impact of conventional methods for rare earth element extraction.

Rare earth elements are critical components used in various high-tech applications, including wind turbines, electric cars, and smartphones. However, conventional methods for their extraction are energy-intensive and often involve the use of environmentally toxic chemicals, leading to significant environmental impacts. As a result, there is growing interest in the development of sustainable methods for the recovery and recycling of REE from industrial wastewater streams.

The present invention relates to a method for using cyanobacteria to collect rare earth elements from wastewater. The invention involves the isolation of genes responsible for neurotoxin production in cyanobacteria and their attenuation, optimization of downstream processing, integration of sensors and control systems for regulating growth conditions, and genetic engineering to modify cyanobacteria to enhance their ability to bind to and remove certain types of metal ions.

Cyanobacteria are a group of phototrophic microorganisms that can be found in aquatic and terrestrial environments. Cyanobacteria have been shown to be effective at adsorbing rare earth elements (REE) from wastewater. The invention involves the selection and modification of the most effective cyanobacteria strains for rare earth element adsorption.

The invention further includes genetic engineering to modify cyanobacteria to enhance their ability to bind to and remove certain types of metal ions. This modification makes them more efficient in rare earth element adsorption. The expression of the metal-binding genes is optimized by selecting suitable promoters, ribosome binding sites, and terminator sequences.

The present invention provides a cost-efficient and sustainable method for REE recovery from wastewater streams, leading to enhanced market stability and supply chain independence for industrialized regions. The invention can also contribute to reducing the environmental impact of conventional methods for rare earth element extraction.

The patent will be licensed to companies that wish to develop and commercialize this technology for wastewater treatment and REE recovery throughout the world but developed and commercialized by the Company in China. The inventors believe that this technology will be beneficial for the global economy and the environment.

Yasheng Group

Yasheng Group (“The Company”) is a Colorado corporation that conducts business operations in US, China, and the Philippines in four major segments: Agriculture, Mining, Biotechnology and Blockchain + IOT. The company's agriculture products include herbal medicine, herbal organic food, ginkgo, songaricum, betel nut, coconut, coffee, wolfberry, and hemp. Its products are exported to 15 countries around the world, and 2875 Cooperative regional distribution agents. It also designs, develops, and markets new technologies related to agriculture and genetic biology.

Safe Harbor Statement

Except for the historical information contained herein, certain matters discussed in this press release are forward-looking statements which involve risks and uncertainties such as expectations of future growth and profits. The company assumes no obligation to update these forward-looking statements.

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