

Cultivating extremophilic microalgae *Galdieria sulphuraria* on urine for production of high-value pigment C-phyococyanin

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Urine contributes as a mere 1% of the total volume that an average household discharges as wastewater. However, urine contributes up to 80% of the nitrogen and 55% of the phosphorus in domestic wastewater. Offering an economical incentive to separate and reuse urine from urban sewage may significantly reduce loading of nutrients into wastewater treatment plants and subsequent surface waters.

As part of the New Energy and Resources from Urban Sanitation (NEREUS) project, this research intends to study a new pathway to reuse urine for the production of a high-value compound. Thermoacidophilic microalgae *Galdieria sulphuraria* was chosen for its production of C-phyococyanin, a versatile pigment of high value with thermostable properties, in addition to its affinity for extreme culture conditions. This research-in-progress will study under which conditions *G. sulphuraria* is able to grow on urine derived medium and whether an interesting amount of C-phyococyanin can be produced.

Keywords: Biotechnology; Microalgae; Wastewater; Nutrients; Circular economy; Extremophile; Urine; NEREUS; C-phyococyanin; *Galdieria sulphuraria*