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CHEMICAL AND SOLAR ENERGETIC TREATMENT FOR HUMAN URINE TO PRODUCE NATURAL FERTILIZER

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Abstract

This research demonstrated the feasibility of converting human urine into a solid fertilizer by means of lab-scale evaporation technology, and investigated the feasibility of preparing fertilizer from human urine in designed solar reactor. After 22 days of sun exposure, 18.7 g solid fertilizer material was recovered from 5 liter undiluted urine. This urine derived fertilizer was subjected to full chemical and structural analysis by means of Atomic Absorption, SEM and XRD analysis. The main contents are ammonium hydrogen phosphate, sodium chloride and sodium sulphate. The fertilizer was tested for nutrition of spinach and compared with struvite prepared from human urine and liquid bittern. The solar urine fertilizer showed a significant NPK uptake compared to both control fertilizer from commercial mineral fertilizer and struvite prepared from human urine showed good results too. Furthermore the solar urine fertilizer doesn't need extra production expenses and has no energy sources other than solar radiation required.

Key words: solar reactor, nutrient recycling, fertilizer, human urine, struvite.
