# Preparation and Use of Urolithin A in Treating Acute Kidney Injury

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Technology description

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**Overview**

Acute kidney injury (AKI) is a sudden kidney failure or damage that can lead to a buildup of waste products in the blood. AKI is common in patients with longer hospital stays and in older adults. AKI can lead to higher healthcare costs due to comorbidities associated with the disorder and can increase the risk of mortality, causing 1.7 million deaths each year. This invention is a biodegradable anti-inflammatory nanoparticle composed of urolithin A and can prevent and treat AKI.

**Technology**

This invention is a process to treat acute kidney injuries because there are currently no drugs approved for its prevention and treatment. The invention would be biodegradable nanoparticle compositions comprised of urolithin A. Urolithin A is a metabolite compound that has been shown to inhibit metastasis of colorectal cancer cells. Urolithin A is an anti-inflammatory agent that that can treat AKI. The pathogenesis of AKI involves activation of inflammatory and apoptotic pathways, for which Urolithin A would be a beneficial compound to treat AKI.

Due to the poor bioavailability of Urolithin A, the invention can be used to prepare efficacious Urolithin A as a pharmaceutically effective polymer nanosystems for delivery or targeting drugs. The process allows for the drug to be delivered as an oral re-constitutable suspension or via the nose or skin. The delivery system is advantageous because it allows for optimization of ligand-receptor binding, which can improve intestinal uptake and achieve ideal receptor mediated delivery.

**Research Interests**

Drug Delivery Strategies

Nano-scale Biotherapeutics

## Application area

Prevention and treatment for AKI

Applied for drug repurposing

## Advantages

Use early in drug discovery program to minimize attrition rate

Convert injectable to oral delivery

Novel Prevention and Treatment Method for AKI

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