

PRODUCT

Microbial consortia.

INDICATION

Urinary Stone Disease.

VALUE PROPOSITION

- Both assesses risk and provides a treatment approach.
- Evidence suggests proposed treatment is more effective than current bacteriotherapies.
- A short-term course of probiotic is expected to protect individuals for up to nine months.

DEVELOPMENT STAGE

- Proof-of-concept demonstrated in preclinical animal models

INTELLECTUAL PROPERTY

Issued US Patent 11,661,447.

RELATED PUBLICATIONS

Karamad D, ... **Miller AW**.
Foods. 2022 Sep 16;11(18):
2876. PMID: [36141002](https://pubmed.ncbi.nlm.nih.gov/36141002/)

Miller AW, et al. Kidney Int.
2019 Jul;96(1):180-188.
PMID: [31130222](https://pubmed.ncbi.nlm.nih.gov/31130222/)

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Microbial Consortia for the Prevention and Treatment of Urinary Stone Disease

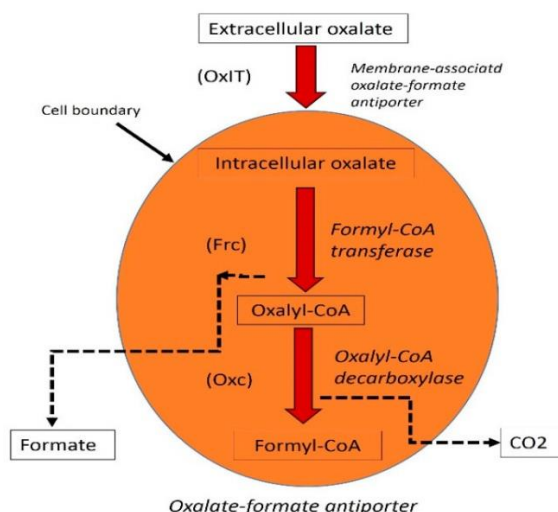
Aaron Miller, PhD and colleagues – Lerner Research Institute

UNMET NEED

- The prevalence of urinary stone disease has been increasing over the last 40 years and currently affects 10% of the population in the United States.
- Oxalate, a simple dicarboxylic acid present in many plant-based foods, is the primary component in 80% of kidney stones.
- While oxalate-degrading bacteria in the gut respond to dietary oxalate exposure to eliminate the compound before it can be absorbed into the bloodstream, animal and clinical studies have failed to show the efficacy of using oxalate-degrading bacteria as probiotics to reduce urinary oxalate excretion.

SOLUTION

- Inoculating mice with mixed microbial communities has demonstrated an effective and persistent reduction of urinary oxalate greater than oxalate-degrading bacteria alone.
- Specific bacteria that include oxalate-degrading bacteria, along with acetogenic, methanogenic, and sulfate-reducing bacteria are responsible for this effect, which has been replicated through preclinical studies.
- These findings represent a promising approach to assess risk and prevent recurrent episodes of urinary stone disease in a significant proportion of the population.



Oxalate degradation pathway in O. formigenes.