

The First Medical Food for Polycystic Kidney Disease Launched

What is Polycystic Kidney Disease (PKD)?

600K

PKD patients in US

13M

PKD patients worldwide

\$7-10B

US societal economic burden

50%

Will progress to kidney failure by age 60

- A genetic form of chronic kidney disease.
- Metabolic defects leads to uncontrolled cyst growth in kidneys.

What is KetoCitra[®] ?

- A medical food for the dietary management of individuals with mild to moderate stages of PKD (CKD stages 1-3).
- To be used under medical supervision.
- Non-prescription.
- Contains **beta-hydroxybutyrate (BHB)** and **citric acid (citrate)**.
- Formulated to be kidney-safe.
- Launched in November 2021.



Turn over for the science behind the FIRST medical food for the dietary management of individuals with AUTOSOMAL-DOMINANT POLYCYSTIC KIDNEY DISEASE (ADPKD).

What is Santa Barbara Nutrients?

- A startup company out of the **University of California Santa Barbara (UCSB)** launched by kidney researchers and kidney patients.
- A benefit corporation.
- Focused on R&D to create innovative products for kidney diseases and kidney health.
- Exclusive license to commercialize UCSB's patented and patent-pending technologies (US Patent No. 11,013,705).

The Science Behind KetoCitra®

Dr. Thomas Weimbs, UC Santa Barbara professor and molecular biologist, has directed a research laboratory for more than 20 years focusing on the molecular mechanisms that underlie PKD. Most recently, two significant discoveries emerged that pointed to dietary approaches in the management of PKD.

1. CRYSTALS

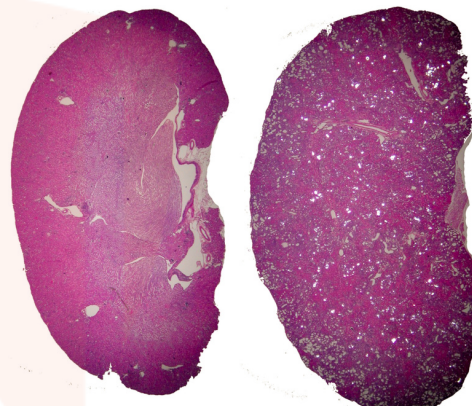
What was previously an unknown mechanism, the Weimbs lab discovered that micro-crystals that can precipitate in renal tubule lumens lead to activation of signaling pathways, tubule dilation and acceleration of cystic progression.

Reference:

Torres JA, Rezaei M, Broderick C, Lin L, Wang X, Hoppe B, Cowley BD, Savica V, Torres VE, Khan S, Holmes RP, Mrug M, Weimbs T. *Crystal deposition triggers tubule dilation that accelerates cystogenesis in polycystic kidney disease.* *J. Clin. Invest.* 2019; [130](#):4506-4522.

KetoCitra® helps with the dietary management of renal crystal precipitation by:

- Normalizing urine pH by providing 51 mEq alkaline base per day.
- Normalizing urine citrate levels by providing **citrate**.
- Suppressing the dietary uptake of oxalate and inorganic phosphate by providing calcium and magnesium.



Mouse kidney sections with calcium oxalate crystals (right) compared to control

2. KETOSIS



The Weimbs lab discovered that dietary interventions that promote the **metabolic state of ketosis** strongly slow the progression of PKD in multiple animal models, and that the effect can be mimicked by supplementing the diet with the ketone **beta-hydroxybutyrate (BHB)**. Based on these results and numerous clinical data, carbohydrate-predominant diets consumed by most individuals in industrialized societies likely worsen the progression of PKD.

Reference:

Torres JA, Kruger SL, Broderick C, Amarikhagva T, Agrawal S, Dodam JR, Mrug M, Lyons LA, Weimbs T. *Ketosis Ameliorates Renal Cyst Growth in Polycystic Kidney Disease.* *Cell Metabolism.* 2019; [30](#):1007-1023

KetoCitra® helps with the dietary management of metabolic abnormalities in PKD by raising blood BHB levels by providing exogenous BHB.

The Weimbs lab discovered that combining BHB with citrate provides synergistic beneficial effects that allows lower amounts of each component to be used for improved tolerance.

Want a free 30 day sample of KetoCitra® for yourself and/or for a patient who has ADPKD? Scan the QR code for details!



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