

A UNIQUE APPROACH TO MANAGE UREMIC TOXINS IN CKD

CUDO-FORTE

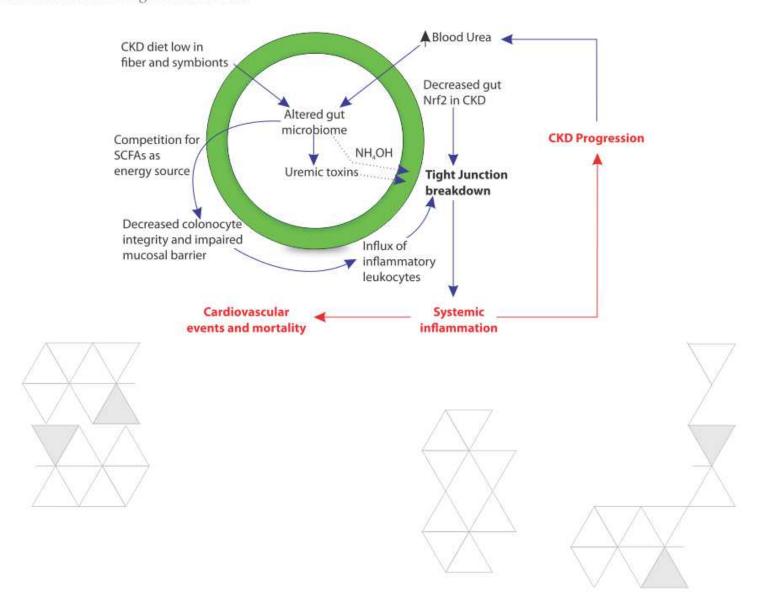
Introduction

The internationally endorsed definition of probiotics is live microorganisms that, when administered in adequate amounts, confer a health benefit on the host. is a Cudo® Forte unique preparation of Probiotic strains and amounts, intended specifically to reduce the load of nitrogenous toxins in the body, thus delaying the requirements of dialysis and the progression of CKD.

The unique preparation of Cudo® Forte contains 90 billion CFU (Colony Forming Units) of three probiotic microorganisms viz. Lactobacillus acidophilus, Streptococcus thermophillus and Bifidobacterium longum, in freeze dried or lyophilized form. The content is then encapsulated to prevent release of probiotic strains until they reach the colon, where the toxins are accumulated. These extremely high strength probiotic strains present in Cudo® Forte attracts the toxins and use the uremic toxins as nutrient. The "TOXIN / MICROBE" metabolite is eliminated as solid waste, thus reducing the load of uremic toxins on the kidney.

Gut Inflammation in CKD

Pathways by which altered microbiome and chronic gut inflammation lead to systemic inflammation in CKD. The low potassium and low phosphorus CKD diet leads to inadequate intake of plant fiber and symbiotic bacteria, and there is influx of urea from the blood circulation in the gut lumen. These factors promote the expansion of bacteria that express urease, as well as overgrowth of bacteria that produce uremic toxins including p-cresyl and indoxyl sulfates. Ultimately, there is translocation of bacteria, endotoxin and uremic toxins from the gut lumen into the circulation which drives systemic inflammation, a known non-traditional risk factor for cardiovascular mortality and CKD progression. Progression of kidney disease feeds into further elevation of blood urea levels, further propagating alterations in gut microbiome and forming a vicious circuit.



Clinical Study

To study the effect of probiotic - prebiotic therapy along with diet counseling on nutrition, renal progression and overall health of CKD patient.

Thirty predialysis CKD patients (21 males, 9 females) were included in the study. The diet charts were designed according to the underlying nutritional status and blood parameters. Calorie intake was 30-40 kcal/kg; proteins 0.6-0.8g/kg (with at least 50% high biological value); potassium 1.5-2gm/day; and phosphorus dgm/day. All patients were prescribed enteric coated gelatin capsules containing lyophilized Streptococcus Thermophillus, Lactobacillus Acidophilus, and Bifidobacterium Longum, in a dose of 15 billion colony forming units along with 100mg Lactitol monohydrate as prebiotic. Each patient received two capsules three times a day with each meal. The mean age was 45 years (range 18-68). The statistical analysis was done using 'RGui' software version 2.13.0 and the outcomes were tested using paired t-test at 5% level of significance.

Various parameters at baseline and after Intervention

S.No	Parameter	Baseline	After 3 months	p Value
1.	Weight (kg)	62	63.2	0.03
2.	BMI (kg/m2)	23.34	23.74	0.02
3.	Urea (mg/dl)	99.8	86.1	0.03
4.	Creatinine (mg/dl)	3.43	3.23	0.05
5.	GFR (ml/min)	24.72	24.72	0.03
6.	Serum Albumin	4.02	4.17	0.005
7.	Serum Calcium	8.53	8.92	0.005
8.	Serum Phosporus	4.73	4.47	NS
9.	Uric Acid	7.36	6.32	0.002
10.	Triglycerides	154	125	0.003
11.	LDL-C (mg/dl)	98	85	0.0005

Table Conclusion

This short time study of diet counseling with probiotic supplementation showed significant improvement in various parameters of CKD necessitating a longer term study.



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Background

Chronic kidney disease (CKD) is a progressive disease leading to requirement of renal replacement therapy (RRT) over a period of time. There is limited availability and high cost of RRT in many countries, especially developing countries. This necessitates the researchers to focus on either prevention or slowing the progression of CKD. The internationally endorsed definition of probiotics is live microorganisms that, when administered in adequate amounts, confer a health benefit on the host. High dose probiotics have been proven to metabolize the nitrogenous waste products, thus delaying the requirement of dialysis.

Description

Cudo Forte is a unique combination of Pro Biotics especially intended for CKD patients intended to reduce the load of nitrogenous toxins in the body and thereby either delay the progression of CKD and/ or the need for dialysis.

Composition

Each HPMC (Hydroxy Polymethyl Cellulose) Capsule of Cudo* Forte contains 90 Billion Colony Forming Units collectively of the three probiotics namely - Lactobacillus acidophilus, Streptococcus thermophillus and Bifidobacterium longum.

Indication

 $Cudo \ \ ^*Forte \ \ is indicated for delaying the progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis in the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis in the need for dialysis in the need for dialysis in the need for dialysis. It is specifically useful in-progression of CKD and the need for dialysis in the need for dialysi$

•••Early stage CKD Patients.

- •••Patients who have strong resistance to invasive RRT.
- ***Patients who cannot afford the cost of RRT.
- Patients who are not frequent on dialysis.

Mechanism of Action

In our body, an equilibrium of uremic toxins normally exists between the blood and the colon's lumen (GI tract). This equilibrium concentration of the uremic toxins in the bowel is usually higher in diseased conditions. Due to the overloaded and impaired kidneys, a buildup of poisonous wastes occurs in the bloodstream. The probiotic blend in Cudo" Forte can utilize urea, uric acid and creatinine and other toxins as nutrients for growth. These probiotics multiply and metabolize larger quantities of uremic toxins, facilitating the increased diffusion of these toxins from the circulating blood into the bowel across the lining of the intestinal walls. Ultimately, these microbes are excreted in the feces (normally microbes make up 50% of feces by weight). In this manner, the enteric toxin reduction technology uses probiotic organisms to transform the colon into a blood cleansing agent, which, with the aid of microbes, indirectly removes toxic wastes and helps eliminate them as fecal matter.

Dosage

The recommended daily dosage of Cudo" Forte is One capsule per day. The dosage may be however altered as deemed fit by the healthcare provider.

Presentation

 $Cudo \\ ^*Forte is presented as 10 HPMC capsules in \\ a Aluminium Blister pack monocarton. Such 3 Blister packs are packed in a baby carton.$

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