

<p><b>Introduction</b></p>	<p><b>Brand Name: LOBUN [Pre-Probiotic] Capsules</b></p> <p><b>Therapeutic Category: Reno-Protective</b></p> <p>Chronic kidney disease (CKD) may progress to end-stage renal disease (ESRD), which requires dialysis or kidney transplantation. No generally applicable therapies to slow progression of renal disease are available. Bacteriotherapy affords a promising approach to mitigate uremic intoxication by ingestion of live microbes able to catabolize uremic solutes in the gut. Azotemia, the accumulation of nitrogenous waste products, chiefly urea, in the blood, is the hallmark of renal failure. Urea is the predominant nitrogen waste product of protein catabolism.</p> <p>According to the World Health Organization, kidney disease and disease of the urinary tract cause 850,000 deaths worldwide every year. Globally, CKD is the 12th leading cause of death and the 17th leading cause of disability. People with CKD are at high risk for heart disease and stroke and they are more likely to die of a heart attack or stroke than of CKD. Moreover, patients with Diabetes and Cardiovascular disease are at high risk of CKD. Even though kidney disease has been graded, detecting the disease is still a major problem. Despite the best of preventive treatment for ESRD, the patient has to undergo dialysis at periodic intervals, ultimately leading to a transplant.</p> <p>In order to delay the progression of the disease, the nephrologist imposes dietary regulations, regulated water intake, etc. An effective treatment strategy or plan is yet to be developed to prevent the progression of CKD to ESRD. However, bio-therapeutics using beneficial microbes have been studied and are now a part of the nephrologists therapeutic regimen to reduce the putrefactive bacterial load in the GI tract that increase the toxin load which consists of BUN, ammonia and other by-products of protein metabolism, which further worsen the prognosis and survival of the patients.</p> <p>Combi-probiotics, with a pre-biotic containing FOS [fructo-oligosaccharide] are being used as an enteric-dialyzer for removal of proteinaceous byproducts. Many of the entero-toxins are removed by dialysis; however, rebound phenomena has been observed, with a rapid rise in enterotoxins and BUN. Studies have shown that probiotics effectively control and reduce the enterotoxins to a great extent, thereby limiting the progression of the disease.</p> <p>Probiotics containing beneficial microbes are now being used in patients diagnosed with CKD to delay the progression and limit the damage to the kidney from enterotoxins. Preventing uremic syndrome is the biggest challenge and a study using Sanzyme's prebiotic and probiotic combination of LOBUN Capsules has shown promising results, while delaying the progression of CKD and improving the QOL [Quality of Life] over a 12-month study.</p>
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<p><b>Streptococcus thermophilus</b></p>	<p>Streptococcus thermophilus (a high urease or urease utilizing microbe) is mainly present in fermented foods, particularly various yogurts and its derivative products. The human species lack this enzyme, and much of the toxic urea and associated metabolites have to be excreted via the fecal matter. In azotaemia, as the putrefactive bacteria subdue these probiotic organisms, the overload on the renal system increases and, as a result, more toxins are excreted, further worsening the renal handling systems. Replacement of the Strep. thermophilus species ensures efficient breakdown of waste uremic metabolic products and allow them to pass through the colonic pathway rather than overload the renal pathway.</p> <p>Nitrogenous wastes are utilized by the probiotic bacteria as nutrients. As the conditions become more conducive, and the state of dysbiosis turns to a eubiotic state, they consume more nitrogenous waste and do not allow further deterioration of the renal function, effectively reducing the renal overload and preventing further damage. FOS a prebiotic provides nutrient medium for the probiotic bacteria.</p>
<p><b>Lactobacillus acidophilus</b></p>	<p>Lactobacillus acidophilus is a species of gram positive bacteria in the genus Lactobacillus. L. acidophilus ferments sugars into lactic acid and grows readily at rather low pH values (&lt; pH 5.0). L. acidophilus occurs naturally in the human and animal gastrointestinal tract and mouth. Strains of L. acidophilus have been studied extensively for health effects. Many antibiotics kill the Lactobacillus species and need to be replaced post antibiotic therapy for recolonization.</p> <p>L. acidophilus produces bacteriocin that is both antibacterial and inhibitory against certain yeasts and molds. It has been shown to improve bowel regularity. L. acidophilus has been associated with positive effects on the immune system such as increased cytokine, phagocytic activity, and antibody production.</p>
<p><b>Bifidobacterium longum</b></p>	<p>Bifidobacterium longum is a gram-positive, catalase-negative, rod-shaped bacterium present in the human gastrointestinal tract and one of the 32 species that belong to the genus Bifidobacterium. It is a micro-aerotolerant anaerobe and is to be one of the earliest colonizers of the gastrointestinal tract of infants. When grown on general anaerobic medium, B. longum forms white, glossy colonies with a convex shape. While B. longum is not significantly present in the adult gastrointestinal tract more than it is considered part of the gut flora, and its production of lactic acid is believed to prevent growth of pathogenic organisms. B. longum is non-pathogenic and is often added to food products for its beneficial probiotic health effects. B. longum is considered to be a scavenger, possessing multiple catabolic pathways to utilize a large variety of nutrients in order to increase its competitiveness among the gut flora. Up to 19 types of permease exist to transport various carbohydrates. Furthermore, B. longum possesses hydrolases, deaminases, and dehydratases in order to ferment amino acids.</p> <p>The short chain fatty acids [SCFA's such as acetate, propionate and butyrate, produced by Bifidobacterium longum alter the pH of the colon, facilitating the excretion of nitrogenous wastes that are generated in the in the intestines. This principle of excretion</p>

	of nitrogenous wastes is effectively being used as a biotherapeutic agent in CKD to delay the progression of the disease.
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<p><b>Lactic Acid Bacillus</b></p>	<p>The lactic acid bacteria (LAB) are either rod shaped (bacillus) or spherical (coccus) and are characterized by an increased tolerance to acidity (low pH range). This aspect helps LAB to outcompete other bacteria in a natural fermentation, as they can withstand the increased acidity from organic acid production (e.g., lactic acid).</p> <p>It is well known that intake of Lactic acid bacteria effectively restores the disturbed microflora to normal ones. This raises the possibility that administration of lactic acid bacteria to uremic patients reduces the levels of uremic toxins, by normalization of the gut microflora.</p> <p>Lactic acid bacteria suppresses the overgrowth of aerobic bacteria that suppresses the production of putrefactive substances and also suppresses the growth of aerobic bacteria, which can increase due to the diffusion of ammonical products into the intestines, by lowering the pH in the intestinal milieu by release of lactic acid.</p>										
<p><b>Mechanism of Action</b></p>	<p>The combi-probiotic when administered to CKD patients exhibits the following properties:</p> <ol style="list-style-type: none"> <li>1. Improves the probiotic count for rapid degradation of toxins [DMA, NDMA. p-cresol and indoles]</li> <li>2. Facilitates the removal and excretion of Urea, Uric acid and Creatinine</li> <li>3. Delays the progression of CKD from Stage III and improves quality of life</li> <li>4. A reduction in frequency of dialysis</li> </ol> <table border="1" data-bbox="432 1178 1412 1644"> <thead> <tr> <th data-bbox="432 1178 807 1227">Probiotic Agent</th> <th data-bbox="807 1178 1412 1227">Precursors and Nitrogenous Wastes Degraded</th> </tr> </thead> <tbody> <tr> <td data-bbox="432 1227 807 1330">Streptococcus thermophilus</td> <td data-bbox="807 1227 1412 1330">BUN, Uric Acid Levels and Creatinine Levels</td> </tr> <tr> <td data-bbox="432 1330 807 1433">Bifidobacterium longum</td> <td data-bbox="807 1330 1412 1433">Serum Indoxyl Sulphate, Plasma Homocysteine and Serum Dimethylamine</td> </tr> <tr> <td data-bbox="432 1433 807 1536">Lactobacillus acidophilus</td> <td data-bbox="807 1433 1412 1536">Plasma NDMA</td> </tr> <tr> <td data-bbox="432 1536 807 1644">Lactic Acid Bacillus</td> <td data-bbox="807 1536 1412 1644">Serum Indoxyl sulphate</td> </tr> </tbody> </table>	Probiotic Agent	Precursors and Nitrogenous Wastes Degraded	Streptococcus thermophilus	BUN, Uric Acid Levels and Creatinine Levels	Bifidobacterium longum	Serum Indoxyl Sulphate, Plasma Homocysteine and Serum Dimethylamine	Lactobacillus acidophilus	Plasma NDMA	Lactic Acid Bacillus	Serum Indoxyl sulphate
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<p><b>Indications &amp; Dosage</b></p>	<ol style="list-style-type: none"> <li>1. Azotemia / Uremia</li> <li>2. Reduction of Nephrotoxicity and to delay the need of dialysis in CKD patients / HD [Haemodialysis] patients</li> <li>3. Control complications of CKD</li> </ol> <p>1 Capsule BID, not to be opened, chewed or crushed. The capsule should be taken with a plain glass of water.</p>										

<b>Safety</b>	The biotherapeutic agent, LOBUN contains probiotic agents that have been tested and are commonly found in food-stuff and within the human body. They are safe with no untoward effects.
<b>Storage</b>	As the capsules contain probiotics and a prebiotic, the capsules should not be exposed to direct sunlight or heat. The strips containing capsules must be kept out of reach of children.
<b>Presentation</b>	Each DR [Delayed Release] Vegetable Capsule contains Probiotics : Not Less than 15 Billion CFU (Streptococcus thermophilus, Lactobacillus acidophilus, Bifidobacterium longum, Lactic Acid Bacillus (earlier known as Lactobacillus Sporogenes) and Fructooligosaccharides -100mg  10 x 10 Capsules per Box.

