**Supplemental File 2:**

Probiotics in Kidney tissue engineering and regeneration

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| **Probiotics** | **Useful Effects** | **Outcome** | **Ref.** |
| *Lactobacillus casei Shirota (LcS)* | Reduction of ammonia levels in patients (a urea precursor involved with bacteria). | More than 10% reduction in levels of serum urea after dietary intervention (LcS for patients with CKD stages 3 and 4). | [1] |
| *Bifidobacterium bifidum* and *Lactobacillus acidophilus* prebiotic inulin fiber, omega-3 fatty acids, and vitamins (B vitamins, folic acid, ascorbic acid, and vitamin E). | *Bifidobacterial* count increment. | Symbiotic gel applied for two months may be potentially in the patient’s treatment with kidney disease and maybe causes the bifidobacteria population increment. | [2] |
| *Lactobacillus plantarum, Lactobacillus casei subsp. Rhamnosus,*  *Lactobacillus gasseri,*  *Bifidobacterium infantis, Bifidobacterium longum, Lactobacillus acidophilus, Lactobacillus salivarius, Lactobacillus sporogenes, Streptococcus thermophilus,*  Prebiotic inulin (VB Beneo Synergy 1)and resistant tapioca starch*.* | Plasma p-cresol levels of non-dialysis CKD patients were reduced by the symbiotic agent. | Total plasma p-cresol levels in CKD patients stages 3 and 4 were decreased by symbiotic agent. | [3] |
| *S. thermophilus KB 19, L. acidophilus KB 27, B. longum KB 31.* | None | Because of small sample size and low statistical power, efficiency could not be confirmed firstly.  More studies are required. | [4] |
| *Lactobacillus acidophilus, Lactobacillus casei, Lactobacillus lactis, Bifidobacterium bifidum, Bifidobacterium longum* and *Bifidobacterium infantis.* | Improvement urea levels after supplementation with probiotics. | Probiotics are able to improve urea levels, exclusively OW/ OB individuals and subjects with high urea levels. Other renal parameters and liver performance were not changed by the probiotics administration. | [5] |
| *B. bifidum A218, B. catenulatum A302, B. longum A101,* and *L. plantarum A87.* | TNF-α, IL-5, IL-6, and endotoxins levels were decreased significantly. While, IL-10 levels were increased.  Residual renal function of patients on PD was preserved after six months-oral probiotics treatment. | Endotoxins serum levels were reduced significantly by probiotics. Proinflammatory serum levels of cytokines (IL-10) were raised by proinflammatory cytokines (TNF-α and IL-6) and IL-5.  Residual renal function of individuals on PD was kept. | [6] |
| *Lactobacillus casei, Lactobacillus cidophilus, Lactobacillus bulgarigus, Lactobacillus rhamnosus, Bifido,bacterium breve, Bifidobacterium longum, Streptococcus thermophilus and fructooligosaccharide* prebiotic agent*.* | Levels of blood urea nitrogen in CKD patients were reduced. | Treatment with symbiotic probiotics for six weeks caused considerable reduction in mean blood urea levels of CKD patients stages 3 and 4 in comparison with controls; impacts were not observed in other renal function indicators. | [7] |
| Nine different strains from the *Lactobacillus, Bifidobacterium* and *Streptococcus genera.* High molecular weight inulin*,* fructooligosaccharides,andgalacto-oligosaccharides*,* and probiotic component. | PCS serum levels were reduced significantly by symbiotic treatment.  Additionally, IS levels in moderate to severe CKD patients had less reduction. | Symbiotic treatment caused statistically remarkable and potentially clinically relevant decreases in IS and PCS serum levels. | [8] |

LcS: Lactobacillus casei Shirota; PCS: p-cresyl sulfate; IS: indoxyl sulfate; OW: overweight; OB: obese; PD: peritoneal dialysis. CKD: chronic kidney disease.

**References:**

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