International Journal of Innovative Research and Advanced Studies (IJIRAS)
Volume 3 Issue 7, June 2016

ISSN: 2394-4404

Role Of Probiotics In The Management Of Chronic Kidney Disease Patients

Mathew George

Department of Pharmacology, Pushpagiri College of Pharmacy, Thiruvalla, Kerala, India

Manu G Krishnan

Department of Nephrology, Pushpagiri Medical College, Thiruvalla, Kerala, India

Lincy Joseph

Department of Pharmaceutical Chemistry, Pushpagiri College of Pharmacy, Thiruvalla, kerala, India

Deepa George

Department of Pharmacy Practice, Pushpagiri College of Pharmacy, Thiruvalla, kerala, India

Abstract: ***Oral administration of a probiotic formulation of selected microbial strains may extend renoprotection via intraintestinal extraction of toxic waste solutes in patients with chronic kidney disease (CKD) . Chronic Kidney disease is more common in indian population today. Hence the need of medications for chronic kidney disease also increased now a days. This study is designed to investigate the role of probiotics in the management of chronic kidney disease patient .The idea behind the research is to prevent the development of key damaging uremic toxins by targeting the process of bacterial protein fermentation in the gut. People with kidney disease have been shown to have a disturbed gut flora, which promotes the increased production of those harmful toxins. By supplementing patients with a specific combination of bacteria (probiotics) and beneficial fibre to support the growth of the good bacteria (prebiotics), it improve the health of the gut, suppressing the growth of bad bacteria and therefore decreasing the production of the toxins. In turn this should assist in delaying further kidney disease progression and improve heart health.***

Keywords: Chronic kidney disease, probiotics, prebiotics, Uremic toxins

I. INTRODUCTION

Chronic kidney disease (CKD), also known as chronic renal disease, is a progressive loss in renal function over a period of months or years. The symptoms of worsening kidney function are not specific, and might include feeling generally unwell and experiencing a reduced appetite. Often, chronic kidney disease is diagnosed as a result of screening of people known to be at risk of kidney problems, such as those with high blood pressure or diabetes and those with a blood relative with CKD. This disease may also be identified when it leads to one of its recognized complications, such as cardiovascular disease, anemia, or pericarditis. It is differentiated from acute kidney disease in that the reduction in kidney function must be present for over 3 months.

Chronic kidney disease is identified by a blood test for creatinine, which is a breakdown product of muscle metabolism. Higher levels of creatinine indicate a lower glomerular filtration rate and as a result a decreased capability of the kidneys to excrete waste products. Creatinine levels may be normal in the early stages of CKD, and the condition is discovered if urinalysis (testing of a urine sample) shows the kidney is allowing the loss of protein or red blood cells into the urine.

Recent professional guidelines classify the severity of CKD in five stages, with stage 1 being the mildest and usually causing few symptoms and stage 5 being a severe illness with poor life expectancy if untreated. Stage 5 CKD is often called end-stage kidney disease, end-stage renal disease, or end-stage kidney failure, and is largely synonymous with the now outdated terms chronic renal failure or chronic kidney failure; and usually means the patient requires renal replacement therapy, which may involve a form of dialysis, but ideally constitutes a kidney transplant.

Screening of at-risk people is important because treatments exist that delay the progression of CKD. If an underlying cause of CKD, such as vasculitis, or obstructive nephropathy (blockage to the drainage system of the kidneys) is found, it may be treated directly to slow the damage. In more advanced stages, treatments may be required for anemia and renal bone disease (also called renal osteodystrophy, secondary hyperparathyroidism or chronic kidney disease - mineral bone disorder (CKD-MBD).

SYMPTOMS OF CHRONIC KIDNEY DISEASE

Most people may not have any severe symptoms until their kidney disease is advanced. Some symptoms include

- ✓ feel more tired and have less energy
- ✓ have trouble concentrating
- ✓ have a poor appetite
- ✓ have trouble sleeping
- ✓ have muscle cramping at night
- ✓ have swollen feet and ankles
- ✓ have puffiness around your eyes, especially in the morning
- ✓ have dry, itchy skin
- ✓ need to urinate more often, especially at night.

CAUSES OF CHRONIC KIDNEY DISEASE

The two main causes of chronic kidney disease are diabetes and high blood pressure, which are responsible for up to two-thirds of the cases. Diabetes happens when your blood sugar is too high, causing damage to many organs in your body, including the kidneys and heart, as well as blood vessels, nerves and eyes. High blood pressure, or hypertension, occurs when the pressure of your blood against the walls of your blood vessels increases. If uncontrolled, or poorly controlled, high blood pressure can be a leading cause of heart attacks, strokes and chronic kidney disease. Also, chronic kidney disease can cause high blood pressure.

Other conditions that affect the kidneys are:

- ✓ Glomerulonephritis, a group of diseases that cause inflammation and damage to the kidney's filtering units. These disorders are the third most common type of kidney disease.
- ✓ Inherited diseases, such as polycystic kidney disease, which causes large cysts to form in the kidneys and damage the surrounding tissue.
- ✓ Malformations that occur as a baby develops in its mother's womb. For example, a narrowing may occur that prevents normal outflow of urine and causes urine to flow back up to the kidney. This causes infections and may damage the kidneys.
- ✓ Lupus and other diseases that affect the body's immune system.
- ✓ Obstructions caused by problems like kidney stones, tumors or an enlarged prostate gland in men.
- ✓ Repeated urinary infections.

Towards the later stages of CKD, the importance of five key nutrients becomes more of a priority: these are phosphorous, potassium, sodium, protein and fluid. People with kidney disease have been shown to have a disturbed gut flora, which promotes the increased production of those harmful toxins. By supplementing patients with a specific combination of bacteria (probiotics) and beneficial fibre to support the growth of the good bacteria (prebiotics), we expect to improve the health of the gut, suppressing the growth of bad bacteria and therefore decreasing the production of the toxins. In turn this should assist in delaying further kidney disease progression and improve heart health.

Probiotic are types of'living friendly bacteria similar to those that inhabitant our digestive tract. They are naturally found in cultured or fermented foods such as yoghurt, butter milk and can also be taken in supplemented form. They may also help to restore good bacteria after a course of antibiotics. Probiotics include *Lactobacillus acidophilus* and *Bifidobacterium lactis*, which are found in yoghurt. The term probiotic is currently used toingested microorganisms associated with beneficial effects to humans and animals. The term came into more common use after 1980. The introduction of the concept is generally attributed to recipient Élie Metchnikoff, who in 1907 suggested that "the dependence of the intestinal microbes on the food makes it possible to adopt measures to modify the flora in our bodies and to replace the harmful microbes by useful microbes"

Prebiotics are 'non living' food ingredients that reach the large intestine unaffected digestion, and feed the good bacteria in our gut helping them to grow and flourish. Prebiotics which include fructooligo saccharides (FOS), galacto – oligosaccharides are naturally found in many foods including legumes, whlewheat products, rye based foods etc.

The idea behind the research is to prevent the development of key damaging uremic toxins by targeting the process of bacterial protein fermentation in the gut. People with kidney disease have been shown to have a disturbed gut flora, which promotes the increased production of those harmful toxins. By supplementing patients with a specific combination of bacteria (probiotics) and beneficial fibre to support the growth of the good bacteria (prebiotics), it improve the health of the gut, suppressing the growth of bad bacteria and therefore decreasing the production of the toxins. In turn this should assist in delaying further kidney disease progression and improve heart health.

II. MATERIALS AND METHODS

A Prospective Study was conducted in Pushpagiri medical college hospital, Thiruvalla. Sample size includes 45 in Test Group and 45 in Control Group.

INCLUSION CRITERIA INCLUDES

Chronic kidney disease patient
Both male and female patients
Patients on age group 40-75 years
Both OP & IP patients

EXCLUSION CRITERIA INCLUDES

Dialysis patient

ISSN: 2394-4404

Patients with age group less than 40 years
Patient not willing to participate

III. RESULTS AND DISCUSSION

In this study 45 patients are probiotic receiving group and 45 patients are probiotic not receiving CKD patient. Probiotics given to test group are Velgut, lobun, bifilac

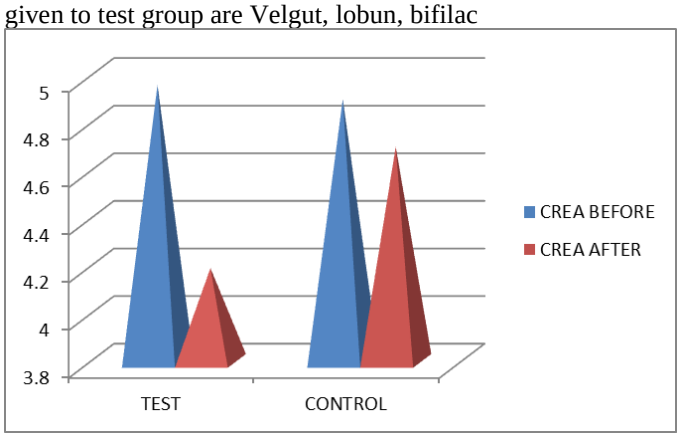

Figure 1

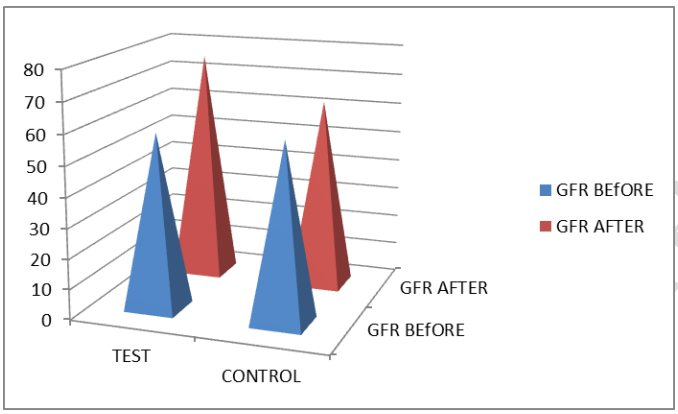

Figure 2

Creatinine level decreased in test more than control.

Glomerular filteration rate improve more in test than control. Thus probiotics are more effective in Chronic kidney disease patient.

DEMOGRAPHY	PERCENTAGE
SEX	
MALE	73.3
FEMALE	26.7
SOCIOECONOMIC STATUS	
HIGH	41.1
MIDDLE	18.9
LOW	40.0

Table 1

Probiotic Prescribed	Percentage
Bifilac	5.6
Lobun	18.9
Velgut	23.3

Table 2

The median difference between Creatinine, GFR before and after equals 0.P value is less than .o5

IV. CONCLUSION

By supplementing patients with a specific combination of bacteria (probiotics) and beneficial fibre to support the growth of the good bacteria (prebiotics), it improve the health of the gut, suppressing the growth of bad bacteria and therefore decreasing the production of the toxins. In turn this should assist in delaying further kidney disease progression and improve heart health. This study help to find the role of probiotics in reducing uremic toxins of chronic kidney disease patient.

REFERENCES

[1] Ranganathan N. Probiotic dietary supplementation in patients with stage III and IV chronic kidney disease: a 6-month pilot scale trial in Canada. Curr Med Res Opin. 2009; 25:1919-1930.
[2] Sherman M. Probiotics and microflora. US Pharmacist. 2009; 34:42-44.
[3] Lee Y-K, Salminen S. The coming of age of probiotics. TIFST. 1995; 6:241-245.
[4] Murthy M. Delineation of beneficial characteristics of effective probiotics. JAMA. 2000; 3:38-43.
[5] Vanholder R, De Smet R, Glorieux G, et al. Review on uremic toxins: classification, concentration, and inter-individual variability. Kidney Int. 2003; 63:1934-1943.
[6] 6. Reuter G. Lactobacilli and Bifidobacterium microflora of the human intestine: composition and succession. Curr Issues Intest Microbial. 2001; 2:43-53.
[7] Stig Benchmark: reviews – immunomodulation by pro- and prebiotics. Japan Bifidus Foundation. 2001;120:9-120:9-18
[8] Pilot Study of Probiotic Dietary Supplementation for Promoting Healthy Kidney Function in Patients with Chronic Kidney Disease 2009 27(9):634-647