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Research Article

**USE OF PROBIOTICS AND PREBIOTICS FOR THE  
CONTROLLING OF DIFFERENT TYPES OF KIDNEY STONES****Dr. Muhammad Naeem Abbas<sup>1</sup>, Dr. Zain-ul-abideen<sup>2</sup>, Dr. Muhammad Mohsin Zia<sup>3</sup>**<sup>1</sup>Allied Hospital Faisalabad, <sup>2</sup>Ghurki Trust Teaching Hospital, Lahore, <sup>3</sup>Tehsil Headquarters  
Hospital Kot Momin District Sargodha.**Article Received:** October 2020    **Accepted:** November 2020    **Published:** December 2020**Abstract:**

**Introduction:** *Kidney stones are dense masses that form in the kidney when there are increased levels of calcium, oxalate, cystine, or phosphate and very less liquid. Calcium oxalate stones are triggered by too much oxalate in the urine. Oxalate is considered an unusable end product of mammalian metabolism and urinary oxalate is derived from endogenous metabolic sources, primarily produced by the liver.*

**Aims and objectives:** *The basic aim of the study is to analyze the use of probiotics supplements for the management of calcium oxalate kidney Stone in local population of Pakistan.*

**Methodology of the study:** *This cross sectional study was conducted at Allied Hospital Faisalabad in April 2019 to July 2019. This was basically a preliminary study which was conducted for the awareness of those patients who are suffering from kidney stones. For this purpose we get permission from the concerned committee of hospital.*

**Results:** *The use of prebiotics, probiotics, and synbiotics is gradually gaining acceptance in the medical community. There have been multiple claims that they are beneficial in the prevention and treatment of different renal conditions. Unfortunately, clinical evidence to support the safety and efficacy of these supplements is often sparse.*

**Conclusion:** *It is concluded that some evidence has supported the use of prebiotics, probiotics, or synbiotics, especially for the treatment of diarrhea, their use in other disease states is controversial.*

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**INTRODUCTION:**

The discovery of probiotics came about in the early 20<sup>th</sup> century, when Elie Metchnikoff, known as the "Father of Probiotics" had observed that rural dwellers in Bulgaria lived to very old ages despite extreme poverty and harsh climate. Crystals of calcium oxalate are the most widely recognized kind of kidney stones [1]. Kidney stones are dense masses that form in the kidney when there are increased levels of calcium, oxalate, cystine, or phosphate and very less liquid. Calcium oxalate stones are triggered by too much oxalate in the urine. Oxalate is considered an unusable end product of mammalian metabolism and urinary oxalate is derived from endogenous metabolic sources, primarily produced by the liver. Almost 80-90% of kidney stone forming individuals form calcium oxalate stones and hyperoxaluria is a main risk factor in this kidney stone diseases [2].

One possible approach to prevent renal stone recurrence is to decrease the consumption of oxalate rich foods. However, albeit such dietary limitation has been accounted to decrease stone recurrence, its long term effectiveness is uncertain. Therefore, other methods aimed to reduce intestinal oxalate absorption have been sought. Both epithelial barriers of the intestine and kidney mediate oxalate balance [3]. Several investigations acknowledged that intestinal commensal bacteria with oxalate degrading activity have the potential to contribute to oxalate homeostasis. Studies have demonstrated that rehashed use of antibiotics can result in the loss of naturally occurring

oxalate-degrading bacteria. With this loss, dietary and endogenous oxalate turns out to be more bioavailable both to the mammalian host and intestinal microbiota. The oxalate tolerance by the human beings and other mammals are often regularly encouraged by the presence of oxalate-degrading microorganisms in their intestinal microbiota [4].

**Aims and objectives:**

The basic aim of the study is to analyze the use of probiotics supplements for the management of calcium oxalate kidney Stone in local population of Pakistan.

**METHODOLOGY OF THE STUDY:**

This cross sectional study was conducted at Allied Hospital Faisalabad in April 2019 to July 2019. This was basically a preliminary study which was conducted for the awareness of those patients who are suffering from kidney stones. For this purpose we get permission from the concerned committee of hospital. Then we prepare a small questionnaire survey based on the knowledge and use of probiotics in local population of Pakistan. After that we ask the patients for the use of probiotics in daily life as it is considered to be the natural remedy for calcium oxalate kidney stone.

**RESULTS:**

After performing analysis we found the most useful probiotics for the management of kidney stone are as follows which we represent in table 01.

**Table 01:** Examples of some of the commercially available prebiotics, probiotics, and synbiotics.

	Trade Name	Strain(s)	Dose
Probiotics	Acidophilus Pearls	Lactobacillus acidophilus and Bifidobacterium longum	1 × 10 <sup>9</sup> CFU
	Align	Bifidobacterium infantis 35624	1 × 10 <sup>9</sup> CFU
	Children's Theralac	Lactobacillus acidophilus LA-1	1 × 10 <sup>10</sup> CFU
		Bifidobacterium lactis BL-34	1 × 10 <sup>10</sup> CFU
		Bifidobacterium lactis Bi-07	3 × 10 <sup>9</sup> CFU
		Lactobacillus paracasei F-19	1 × 10 <sup>9</sup> CFU
		Lactobacillus rhamnosus LR-44	1 × 10 <sup>9</sup> CFU
	Living Flora	Lactobacillus acidophilus	8 × 10 <sup>8</sup> CFU
		Bifidobacterium bifidum	8 × 10 <sup>8</sup> CFU
		Lactobacillus plantarum	1 × 10 <sup>8</sup> CFU
		Lactobacillus helveticus	1 × 10 <sup>8</sup> CFU
		Lactobacillus salivarius	1 × 10 <sup>8</sup> CFU
		Streptococcus thermophilus	1 × 10 <sup>8</sup> CFU
	Multi-Flora ABF	Bifidobacterium longum	5 × 10 <sup>9</sup> CFU
		Lactobacillus acidophilus	
	Culturelle	Lactobacillus GG	1 × 10 <sup>10</sup> cells
	Actiflora	Lactic acid bacteria	45 billion viable bacteria

	Nutricolony	Saccharomyces boulardii	450 mg
	Florastor Maximum Strength	Saccharomyces boulardii lyo	250 mg
Prebiotics	Syntol Prebiotic Blend	Fructo-oligosaccharides	500 mg

The use of prebiotics, probiotics, and synbiotics is gradually gaining acceptance in the medical community. There have been multiple claims that they are beneficial in the prevention and treatment of different renal conditions. Unfortunately, clinical evidence to support the safety and efficacy of these supplements is often sparse. An area that is highly researched in regard to probiotics is diarrhea, and several randomized controlled trials have explored the treatment and prevention of acute gastroenteritis (AGE) in children. Meta-analyses of these trials suggested beneficial effect of probiotics in the early treatment of acute viral watery diarrhea in children. Several different strains of probiotics have also been shown to reduce the risk of antibiotic-associated diarrhea (ADD) in children. There is also work being done on a shiga toxin-binding probiotic as a potential therapeutic agent in the treatment or prevention of illness such as hemolytic uremic syndrome caused by shiga toxin producing *Escherichia coli*. The purpose of this paper is to review the current literature with regard to the safety and efficacy of these supplements [5].

### DISCUSSION:

The urine of most humans is supersaturated and favors CaOx crystallization. Thus, perhaps it is not surprising that 70% or more of kidney stones are composed of CaOx. Given that the urine of most persons is supersaturated for CaOx, one might indeed wonder why everyone does not form stones<sup>6</sup>. However, although supersaturation is key and requisite for stone formation, other biologic events are also implicated. These include the formation of anchored precursors within the kidney including Randall's plaque and collecting duct plugs, macromolecules that control the rates of crystal growth and aggregation, and crystal internalization and processing by cells. These secondary factors are only partially understood, and not subject to therapeutic interventions at the present time [7].

Fortunately, relatively more is known about the control of the urinary composition of stone forming salts<sup>8</sup>. Key factors that determine urinary super saturation include the urinary excretion of calcium, oxalate, citrate and water. Of these, evidence is strong that genetics greatly influence urinary calcium excretion, although diet is also an important modifier<sup>9</sup>.

Evidence also suggests that there are heritable components of the amount of urinary oxalate, citrate and even water (the latter likely mediated by thirst). However, most likely environment (diet and fluid intake/losses) are relatively more important for determining the urine composition [10].

### CONCLUSION:

It is concluded that some evidence has supported the use of prebiotics, probiotics, or synbiotics, especially for the treatment of diarrhea, their use in other disease states is controversial. Special caution needs to be exercised when using these supplements in the immunocompromised and the acutely ill, as serious and potentially fatal complications have recently been reported. More randomized controlled trials need to be performed before the use of these supplements can be routinely recommended.

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