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Plant-based kidney diets prescribed in nutrition clinics: clinical advantages with low risks of hyperkalemia

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Corresponding Author:	Maurizio Gallieni Universita degli Studi di Milano Facolta di Medicina e Chirurgia ITALY
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	Universita degli Studi di Milano Facolta di Medicina e Chirurgia
Corresponding Author's Secondary Institution:	
First Author:	Maurizio Gallieni
First Author Secondary Information:	
Order of Authors:	Maurizio Gallieni
	Monique Buskermolen
	Anna Boggio
	Cristina De Salvo
	Carla Camerotto
Order of Authors Secondary Information:	
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Plant-based kidney diets prescribed in nutrition clinics: clinical advantages with low risks of hyperkalemia

Maurizio Gallieni[1,2], Monique Buskermolen[2], Anna Boggio[3], Cristina De Salvo[2], Carla Camerotto[3].

[1] Department of Biomedical and Clinical Sciences "Luigi Sacco", Università di Milano, Milano, Italy.

[2] Nephrology and Dialysis Unit, ASST Fatebenefratelli Sacco, Milano, Italy.

[3] Nutritional service, Luigi Sacco Hospital, ASST Fatebenefratelli Sacco, Milano, Italy.

Correspondence to:

Maurizio Gallieni

Unità Operativa Nefrologia e Dialisi, DIBIC Sacco Università di Milano,

Via G.B. Grassi, 74 – 20157 Milano, Italy

Email: maurizio.gallieni@unimi.it.

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Potassium, hyperkalemia, chronic kidney disease, diet, protein, nutrition.

A diet rich in plant-based foods, such as vegetables and grains, may help prevent and slow the progression of chronic kidney disease (CKD), compared to animal-based foods [1]. Patients affected by CKD are often affected by several comorbidities, such as type 2 diabetes, hypertension, and heart disease, determining the challenging task of preparing a diet that should take into account contrasting limitations regarding caloric, protein, and electrolytes intake. Thus, professional nutritional intervention is an essential strategy to manage signs and symptoms in CKD, including hyperkalemia (HK), a frequent complication of CKD [2].

D'Alessandro et al. [3] address the issue of the prevalence of chronic HK in a cohort of CKD patients followed in an outpatient nutrition clinic. Besides, they explore the risk of HK in patients on plant-based versus animal-based low protein diets. They report an overall prevalence of HK of 26 %, which increased to 36.5% in patients with a decreased eGFR < 20 ml/min. Most patients had mild HK (< 6 mmol/l), whereas moderate HK (6.0 to 6.9 mmol/l) occurred in only 0.7% of the clinic visits, and no severe HK (> 7 mmol/l) was observed. Remarkably, treatment with inhibitors of the renin-angiotensin-aldosterone system was prescribed in 85% of patients, who did not show an increased prevalence of HK compared to non-users. The choice of a plant-based low-protein (0.7 g/kg/day) diet was not associated with a higher prevalence of HK compared to animal-based low-protein (0.6 g/kg/day) diet, at the same residual kidney function. All patients received personalized nutritional counseling, which may explain the lower prevalence of HK, compared to 36% (and 4% with K levels > 6.0 mmol/l) reported in another Italian multicenter prospective study [4].

The results reported by D'Alessandro et al. [3] suggest that the risk of HK should not impact on the choice of a nutritionally safe dietary approach. When prescribing a low-protein diet, a process of decision making that includes the patient's attitudes is an essential factor in obtaining high adherence and low impact on the quality of life. The difficulties in adhering to protein restriction are a crucial point in numerous studies and analyses [5]. A flexible approach with different possibilities may be a response to doubts about nutritional therapies [6].

In the burden of low compliance, the dietetic therapeutic choices should consider a personalized approach, in which attitudinal features play a crucial role. Chronic kidney disease (CKD) requires attention and often long-term intrusive therapy, profoundly impacting the quality of life. The possibility for patients to choose a personalized diet or to increase their options by shifting to another one may be a resource to improve adherence [6]. Thus, different approaches should be used, assessing risks and advantages, to develop good practices.

With the progression of kidney disease, a reduction in proteins is prescribed while maintaining an adequate amount of energy to preserve an appropriate nutritional status. Additional nutritional features not traditionally considered, like the quality of proteins and alkali intake, may provide more benefits [7]. Some clinicians consider plant-based low protein diets at risk due to the high potassium content in fruits and vegetables. However, new insights report the advantages of a plant-based approach in delaying disease progression and managing the metabolic and hormonal alteration connected with the reduction of kidney function [8]. Importantly, a plant-based diet is cheaper, more palatable, and flexible, suitable for people with an active life. [6, 9]. High fiber intake and the quality of proteins in plant-based nutrition may benefit the gut microbiota, implementing short-chain fatty productions, and reducing toxins derived by proteolytic fermentation. Vegetables may improve the dysbiosis associated with CKD and provide further benefits in preventing the metabolic alterations connected with the reduction in GFR [8].

When kidney damage develops, metabolic acidosis is common and is associated with several serious consequences. Clinical practice guidelines suggest treating HK with alkali supplementation using sodium bicarbonate, if acidosis is present, or considering K binders [10].

Western diets carry elevated acid loads since they are rich in animal protein and reduced in vegetables. Although patients with HK are often advised to follow low potassium diets, poor in fruits and vegetables, the evidence is lacking,

while poor dietary quality and satisfaction are common. Beneficial associations with plant-based foods suggest a paradigm shift: a substantial cut of dietary acid using sodium bicarbonate or base-producing fruits and vegetables reduces kidney angiotensin II activity and preserves eGFR [11]. Thus, adopting a plant-based diet may favorably affect the acid-base balance and induce similar beneficial results as alkali therapy, but also providing further protective effects mediated by antioxidants, magnesium, and vitamin K [7]. Educational strategies, often time-consuming, by dedicated and well-trained dietitians, are fundamental. Adequate cooking and preparation techniques can reduce up to 50% the potassium content of the plant-based diet, with preserved taste and nutritional properties [12]. A conjoint nephrology and nutrition follow-up is required to provide a supplementation tailored treatment, if necessary, and to avoid or promptly identify the risk for protein-energy wasting. Nutritional therapy is safe if it is correctly managed, and if the patients are motived [13].

In conclusion, the risk of moderate to severe HK (> 6 mmol/l) is low in CKD patients followed in a nutrition outpatient clinic, even if they follow a mostly vegetarian diet. In addition to the favorable effects on CKD progression, plant-based diets also help in reducing the burden of type 2 diabetes, high blood pressure, and heart disease. The risk of HK is manageable and should not prevent the use of such diets.

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Corresponding author name MAURIZIO GALLIENI

Herewith I confirm, on behalf of all authors, that the information provided is accurate.

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