

## Comment on: The effects of green tea consumption on metabolic and anthropometric indices in patients with type 2 diabetes

Sir,

The recently published paper by Mousavi *et al.*, entitled “the effects of green tea consumption on metabolic and anthropometric indices in patients with type 2 diabetes” has some points which needs more explanation. They aimed to investigate the possible efficacy of various daily doses of green tea intake for 8 weeks on certain anthropometric, metabolic, and oxidative stress biomarkers of diabetic patients. In a randomized clinical trial, in which 63 type 2 diabetes patients were included, found that consumption of four cups of green tea per day caused a significant decrease in body weight, body mass index, waist circumference and systolic blood pressure. Four cups of green tea also led to a significant reduction in weight and systolic blood pressure.<sup>[1]</sup> It is evident that reactive oxygen species is a mediator of kidney injury and green tea is a potent free radical scavenger.<sup>[2-5]</sup> To test whether green tea could protect against the nephrotoxicity induced by contrast media, we conducted a study on 40 rats, which were randomly divided into four groups including:

1. Control group,
2. Contrast media group,
3. Contrast media plus green tea,
4. Contrast media and green tea pretreatment group.

Histological and biochemical changes regarding the severity of kidney damage were assessed. In this study, beneficial property of green tea against tubular renal toxicity of contrast media by the evaluation of renal function<sup>[6]</sup> and structure<sup>[7]</sup> was detected. In diabetic kidney disease tubular damage by various mechanisms is a part of this nephropathy.<sup>[8-10]</sup> Hence, green tea is able to protect the tubular cells from oxidative stress in diabetic kidney disease, beyond its beneficial effects on metabolic and anthropometric indices in patients with type 2 diabetes.<sup>[2,7,8]</sup> In accord with the findings of Mousavi *et al.*, Vieira-Senger *et al.*, conducted a study to evaluate the effect of green tea consumption on components of metabolic syndrome

in the elderly.<sup>[9]</sup> They found the positive effective of green tea in inducing weight loss, reducing body mass index and waist circumference in elderly patients with metabolic syndrome.<sup>[9]</sup> Similarly, Mozaffari-Khosravi *et al.* examined the effects of green tea and sour tea on blood pressure of patients with type II diabetes mellitus by a randomized clinical trial on 100 mildly hypertensive patients. They found that mildly hypertensive type II diabetic individuals who drank three glasses of green or sour tea, daily for 4 weeks, showed significant decrease in systolic and diastolic blood pressures.<sup>[10]</sup> Thus, consumption of green tea for the treatment of hypertension, further, protects kidney in diabetic patients.<sup>[2,7-9]</sup> In diabetic kidney disease, the glomeruli has been at the focus of attention as the primary site of injury in diabetic nephropathy. Conversely, it is well known that tubulointerstitial alterations are notorious components of the disease, especially in patients with type II diabetes.<sup>[1-7]</sup> The amounts of proteinuria and diabetic nephropathy progression are finely associated with tubular injury and interstitial fibrosis.<sup>[5-7]</sup> Indeed, urinary biomarker data in human beings offer the inspection that proximal tubule injury contributes in a main key, rather than in a secondary manner, to the development of early diabetic nephropathy.<sup>[7-9]</sup> Actually, in the process of diabetic kidney disease, capillary rarefaction leads to local ischemia with additional damage to the tubules, additional profibrogenic mediator of fibrosis, matrix protein deposition and acceleration of the glomerulosclerosis.<sup>[3-6]</sup> Thus, in diabetic nephropathy, the tubules show changes that are usually correlated with glomerular alterations, tubular cell degeneration, tubular apoptosis, and tubular atrophy.<sup>[6-10]</sup> Hence, it is rational to interpret that green tea has two different roles:

1. Tubular protection by acting as an effective antioxidant.
2. Ameliorative effects on metabolic and anthropometric indices as well as level of blood pressure which indirectly protect the kidney against nephropathy of diabetes.

Thus, diabetic patients may benefit from both of these two distinct properties, as well as its blood glucose regulatory effects. Finally, it should be noted that, green tea extract may present a nontoxic, effective and inexpensive modality in diabetic patients.<sup>[7-12]</sup>

### AUTHORS CONTRIBUTION

HN and MRK equally contributed in the conception of the work, revising the draft, approval of the final version of the manuscript, and agreed for all aspects of the work

**Hamid Nasri, Mahmoud Rafieian-Kopaei<sup>1</sup>**

Department of Nephrology, Isfahan University of Medical Sciences, Isfahan, <sup>1</sup>Medical Plants Research Center, Shahrekord University of Medical Sciences, Sharhekord, Iran

**Address for correspondence:** Prof. Mahmoud Rafieian-Kopaei, Medical Plants Research Center, Shahrekord University of Medical Sciences, Sharhekord, Iran.  
E-mail: rafieian@yahoo.com

## REFERENCES

1. Mousavi A, Vafa M, Neyestani T, Khamseh M, Hoseini F. The effects of green tea consumption on metabolic and anthropometric indices in patients with Type 2 diabetes. *J Res Med Sci* 2013;18:1080-6.
2. Hajian S. Renoprotective effects of green tea. *J Nephropharmacol* 2013;2:21-2.
3. Rafieian-Kopaei M, Baradaran A, Rafieian M. Plants antioxidants: From laboratory to clinic. *J Nephrothol* 2013;2:152-3.
4. Nasri H. Impact of diabetes mellitus on parathyroid hormone in hemodialysis patients. *J Parathyr Dis* 2013;1:9-11.
5. Rafieian-Kopaei M. Medicinal plants and the human needs. *J HerbMed Pharmacol* 2012;1:1-2.
6. Nasri H, Ahmadi A, Baradaran A, Nasri P, Hajian S, Pour-Arian A, *et al.* A biochemical study on ameliorative effect of green tea (*Camellia sinensis*) extract against contrast media induced acute kidney injury. *J Renal Inj Prev* 2014;3:47-9.
7. Nasri H, Rafieian-Kopaei M. Herbal medicine and diabetic kidney disease. *J Nephropharmacol* 2013;2:1-2.
8. Tavafi M. Complexity of diabetic nephropathy pathogenesis and design of investigations. *J Renal Inj Prev* 2013;2:59-62.
9. Vieira Senger AEI, Schwanke CH, Gomes I, Valle Gottlieb MG. Effect of green tea (*Camellia sinensis*) consumption on the components of metabolic syndrome in elderly. *J Nutr Health Aging* 2012;16:738-42.
10. Mozaffari-Khosravi H, Ahadi Z, Fallah Tafti M. The Effect of Green Tea versus Sour Tea on Insulin Resistance, Lipids Profiles and Oxidative Stress in Patients with Type 2 Diabetes Mellitus: A Randomized Clinical Trial. *Iran J Med Sci* 2014;39:424-32.
11. Hajivandi A, Amiri M. World kidney day 2014: Kidney disease and elderly. *J Parathyr Dis* 2014;2:3-4.
12. Ghorbani A, Baradaran A. Magnesium and diabetes mellitus. *J Renal Inj Prev* 2012;1:46-7.