

On the Efficacy of *Moringa oleifera* for Chronic Kidney Disease Treatment: A Literature Survey

¹Victor Christianto*

²Florentin Smarandache

Authors' Affiliations:

¹Malang Institute of Agriculture (IPM), Malang, Indonesia.

http://researchgate.net/profile/Victor_Christianto
E-mail: victorchristianto@gmail.com.

²Dept. Mathematics and Sciences, University of New Mexico, Gallup – USA.

E-mail: smarand@unm.edu

*Corresponding Author:

Victor Christianto

Malang Institute of Agriculture (IPM), Malang, Indonesia.

E-mail:

victorchristianto@gmail.com.

http://researchgate.net/profile/Victor_Christianto

Received on 13.08.2020

Accepted on 09.11.2020

ABSTRACT

Medicinal plants are important elements of indigenous medical system that have persisted in developing countries. In ongoing kidney illness both persistent and repeating intense irritation are successive. Basic sicknesses, as immune system illnesses, drug, uremic poisons, diseases, and hemodialysis treatment are causal. The aim of this study was to test different extracts from the *Moringa oleifera* leaves. Previous studies have shown potentially antioxidant, antitumor promoter, anticlastogen and anticarcinogen activities both in vitro and in vivo. This paper is a short literature survey of research in recent years.

KEYWORDS: *Moringa oleifera*, Renal Failure, Chronic Kidney Disease

INTRODUCTION

Moringa oleifera (MO), a plant from the family *Moringaceae* is a major crop in Asia and Africa (they can be found in Himalaya Mountain, and have been used for thousand years in India etc.).

Moringa oleifera regularly known as "Supernatural occurrence Tree" or "Mother's Best Friend" is the most popular and most broadly conveyed types of *Moringaceae* family, having a noteworthy scope of therapeutic uses with high dietary benefit all through the world. This rapidly creating tree (in any case called the horseradish tree, drumstick tree, benzolive tree, kelor, marango, mlonge, moonga, mulangay, nébéday, saijhan, sajna or Ben oil tree), was utilized by the old Romans, Greeks and Egyptians.[2] See also [8].

MO has been read for its wellbeing properties, credited to the various bioactive segments, including nutrients, phenolic acids, flavonoids, isothiocyanates, tannins and saponins, which are available in significant sums in different segments of the plant. *Moringa Oleifera* leaves are the most broadly considered and they have demonstrated to be beneficial in a few ongoing conditions, including hypercholesterolemia, hypertension, diabetes, insulin opposition, non-alcoholic liver sickness, disease and in general inflammation.

In ongoing kidney illness both persistent and repeating intense irritation are successive. Basic sicknesses, as immune system illnesses, drug, uremic poisons, diseases, and hemodialysis treatment are causal. CKD is described by a progressive loss of kidney work. It advances through an underlying injury, the event of fix instruments wherein nephrons are lost, and the expansion of movement of

outstanding nephrons that might be inconvenient for nephron work. This unsettling influence as often as possible shows an example described by diminished glomerular filtration, upset salt and water equilibrium, and loss of endocrine capacities. The point of this investigation was to test various concentrates from the *Moringa oleifera* leaves. [7]

This paper is a short literature survey of research on MO efficacy as chronic kidney disease treatment in recent years.

IDENTIFICATION

According to Hassan et al. [4], which can be paraphrased as follows: “Moringa is a little, quickly developing, dry spell deciduous tree or bush that arrives at 12 m in tallness at development. It has a wideopen, normally umbrella-molded crown, straight trunk (10-30 cm thick) and a corky, whitish bark. The plant (contingent upon atmosphere) has handouts 1-2 cm in measurement and 1.5-2.5 cm long its leaves are hinder pinnate, rachis 3 to 6 cm long with 2 to 6 sets of pinnules. Every pinnule has 3 to 5 obovate pamphlets that are 1 to 2 cm long (Von Maydell, 1986). The terminal pamphlet is regularly somewhat bigger. Its flyers are very pale when youthful, yet become more extravagant in shading with development. Cream-hued blossoms rise in sweet-smelling panicles during times of dry season or water pressure when the tree loses its leaves. The pods are three-sided in cross-area 30 to 50 cm long and vegetable like in appearance. The slick seeds are dark and winged. The tree delivers a tuberous taproot, which discloses its resilience to dry spell conditions.”

OCCURRENCE THROUGHOUT THE WORLD

According to Leone et al. [5], which can be rephrased as follows:

“This species is a quickly developing delicate wood tree that can arrive at 12 m in tallness and is indigenous to the Himalayan lower regions (northern India Pakistan and Nepal) [2,3]. Its different uses and potential pulled in the consideration of ranchers and scientists in previous recorded periods. Ayurvedic customary medication says that *Moringa oleifera* can forestall 300 infections and its leaves have been used both for preventive and corrective purposes [4]. ... *Moringa oleifera* has been developed and devoured in its unique territories as of not long ago (the 1990s) when a couple of scientists began to contemplate its expected use in explaining water therapies, while just later were its wholesome and clinical properties “found” and the species was spread all through practically all tropical nations. In 2001, the principal global meeting on *Moringa oleifera* was held in Tanzania and from that point forward the quantity of congresses and studies expanded spreading the data about the staggering properties of *Moringa oleifera*. Presently this species has been named “marvel tree”, or “characteristic blessing”, or mother’s closest companion.”

According to Hassan et al. [4], which can be paraphrased as follows:

“Moringa trees however local in the sub-Himalayan plots, it is generally developed in Africa, Central and South America, Sri Lanka, India, Mexico, Malaysia, Indonesia and the Philippines (Anwar and Bhangar, 2003). As indicated by Muluvi et al (1999), the Moringa tree wide regular spread on the planet and acquainted with Africa from India where it utilized as a wellbeing supplement and it was initially an elaborate tree in the Sudan, planted during British guideline in the rear entryways along the Nile, public parks, and the nurseries of outsiders. It appears to be likely that the Arab ladies of Sudan found this wonderful clarifier tree (Jahn, 1986).“

PHYTOCHEMISTRY

As *Moringa oleifera* leaves are most utilized piece of the plant, we audit articles concerning phytochemistry and pharmacological properties of leaves. A few bioactive mixes were perceived in the leaves of *Moringa oleifera*. They are assembled as nutrients, carotenoids, polyphenol, phenolic acids, flavonoids, alkaloids, glucosinolates, isothiocyanates, tannins, saponins and oxalates and phytates.

MORINGA EFFECTS FOR CKD

According to Vergara-Jimenez et al., which can rephrased as follows: [1]

“A rundown of some bioactive parts present in MO leaves, their hypothesized activities in the creature model utilized their security against a specific sickness and the relating references are introduced in Table 1.”

Moreover, according to Pedrazza-Chaverri et al. [7], *Moringa* (*Moringa oleifera* L.) is the cultivated species of the genus *Moringa* of the family *Moringaceae*. The moringa remove exhibited a valuable impact on body weight, blood glucose fixation, renal capacity, lipid peroxidation, and exercises of SOD, CAT, GST, and GSH in renal tissue, just as TNF and IL1 focuses in serum. Clinical examinations indicated that moringa fundamentally diminished FPG, hyperglycemia, all out cholesterol, fatty substances, low-thickness lipoprotein-(LDL-) cholesterol, and VLDL-cholesterol. [7]

An experimental study with rats performed by Halaby et al. [2], produced results which could be summed up that bread invigorated with MO at 10% and 15% were viewed as the best for causing a decrease of TC, TG, LDL and VLDL. Likewise, kidney work has been improved and there were critical decrease in uric corrosive serum, urea, and creatinine than that of positive benchmark group. Indeed, taking care of bread invigorated with MO improved the body weight increase and food consumption. Histopathological perception demonstrated that the last gathering diet is considered as a negative benchmark group. We can presume that strengthened eating routine with 15% MO level powder understood the best consequences for hyperlipidemia rodents.

Another study by Al-Malki & El Rabey was reported in [3]. They wrote, which can be rephrased as follows:

“The antidiabetic action of two low portions of *Moringa* seed powder (50 and 100 mg/kg body weight, in the eating regimen) on streptozotocin (STZ) prompted diabetes male rodents was researched. Forty rodents were isolated into four gatherings. The diabetic positive control (STZ treated) bunch demonstrated expanded lipid peroxide, expanded IL-6, and diminished cell reinforcement compound in the serum and kidney tissue homogenate contrasted and that of the negative benchmark group. Immunoglobulins (IgA, IgG), fasting glucose, and glycosylated hemoglobin (HbA1c) were likewise expanded because of diabetes in G2 rodents. Also egg whites were diminished, and liver catalysts and α -amylase were not influenced. What's more, the renal capacities and potassium and sodium levels in G2 were expanded as an indication of diabetic nephropathy. Pee investigation indicated likewise glucosuria and expanded potassium, sodium, creatinine, uric corrosive, and egg whites levels. Kidney and pancreas tissues indicated likewise obsessive adjustment contrasted with the negative benchmark group.”

As to possible side effect, an experimental study by Akinlolu et al. reported which can be rephrased as follows: “No statistical significant differences ($p \leq 0.05$) were observed in the analyses of the relative weights of kidneys of rats of Groups I – IV. Histological examinations showed normal cyto-architecture of the kidneys of rats of Group I while the Capsular spaces of the kidneys of rats of Groups II – IV appeared wider than those of Group I.” [6]

CONCLUDING REMARKS

We have discussed some real positive effects on the use and efficacy of *Moringa Oleifera* as chronic kidney disease (CKD) treatment.

Nonetheless, further studies and procedures to maximize such positive impact of MO for CKD should be continued.

REFERENCES

1. Marcela Vergara-Jimenez, Manal Mused Almatrafi, and Maria Luz Fernandez. Bioactive Components in *Moringa Oleifera* Leaves Protect against Chronic Disease. *Antioxidants* 2017, 6, 91; doi:10.3390/antiox6040091
2. M.S. Halaby et al. Effect of *Moringa Oleifera* on serum lipids and kidney function of hyperlipidemic rats. *Journal of Applied Sciences Research*, 9(8): 5189-5198, 2013
3. A.L. Al-Malki & H.A. El Rabey. The Antidiabetic Effect of Low Doses of *Moringa oleifera* Lam. Seeds on Streptozotocin Induced Diabetes and Diabetic Nephropathy in Male Rats. *BioMed Research International* Volume 2015, Article ID 381040, 13 pp., DOI: <http://dx.doi.org/10.1155/2015/381040>
4. Fatima Al Gunaid Hassan, Muna Abdalla Ibrahim. *Moringa oleifera*: Nature is Most Nutritious and Multi-Purpose Tree. *International Journal of Scientific and Research Publications*, Volume 3, Issue 4, April 2013
5. Alessandro Leone et al. Cultivation, Genetic, Ethnopharmacology, Phytochemistry and Pharmacology of *Moringa oleifera* Leaves: An Overview. *Int. J. Mol. Sci.* 2015, 16, 12791-12835; doi:10.3390/ijms16061279
6. A.A. Akinlolu, et al. *Moringa oleifera* impairs the Morphology and Functions of the Kidney in Adult Wistar Rats. *Int. J. Morphol.*, 32(2):469-474, 2014.
7. J. Pedrazza-Chaverri, et al. New Pathogenic Concepts and Therapeutic Approaches to Oxidative Stress in Chronic Kidney Disease. *Oxidative Medicine and Cellular Longevity* Volume 2016, Article ID 6043601, 21 pp., DOI: <http://dx.doi.org/10.1155/2016/6043601>
8. Y.P. Rajbhar et al. Grow Moringa (*Moringa oleifera*), the miracle tree on the earth. *Horticulture International Journal*, Vol. 2 Issue 4 - 2018