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Renal tonics (Muqawwi-e-Gurda) mentioned in Unani medicine with recent advancements – a review

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Running title: Fahamia, *et al.*, Renal tonics (Muqawwi-e-Gurda) mentioned in Unani medicine

Abstract

Over the past years, it has become more apparent that the kidneys are seriously affected by variety of chemicals and therapeutic agents. Meanwhile, herbal medicines have shown great potential in curing several illness and disease of human being since long; because, they are easily available, effective and safe with few side effects. The aim of this present review is to explore the recent experimental studies of nephro-protective plants and their bioactive components and to explore the concept of kidney diseases in Unani medicine, and by that to open the pathway for further studies. Data were gathered from Unani classical texts, scientific journals and databases such as MEDLINE, PubMed, and Google scholar. In Unani classical text there are number of single and compound drugs described by Unani Scholars for treating kidney diseases. These are found from their clinical experience. Even though, many herbs have been tested and have proved to improve renal diseases and even reverse its damage in animal models, large numbers of drugs is still not in use. It is need of the hour to reveal the concept of kidney diseases to use these drugs effectively and to prove its efficacy with the help of modern tools. Therefore, this study will be helpful for those who are interested in doing research in nephro-protective drugs to develop the future trials to provide safe medicine for humanity.

Keywords: Nephroprotective, herbal medicine, Unani, renal

Introduction

Nephrotoxicity can be defined as renal disease or dysfunction that arises as a direct or indirect result of exposure to medicines, and industrial or environmental chemicals^[1]. Over the last several years, it has become more apparent that the kidney is seriously affected by variety of chemicals and therapeutic agents. In Sri Lanka approximately 15% of the population in Anuradhapura, Polonnaruwa and Badulla Districts are affected by CKDu (unknown chronic kidney disease). Most vulnerable groups are age between 15-70 years, male paddy farmers and agricultural laborers. Most vulnerable groups are male paddy farmers and agricultural laborers aged between 15-70 years.

According to WHO CKDu is an environmental-exposure disease caused by multiple factors such as chronic exposure to kidney damaging pesticides, arsenic, lead, cadmium, poor diet and genetic susceptibility to kidney failure. The kidney is a common target for toxic due to its capacity to extract and concentrate toxic substances, and to its large blood flow share (about 20% of cardiac output)^[2]. There were numbers of evidence indicating that nephrotoxicity leading to acute and/or chronic renal failure represents a substantial financial burden to society^[1,3]. There was no conventional treatment for renal failure except dialysis and kidney transplant, which are expensive and also with low survival rate. Many herbs have been proved to be beneficial in renal diseases and to protect from damages. These herbs are not only beneficial in kidney disease but also with fewer side effects. The objectives of this review is to reveal the concept of kidney diseases in Unani medicine and to explore the recent experimental studies of nephroprotective plants and their bioactive components, and by that to open the pathway for further studies.

Material and Methods

A thorough literature review of relevant scientific journals, databases such as MEDLINE, PubMed, and Google scholar, and Unani classical texts was performed to gather the maximum available data on renal tonics (Muqawwi-e-Gurda) mentioned in Unani medicine and recent studies from 2007 to 2015 on plants with nephroprotective activity.

Results

Concept of kidney disease in Unani medicine

Unani medicine is a Greco-Arabian medicine, which has been practiced in Sri Lanka, India and the other parts of the world since long. Kidney disorders have always been a major area of concern for Unani scholars. In Unani medicine kidneys are known as *Kulliya* or *Gurda*. Normal *Mizaj* (temperament) of kidney is *Har Ratab* (hot and moist). The kidney disorder is a term with broad meaning and is applied when kidney(s) does not function properly. As a result several diseases occur such as *Hazal-e-Kulliya* (atrophy of kidney), *Zauf-e-Kulliya* (weakness of kidney), *Auram-e-Kulliya* (inflammation of kidney), *Qurooh-e-Kulliya* (ulcers in kidney), *Hassat-e-Kulliya* (stones in the kidney), *Sue Mizaj-e-Kulliya* (abnormal temperament of kidney), *Dabela-e Kulliya* (abscess in the kidney) and *Suddad-e-Kulliya* (obstruction in the kidney).

Unani physicians classified kidney diseases into four major types viz. *Amraz-e-Sue Mizaj* (any deviation from this innate *Mizaj* produces variable pathological conditions based on the type and extent of deviation) *Amraz-e-Sue Tarkeeb* (malformation of kidney due to structural anomalies, or deformity in size and number or in arrangement of kidney), *Amraz-e-Sudda* (obstruction, affecting any part of the kidney), *Amraz-e-Tafarruq-e-Ittesal* (acquired pathological condition of the kidney arising from tissue injury)^[4].

***Zauf-e-Kulliya* (weakness of kidney)**

In classical Unani literatures different opinions have been given by different Unani physicians regarding *Zauf-e-Kulliya*. Some Unani physicians have described *Zauf-e-Kulliya* as a condition in which the kidneys are incapable of separating water and other substances from the blood and pass them as such into the urinary bladder. This blood comes into the kidney from the liver. Thus urine finally excreted, is diluted and contains proteins^[5,6,7].

These disorders may be produced due to the changes in *Mizaj* (temperament), *Akhlat* (humours) and *Quwwa* (faculties). If any one of these were altered in kidney, disorders would appear^[5,6,7,8,9]. According to Ibn-e-Rushd (1980) functions of kidney depend upon its *Quwwa* (faculties). Whenever any faculty becomes weak, kidney disorders appear^[10]. These faculties may be classified as *Quwwat-e-Mumayyaza* (power of distinction -unique power of

kidney which separates metabolic waste and discriminates between useful and harmful metabolites; holding back useful ones), *Quwwat-e-Hazima* (power of digestion), *Quwwat-e-Jaziba* (power of absorption), *Quwwat-e-Masika* (power of retention), *Quwwat-e-Dafia* (power of propulsion or excretion).

The increased workload on *Quwwat-e-Jaziba* (absorptive faculty) causes weakening of *Quwwat-e-Masika* and *Quwwat-e-Hazima*, this result in formation of *Kham* (immetabolized) urine^[5,8,9,10]. When absorption from kidney becomes weak, it results in haematuria and ascites. Sometimes the absorptive faculty becomes weakened because of excessive waste products^[11]. Kidneys cannot perform their normal filtration process due to weakness of *Quwwat-e-Masika* (retentive faculty) or *Quwwat-e-Hazima* and result in *Ghussalah* (washofmeat Blood stained) urine^[12]. Qarshi (1929) also described *Sammiyat-e-Baul*, as a condition in which the urinary toxic substances accumulate in the blood and affect the nervous systems which results in coma and delirium^[6]. When albumin (*RatoobateZullali*) doesn't reabsorb or not separated by the kidney, then it starts appearing in the urine and in this condition the body swells up^[4].

Unanischolarsmentioned the following as causes for the *Zauf-e-Kulliyasuch* to be old age, excessive labour, excessive fatigue, excessive use of *Mudiraat* (diuretics), excessive journey, excessive coitus, excessive horse riding, excessive intake of cold substance, concentrated blood (*Ghaleez dam*), inflammation of kidney, looseness of kidney mass, prolonged standing, pulling heavy articles (weight lifting), diluted bile (*Raqeeq safra*), reduced power of *Quwwat-e-Hazima*, reduced power of *Quwwat-e-jaziba*, *Sue-Mizaj Barid*, *Sue-Mizaj Yabis*, trauma of the kidney, urinary obstruction, *Amraz-e-suetarkeeb*(deformityinshapeandsize of kidney) and *Ijtima-e-Qiwaam-e-Gurda* (deposition of renal matrix)^[7,9,13].

Treatment is done by elimination of the morbid humours as *Imala* is achieved by *Fasad* (venesection), *Qai* (induced vomiting), *Ishal* (induced purgation), and *Idrar* (induced diuresis). *Muhallil-e-Auram* (anti-inflammatory) drugs are used in case of inflammatory disease of the kidney. *Ta'deel-e-Mizaj* with *BaridAdvia waTadabeer*(restoration of normaltemperament with drugs and procedures having cold properties) as *Sue-Mizaj HarGurda*isthemostcommoncauseof *Zauf-e-Kuliya*, *MuzeeqatwaMugharriyatAdviya*(constrictiveand glutinous drugs), *Qabiz-Habis Adviya* (astringent and styptic drugs) are used^[14,15,16].Beside these measures, *Muqwwi-e-Kulliya*

(nephrotonics) drugs are used for the treatment of these disorders. In addition to drug therapy, Unani physicians have not ignored the role of diet. They advised to take foods/diet that can be easily digested, absorbed and assimilated^[5].

***Muqawwi-e-Kulliya* (nephrotonics)**

In Unani system of medicine the concept of tonics (*Muqawwiyat*) is unique feature. Such drugs are used to tone up the important organs and strengthen them to save against the possible harmful substances. A large number of herbal drugs and dietary components are described as nephroprotective in Unani system of medicine. Although they were not aware about the active ingredient and chemical composition of the herbs, the innovation they made is surprising.

In Unani literature various physicians have described many drugs used as nephrotonics such as *Akhrot* (*Jugulans regia*), *Anjeer Zard* (*Ficus carica*), *Maghz-e-Badam* (*Prunus amygdalus*), *Baqila* (*Vicia fabla*), *Chilghoza* (*Pinus gerardiana*), *Funduq* (*Corylus avellana*), *Joz-e-bowa* (*Myristica fragrans*), *Kunjad* (*Sesamum indicum*), *Maghz-e-Narjeel* (*Cocos nucifera*), *Pista* (*Pistacia vera*), *Pumbadana* (*Gossypium herbaceum*), meat of pigeon, milk of cow and goat, fat of hen and duck and kidneys of animals (especially goat)^[7,13,17].

Nephroprotective plants

Large numbers of medicinal plants extracts and dietary antioxidants have been reported to show protective effects against nephrotoxicity. In the present review, interest is focused on recent experimental studies (from 2007 to 2015) performed on nephroprotective plants and their bioactive components. Tables 1 to 5 give a comprehensive overview of the medicinal plants having nephroprotective potential. Tables are classified by the name of the toxicant used to produce nephrotoxicity. The details of scientific name of the plant, family of that plant, main parts used in the study and the parameters utilized to evaluate nephroprotective effects are summarized in the Tables 1-5.

Recent studies of plants on nephroprotective activity (2007 - 2015)

Table 1: Nephroprotective Activity of Plant with Acetaminophen Induced Nephrotoxicity

S. No	Botanical Name	Unani(U)/ English(E) Name	Family	Parts used	Parameter used to asses nephroprotective activity
1.	<i>Acorus calamus</i>	Waj (U)	Acoraceae	Et. extract of aerial part	SOD, CAT, GSH, GPx, MDA, H&E ^[18] .
2.	<i>Anthoxanthum odoratum</i>	Sweet vernal grass (E)	Poaceae	Et. extract of aerial part	MDA, SOD, CAT, reduced glutathione, GPx ^[19] .
3.	<i>Caesalpinia sappan</i>	Patanga(U)	Caesalpinaceae	Et. extract of aerial part	SOD, CAT, GPx, MDA, H&E ^[20] .
4.	<i>Carica papaya</i>	Papita (U)	Caricaceae	seed extract	serum UR, Scr, and UA, H&E ^[21] .
5.	<i>Harungana madagascariensis</i>	Dragon's Blood tree(E)	Hypericaceae	Aq. root extract	Serum UR, UA and Cr, H&E ^[22] .
6.	<i>Indigofera barberi</i>	Janglimeti (U)	Fabaceae	Et. extract of whole plant	Serum UR, UA, Scr ^[23] .
7.	<i>Monochoria vaginalis</i>	Indivar (U)	Pontederiaceae	Et. extract of aerial part	Scr, BUN, UR, B Wt., UA, SOD, CAT, GSH, GPx, H&E ^[24] .

Aq.-Aqueous; B Wt. –Body Weight; BUN - serum blood urea nitrogen; CAT – catalase;Et.- Ethanolic;GPx - glutathione peroxidase; GSH – glutathione; H&E - Histopathological examination;MDA – malondialdehyde; Scr - serum creatinine; SOD - superoxide dismutase; UA - uric acid;UR – urea

Table 2: Nephroprotective Activity of Plant with Gentamicin Induced Nephrotoxicity

S. No	Botanical Name	Unani(U)/ English(E) Name	Family	Parts used	Parameter used to asses nephroprotective activity
1.	<i>Aegle marmelos</i>	<i>Belgiri</i> (U)	Rutaceae	Aq.extract of Leaves	Scr, urea and BUN, MDA level CAT, reduced glutathione ^[25] .
2.	<i>Andrographis paniculata</i>	<i>Kalmegh</i> (U)	Acanthaceae	Aq.extract of whole plant	Scr, UR,BUN ^[26] .
3.	<i>Bauhinia purpurea</i>	Purple orchid tree (E)	Fabaceae	Et.extract of leaves and unripe pods	Scr, BUN, UA, H&E ^[27] .
4.	<i>Camellia Sinensis</i>	<i>Chai</i> (U)	Theaceae	Me. extract of tea leaves.	Daily urinary total protein, BUN, Cr, GSH, TBARS, SOD, CAT, H&E ^[28] .
5.	<i>Crocus sativus</i>	<i>Zafran</i> (U)	Iridaceae	Aq. extract	SCr, BUN, MDA, H&E ^[29] .
6.	<i>Cucumis melo</i>	<i>Kharbuza</i> (U)	Curcubitaceae	Me.extract of seed kernal	BUN, Scr, SOD, CAT, GPx, GSH, MDA, H&E ^[30] .
7.	<i>Graptophyllum pictum</i>	Caricature Plant (E)	Acanthaceae	Et.extract	TBARS, GSH, GST, SOD, CAT, serum UA, Cr ^[31] .
8.	<i>Hygrophila spinosa</i>	<i>Talmakhana</i> (U)	Acanthaceae	Et.extract of whole plant	Scr, urea, SOD, CAT, GSH, MDA, H&E ^[32] .
9.	<i>Kalanchoe pinnata</i>	<i>Zakhmhaiyat</i> (U)	Crassulaceae	Aq.extract of leaves	24 h urine output, urine Cr, Scr, BUN, H&E ^[33] .
10.	<i>Momordica charantia</i>	<i>Karela</i> (U)	Cucurbitaceae	Aq.extract of leaves	Scr, BUN ^[34] .

11.	<i>Morchella Esculenta</i>	Spong Morel (E)	Morchellaceae	Aq.-Et. extract of morel mushroom	SOD, CAT, GPx, GSH, MDA ^[35] .
12.	<i>Olea europaea</i>	Zaitoon (U)	Oleaceae	Et.extract of olive leaves	Scr, MDA, BUN, Creatinine clearance, GSH, GP, SOD, CAT, B Wt., H&E ^[36] .
13.	<i>Pedaliium murex</i>	Bada Gokhru(U)	Pedaliaceae	Et.and Aq. extract of fruits	BUN, Scr, urinary protein, urine to Scr ratio, CAT, MDA, reduced glutathione ^[37] .
14.	<i>Pleurotus porrigens</i>	Angel's Wings (E)	Marasmiaceae	Me.fraction Angel's wings	BUN, Scr and serum urea ^[38] .
15.	<i>Rubus ellipticus</i>	Lalanchu(U)	Rosaceae	PE, Et. and Aq.extracts of fruits	SCr, BUN, serum UA and UR ^[39] .
16.	<i>Sida rhomboidea</i>	Rhombus-leaved sida(E)	Malvaceae	Leaf extract	Plasma and urine UR and Cr, LPO, renal enzymatic and non-enzymatic antioxidants ^[40] .
17.	<i>Tephrosia purpurea</i>	Sarphoka (U)	Fabaceae	Et. extract of leaves	UR, SCr, GSH, MDA ^[41] .
18.	<i>Vitis vinifera</i>	Angoor(U), Kishmish (U)	Vitaceae	Grape seed extract	GPx, GSH, MDA, serum UA and Cr, H&E, bone marrow chromosomes ^[42] .
19.	<i>Withania somnifera</i>	Asgand(U)	Solanaceae	Root extract	Kidney Wt., UA, Cr, urinary protein, and glucose, B Wt.,potassium & H&E ^[43] .

Aq.-Aqueous; B Wt. –Body Weight; BUN - serum blood urea nitrogen; CAT – catalase; Cr – creatinine; Et- Ethanollic; GPx - glutathione peroxidase; GSH – glutathione; GST - glutathione-S-transferase; H&E - Histopathological examination; LPO – Lipid peroxidation; MDA – malondialdehyde; Me- Methanolic; PE – Petroleum ether; Scr - serum creatinine; SOD - superoxide dismutase; TBARS - thiobarbituric acid reactive substances; UA - uric acid; UR – urea

Table 3: Nephroprotective Activity of Plant with Cadmium Induced Nephrotoxicity

S. No	Botanical Name	Unani(U)/ English(E) Name	Family	Parts used	Parameter used to asses nephroprotective activity
1.	<i>Allium cepa</i>	<i>Piyaz</i> (U)	Amaryllidaceae	<i>Allium cepa</i> extract	Renal Wt index, 24 h urine volume, renal clearance, MDA, SOD ^[44] .
2.	<i>Curcuma longa</i>	<i>Haldi</i> (U)	<i>Zingiberaceae</i>	Curcumin	MDA, GSH, H&E ^[45] .
3.	<i>Origanummajorana</i> L	<i>Marzanjosh</i> (U)	Labiatae	Gadolinium chloride extract	Total protein, Scr, UA, GSH, SOD, CAT, MDA ^[46] .
4.	<i>Tribulus terrestris</i>	<i>Khare Khasak</i> (U)	Zygophyllaceae	Et. (Ethanol) extract of whole plant	Total protein, albumin, ALT, SCr, BUN, H&E ^[47] .
ALT- alanine aminotransferase; BUN - serum blood urea nitrogen CAT – catalase; GSH – glutathione;H&E - Histopathological examination; MDA – malondialdehyde; Scr - serum creatinine; SOD - superoxide dismutase; UA - uric acid					

Table 4: Nephroprotective Activity of Plant with Cisplatin Induced Nephrotoxicity

S. No	Botanical Name	Unani(U)/ English(E) Name	Family	Parts used	Parameter used to asses nephroprotective activity
1.	<i>Bauhinia variegata</i>	<i>Kachnar</i> (U)	Caesalpiniaceae	Et. extract of whole stem	Scr, UR, B Wt, urine volume ^[48] .
2.	<i>Berberis aristata</i>	<i>Darhald</i> (U)	Berberidaceae	Decoction of root bark	Scr, BUN, urinary protein, urine to Scr ratio, LPO, H&E ^[49] .
3.	<i>Dichrostachys cinerea</i>	<i>Khairi</i> (U)	Mimosaceae	Al. extract of roots	Urinary protein, urine to Scr ratio, creatinine clearance, H&E ^[50] .
4.	<i>Ficus religiosa</i>	<i>Peepal</i> (U)	Moraceae	Me. extract of latex	Scr, UR, ATPases content in kidney tissue, MDA, SOD, CAT, reduced glutathione ^[51] .
5.	<i>Hygrophila spinosa</i>	<i>Talmakhana</i> (U)	Acanthaceae	Me. extract of aerial part	BUN, Scr, MDA, GSH, CAT, SOD, GSH, H&E ^[52] .
6.	<i>Leea asiatica</i>	<i>Banchalita</i> (U)	<i>Leeaceae</i>	Me. extract of leaves	BUN, Scr, UA, MDA, increase total protein and albumin level ^[53] .
7.	<i>Lepidium sativum</i>	<i>Halim, Halyun</i> (U)	Brassicaceae	Et. extract of seeds	UR, Scr, MDA, SOD, CAT, reduced glutathione, B Wt, increase urine excretion, and Na ⁺ /K ⁺ ATPase, Ca ⁺⁺ ATPase, Mg ⁺⁺ ATPase ^[54] .
8.	<i>Ligusticum wallichii</i>	Chinese Parsley Root (E)	Umbelliferae	Tetramethylpyrazine	Proximal reabsorptive function, glomerular function and the cellular redox, H&E ^[55] .

9.	<i>Momordica dioica</i>	<i>Kakoda</i> (U)	Cucurbitaceae	Et. extract of fruit extract	BUN, Scr, GSH, MDA ^[56] .
10.	<i>Morchella esculenta</i>	Spong Morel (E)	Morchellaceae	Aq. - Et. extract of morel mushroom	SOD, CAT, GPx, GSH, MDA ^[35] .
11.	<i>Portulaca Oleracea</i>	<i>Khurfa</i> (U)	Portulacaceae	Aq. and Et. extracts of aerial parts	BUN, Scr and H&E ^[57] .
12.	<i>Sphaeranthus indicus</i>	<i>Mundi</i> (U)	Asteraceae	Et. extract ofentire plant	Scr, UR, SOD, CAT, GPx, Reduced glutathione ^[58] .
13.	<i>Rubus ellipticus</i>	<i>Lalanchu</i> (U)	Rosaceae	PE, Et & Aq.extracts of fruits	SCr, BUN, serum UA and UR ^[39] .
14.	<i>Tinospora cordifolia</i>	<i>Gilo</i> (U)	Menispermaceae	Al. extract of stem	Scr, BUN, Alkaline phosphatase, H&E ^[59] .

Al- Alcoholic; Aq.- Aqueous;B Wt. –Body Weight; BUN - serum blood urea nitrogen; CAT – catalase; Cr – creatinine; Et- Ethanolic; GPx - glutathione peroxidase; GSH – glutathione; GST - glutathione-S-transferase; H&E - Histopathological examination; LPO-Lipid peroxidation; MDA – malondialdehyde; Me- Methanolic; PE- Petroleum ether; Scr - serum creatinine; SOD - superoxide dismutase; UR – urea; UA - uric acid

Table 5: Nephroprotective Activity of Plant with Miscellaneous Type of Toxicant Induced Nephrotoxicity

S. No	Botanical Name	Unani(U)/ English(E) Name	Family	Parts used	Toxicant	Parameter used to asses nephroprotective activity
1.	<i>Achyranthes aspera</i>	<i>Charchitah</i> (U)	Amaranthaceae	Me. extract of whole plant	Lead	Gamma-glutamyltranspeptidase, Cathespin D, ALP, acid phosphatase, beta-glucuronidase, lactate dehydrogenase, NAG in urine, UA, Cr, protein, phosphorous, kidney Wt ^[60] .
2.	<i>Carica papaya</i>	<i>Papita</i> (U)	Caricaceae	Aq.extract of seed	Carbon tetrachloride	Serum UA, UR, Cr, H&E ^[61] .
3.	<i>Curcuma longa</i>	<i>Haldi</i> (U)	Zingiberaceae	Curcumin	Sodium Fluoride	Scr, BUN, Serum UR, MDA, SOD, CAT and GSH ^[62] .
4.	<i>Elaeis guineensis</i>		Arecaceae	Tocotrienol-rich fraction of palm oil	Potassium dichromate	Renal functions, oxidative and nitrosative stress,H&E ^[63] .
5.	<i>Ginkgo biloba</i>	<i>Pankha</i> (U)	Ginkgoaceae	Leaf extract	Adriamycin	Serum lipid profile and total protein and UR, Cr clearance, urinary protein and NAG, TBARS, GSH, antioxidant enzymes, renal-tissue and urine total NO level ^[64] .
6.	<i>Glycyrrhiza glabra</i>	<i>Asalus Soos</i> (U)	Leguminosae	Liquorice extract	Ochratoxin A	Scr, BUN, ALP, ALT, MDA, H&E ^[65] ..

7.	<i>Hemidesmus indicus</i>	<i>Ushbah</i> (U)	Apocynaceae	Et. extract of root	Ethanol	Scr, UA, TBARS, LOOH, conjugated dienes, SOD, CAT, GPx, GSH, vitamin C and E ^[66] .
8.	<i>Moringa oleifera</i>	<i>Sahajna</i> (U)	Moringaceae	Hydro-Et.extract of pods	DMBA	LPO, SOD, CAT ^[67] .
9.	<i>Nigella sativa</i>	<i>Kalonji</i> (U)	Ranunculaceae	Seed oil	Cyclosporine	SCr, SOD, GPx, CAT, Nitric oxide, MDA, H&E ^[68] .
10.	<i>Picrorhiza kurroa</i>	<i>Kutki</i> (U)	Plantaginaceae	Glycosidal extract	Nimesulide	serum UR & Cr, H&E ^[69] .
11.	<i>Zingiber officinale</i>	<i>Adrak</i> (U)	Zingiberaceae	Aq.extract of rhizome	Metalaxylfungicide	Scr, BUN, MDA, SOD, CAT and H&E ^[70] .

ALT- alanine aminotransferase; Aqueous; B Wt. –Body Weight; BUN - serum blood urea nitrogen; CAT – catalase; Cr – creatinine; Et- Ethanolic; GPx - glutathione peroxidase; GSH – glutathione; GST - glutathione-S-transferase; H&E - Histopathological examination; LPO- Lipid peroxidation; LOOH - lipid hydroperoxides; MDA – malondialdehyde; Me- Methanolic; NAG - N-acetyl-beta-D-glucosaminidase; NO – nitric oxide; Scr - serum creatinine; SOD - superoxide dismutase; TBARS - thiobarbituric acid reactive substances; UR – urea; UA - uric acid

Discussion

Unani formulations have been successfully tested over a period of time and used effectively for treating various diseases since time immemorial. In this paper a sincere attempt has been made to review various plants with nephroprotective properties which are mentioned in Unani system of medicine that can have an adjuvant role in the maintenance of renal health and to provide a scientific reason to some of the Unani medicines by reviewing various studies undertaken in recent time, and also to provide a look into the multitude prospects and perspectives of Unani system of medicine in management of renal diseases. Searched literature indicated that there are many single drugs mentioned in Unani classical texts that can be utilized in the prevention as well as in the management of renal diseases. When screened according to the modern parameters, number of Unani herbs which are reviewed in this paper showed significant nephroprotective activities but among them very negligible percentage of herbal plant are used in routine clinical practice.

Conclusion

Herbal medicines have shown great potential in curing several illnesses of human being since long because these are easily available, effective and safe with few side effects. Kidneys are often adversely affected by a variety of chemicals and therapeutic agents. A large number of animal studies have been carried out on medicinal plants to prove their nephroprotective potential. However, to get the maximum benefits of these medicinal plants it is a need of hour to do more research in these medicinal plants with randomized control clinical trial with the help of modern parameters to be used in human being and to prove its efficacy without distorting the Unani concepts to provide effective, better-quality and safer drugs for humanity. Furthermore, an attempt should be made to integrate the traditional knowledge of medical systems like Unani with modern conventional practice.

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