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Short Communication

Herbs as Nephroprotective Agent: An Over View with Reference to Unani System of Medicine

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Nephroprotection has been resonating for quite some times about decades but unfortunately without any sound repercussion and major break through either in its appreciation or in the field of drug development befitting with its scope in the entirety. Theory and practice of protection and tonicity actually originated from and rooted in the traditional systems of medicine. There elaboration requires therefore an understanding of the context and the philosophical contour they are imbibed with. Drugs attributed to possess tonic or protective effect such as hepatoprotective, neuroprotective and renoprotective etc. have been largely used for their face value without knowing their actual pharmacological profile and potential therapeutic value.

Inability of Modern medicine to deliver drugs for a number of disorders actually lured the practitioner to grab such a product alleged to be useful in a disease for which they do not have an option of management. This phenomenon increased the popularity such drug on one hand but narrowed down their wide therapeutic potential and gave way for injudicious use on the other. Probably that is the reason that such drugs are a bit away from achieving the epitome of a drug with specific action. Unani System of Medicine has elaborate discussion of such drugs including that of nephroprotective drugs and combinations.

The concept of protection and tonicity of an organ have specific annotation that can only be understood through the philosophy of Unani System of Medicine. This will help understand the significance of theory and its practical application and also the nature and mechanism of drug action. Evidences are accumulating to demonstrate that the drug to be described useful in various renal disorder because of their nephrotonic and nephroprotective as described in Unani or other traditional medicines have even more wide and diverse therapeutic uses than that depicted by Modern Medicine practitioners and can be important source of managing many renal diseases and their complications, of course giving a ray of hope to the millions of patients struggling to reverse or at least slowdown the progression of their disease. However, there is equally wide scope of the scientific evaluation of nephroprotective drugs to minutely characterized them and make them specific and user friendly. Use of recent technique and appropriate methodology of research will be of great utility in determining the actual therapeutic value of such drugs and giving them a scientific sanctity.

Renoprotection by view point of Unani Medicine comprises of the protection of the various faculties the kidneys are imbibed with, to maintain its functioning. In case of mild degree of kidney disorder the drugs categorized to be kidney tonics are sufficient enough to deal with the situation to bring the normalcy. However, when gross impairment in kidney function or it matrix takes place anyhow, because of the high toxic effect of a substance or because one of the natural faculties is undermined owing to some local or systemic disease of the body, then the drugs having other pharmacological actions along with the tonic one, are used. Drugs ascribed to possess diuretic, anti-inflammatory, antioxidant, cathartic etc along with tonic effect are frequently used with an aim to treat the pathology and invigorate the kidney to bounce back to its normal state to perform its assigned function. Further, in case of progression of kidney diseases some other drugs are included in the regimen along with the drugs mentioned above, to directly ameliorate the compromised condition by promoting the healing of injured tissue, removal of toxins and reducing the pressure of work on kidney by diverting the wastes to some other system or organs of the body [1,2].

However, despite recognition of drug induced nephrotoxicity and concerted scientific efforts directed into developing therapeutic or prophylactic agents to induce protection against chemically and drug induced nephrotoxicity, conventional chemotherapeutic options available to either treat or prevent its development, are still limited. In the absence of reliable and effective modern nephroprotective drugs and available traditional medicines employed for the disease treatment, concerted efforts are currently channeled towards exploring complementary or measure to treat or prevent the disease.

A number of ethnomedicinal plants from traditional system of medicine viz Ayurveda and Unani, which are acclaimed by the Ayurvedic and Unani physicians to have nephroprotective properties and commonly being used to treat the various renal disorder have extensively investigated for their nephroprotective effect which showed significant results in various studies [3]. These findings have been suggested that the Ethnomedicinal plants can be used to help forestall the need for dialysis by treating the cause and effect of renal failure, as well as to slow the progression of disease by reducing the many adverse effect of dialysis [4]. Though there are few chemical agents to treat acute renal failure. Studies reveal that synthetic nephroprotective agents have adverse effect besides reduce nephrotoxicity, various environmental toxicant and clinically useful drugs, acetaminophen and gentamicin, can cause severe organ toxicities through the metabolic activation to highly reactive free radical [5]. Right from its beginning, the documentation of traditional knowledge, especially medicinal uses of plants, has provided many important drugs of modern day. Several herbal drugs act as good non-specific cytoprotective. In view of this background, it is thought worthwhile to evaluate the indigenous plants which could be useful as adjuvant as nephroprotective. This helps to decrease the potential

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Table 1: Unani drugs which are scientifically evaluated for their nephroprotective effect.

S.no.	Herbs	Protective effect	Phytochemical constituent
	Tribulus terresteris	Possesses protective effect against gentamicin induced nephrotoxicity in both structural and functional terms. (Nagarkatti et.al.) [15].	Saponine, Diosgenine, gitogenine, flaonoids, Alkaloid.
	Boerhavia diffusa	Clinically proved to be useful and safe drug in patients of nephritic syndrome (Singh, et. al.) [16].	Flavonoid, Alkaloids, triacontanol, hentriacontane, β. sitoste rol.
	Withania somnifera	Significantly reduced toxicity caused by cadmium (Panday et.al.) [17].	Alkaloids (Somniferon), Withaminon, Wasamin, Sugars, Glycosides, Amino acids, Essential Oils, Withaniol, Hexatriacontane, Phyto sterol and oils.
	Banadequl Buzoor	The formulation was found to decrease the serum urea and serum creatinine levels significantly (Anwar et. al.) [18].	Unani Pharmacopeal Formulation.
	Jawarish Zarooni Sada	The formulation was found to decrease the serum urea and serum creatinine levels significantly (Afzal et. al.) [19].	Unani Pharmacopeal Formulation.
	Piper cubeba	Showed significant protective effect against cisplatin and gentamicin induced nephrotoxicity (Zaid et. al.) [20,21].	sesquiterpene hydrocarbons;cubebine, cubebinin and kinokinin; cubebic acid. The oxygenated cyclohexanes, piperenol A and B, together with (+)-crotepoxide and (+)-zeylenol.
	Ficus racemosa	Significantly protects the toxicity produced by Cisplatin (Shivalinge Gowda et.al.) [22].	Gluacol, beta-sitosterol, lupeol acetate, friedelin, higher hydrocarbons and other phytosterols.
	Aegle marmelos	Normalized the serum creatinine, urea and blood urea nitrogen levels in gentamicin toxicity (Kore K. J et. al.) [23].	Aegeline, Agelinine, Rutin, Sterol, β-sitosterol, β-D-glucoside, Mamesinine, Lupeol, Tannins, Phlobatannins, Flavonoids, Umbelliferone, Quercetin and Volatile oils.
	Bauhinia variegate	offered protective effect against cisplatin induced nephropathy (Pani SR et.al.) [24].	stigmasterol, flavone glycosides, lupeol, kaempferol-3- glucoside, β-setosterol.
	Moringa oleifera	Showed moderate protection in both curative and prophylactic models against Cisplatin induced toxicity (Sreedevi A et.al.) [25].	Carotene, nicotic acid, ascorbic acid, amino acid.
	Carica papaya	showed nephroprotective effect on CCl4 induced nephrotoxicity (Olagunjua J.A et.al) [26].	Seed Flavonoids, Phenols, Alkaloids, Protein, Sterols, Terpenoids, Carbohydrates, Steroids, Tannins, Glycosides, Terpenes and Saponins.
	Cassia auriculata	Reduced the blood urea and serum creatinine level effectively in both the curative as well as the preventive regimen (Shirwaikar et.al.) [27].	Tannins, Di-(2-ethyl) hexyl phthalate, Alkaloids, Resins, Ca2+ and Phosphorous.
	Eruca sativa	A potent antioxidant and renal protective activity and preclude oxidative damage inflicted to the kidney (Sarwar Alam M et.al.) [28].	Glucoerucin iso-rhamnetin- 3glucoside and iso-rhamnetin. Isothiocyanate derivatives.
	Hemidesmus indicus	Showed nephroprotective activity against gentamicin induced nephrotoxicity (Magala S et.al.) [29].	Essential oil, Steroid, saponin, resine tannine
	Allium sativum	Showed dose dependent reduction in the elevated blood urea and serum creatinine levels and normalized the histopathological changes in the curative regimen. (Maldonado et.al.) [30].	Flavonoids, anthocyanins, polyphenols and diallyl disulphide, allicin
	Glycyrrhiza glabra	Offered protective effect against gentamicin induced toxicity (Sohn E J et. al.) [31].	Glycyrrhizin, Glyciyrrhizic acid, Glycosides, Steroids, Glucose, Sucrose, Resin, Starch and Essential oil.
	Pongamia pinnata	Demonstrated protective effect against cisplatin and gentamicin induced renal injury (Shirwaikar et. al.) [32].	Pongamol, Protien, Alkaloids, Tannins, Sugar, Resin and Fatty oil.
	Solanum nigrum	Exhibited significant hydroxyl radical scavenging potential, thus suggesting its probable mechanism of cytoprotection (Prasanth Kumar V et. al.) [33].	Alkaloids, Reducing sugars, Glycosides, saponins, Steroids, Leutein, Lycopene, Vitamin-c, Glucose, Fructose, Caffeicsolasodine, Tamatidenol, Solamargine, Solasomine, Trigogenine, Pottasium, Sulphur, Calcium and Phosphorous.
	Terminalia chebula	Reduced the serum concentrations of urea nitrogen, creatinine, methyl guanidine and guanidinosuccinic acid significantly (Yokozava et. al.) [34].	Palmitic stearic oleic linoleic,Astrigent,tannic acid.
	Rosa damascena and Cichorium intybus	Revealed nephroprotective activity against gentamicin (80 mg/kg) induced nephrotoxicity in albino rabbits. (Khaliq et.al) [35].	quercetin, kaempferol and cyanidin. Lycopene, rubixanthin, zeaxanthin, xanthophyll and taraxanthin -Inulin sesquiterpene lactones coumarins (chicoriin, esculetin, esculin, umbelliferone and scopoletin); glucofructosans.

nephrotoxicity of drugs like gentamicin, cisplatin, cyclosporine, Carbon tetrachloride, etc [6]. Further it was conceptualized that such native plants would be useful, at least as adjuvant in the treatment of different kind of degenerative disease of kidney [7] such type of observations also recorded.

Furthermore in some phytochemical studies it was observed that medicinal plants are also a source for a wide variety of natural antioxidants which are used for the treatment of diseases throughout the world [8]. Some of these properties are antimicrobial [9], anti-cancer [10], anti-diabetic [11], anti-atherosclerosis [12], immunomodulatory [13] and even reno-protection [14] or hepato-protective effects.

These reports are although of preliminary nature but showing great potential of Unani Medicine to deliver promising agents

that can be used to treat the kidney diseases or at least, preserve its function and slow its progression. Therefore, the study of Unani diuretics, tonics and nephroprotective drugs gain importance as one of the means of characterizing and identifying a better group of drugs that can be used as actual nephroprotective agent, a few of them have been investigated for nephroprotective, diuretic and other associated effects. These studies presented in tabulated form, have demonstrated great potential of Unani medicine to provide nephroprotective drugs (Table 1).

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