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An conscious review validation biodiversity, pharmacognostical, pharmacological, toxicological research studies and therapeutic potential of ASU herbal drugs - seed part of Baphali / Duku / Duqu (*Peucedanum grande* C.B. Clarke)

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Abstract

Biodiversity, Pharmacognostical, Pharmacological, Toxicological research studies of ASU herbal products remains a big challenging task. There needs to be more than the advance investigation research studies and screening parameters to validation, authenticate and differentiate adulterants in ASU medicinal plants. *Peucedanum grande* C.B. Clarke is one of the herbs used to treat various health wellness and therapeutic illness of public mankind. This study aims to evaluate the Biodiversity, Pharmacognostical, Pharmacological, Toxicological research studies of the seed part of plant of P G.

Methods: The Botanical identification, Pharmacognosy and Toxicological quality control research analysis of the seed part of plant of P G. powder were carried out using standard methods. The Quality, safety and toxicity effects of the tested drug samples were also investigated.

Results: The Botanical identification, Pharmacognosy, Toxicological QC. Properties of P G. have shown that all the parameters were within the permissible limits. The tested drug samples showed significant Quality, safety and toxicity studies against certain pathogens organisms and promising anti-pathogenic activity.

Conclusions: In the investigated review studies of Pharmacognosy, Toxicological DSR, QC. Research findings revealed that the revalidated test drug was free from adulterations. This investigated herb's research data confirmed to drug standardization and therapeutically may treat that the drug is safe for internal use and cures in Anti-lithiatic, Carminative, Demulcent, Diaphoretic, Anti-Inflammatory, Antidote, Stimulant, Expectorant, Deobstruent, Lithotriptic, Emmenagogue disorder.

Keywords: Duqu, *Peucedanum grande* C.B. Clarke, DSR, QC and QA, biodiversity, pharmacognosy and toxicological, pharmacological quality, safety and toxicity studies

Introduction

Ethno-botanical, biodiversity leads are invaluable for the discovery of novel active compounds from natural source, particularly from plants, since new diseases as well as drug resistant strains of known pathogens continue to emerge the search for novel compounds. Traditional knowledge of medicinal plants and indigenous use of plant material have provided the basis for many pharmaceuticals used today and there are still many potential pharmaceutical compounds yet to be discovered. (Murugeswaran *et al.*, 2017) ^[15] There is a risk however, of losing this precious resource and many indigenous culture as well as the medicinal plants themselves are present study was undertaken and provides data on ethno-pharmacological, biodiversity field studies and literature survey conducted in rural and suburban places of Southern region of India. Study area of Tamil Nadu, Karnataka, Kerala during 2005-2010 to contribute material for further investigations in the search of new drugs of plants origin (Murugeswaran *et al.*, 2017; Anonymous, 1994). ^[15, 35] The tribal population inhabit various geographical and climatic zones of the country and well knowledge of biodiversity of TAM plants. Living close to nature, the tribal's have acquired unique knowledge about the indigenous flora and fauna and their traditional therapeutics uses. Most of which are not known to the outside world Therefore, ethno-botanical, biodiversity studies assume great importance in enhancing the knowledge about the plants grown and used by native / tribal communities, the rich diversity assembled by them for their sustenance and different means adopted by them for its preservation and conservation.

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(Murugeswaran *et al.*, 2017; Patil *et al.*, a2012; b2012; Trade and Patil, 2005) ^[15, 19, 20, 30].

Plants which have many therapeutic properties are widely used by traditional people in different indigenous systems of medicine like Siddha, Ayurveda and Unani and also as processed product of pharma industry (Baig *et al.*, 2019; Srinivasan *et al.*, 2007) ^[13, 28]. According to WHO, as many as 80% world's population depend on traditional medicine for their primary healthcare needs. Tribal communities are solely dependent on plants for their medication. They have preserved the wealth of traditional knowledge as a part of their belief and customs. Medicines have been object of research in both systematics and advance areas of plant sciences. (Baig *et al.*, 2019; Patil, 2012) ^[13, 19, 20] Tribal communities use plants as a source of drug through trial-and-error method and it is being followed over hundreds of years, which proves that medicinal plants have been in focus as life saving drug right from beginning of human civilization (Baig *et al.*, 2019; Mahesh *et al.*, 2012) ^[13, 21] Baphali / Duku / Duqu (*Peucedanum grande* C.B. Clarke) is a succulent herb, belongs to the family Apiaceae earlier known as Umbellifereae. This is one of the largest plant families in the world that comprises of approximately 450 genera and 3700 species worldwide. (Asif *et al.*, 2019; Pimenov *et al.*, 1993) ^[14, 1]. The plant is commonly found in Europe, Asia, North East Africa, South West America and Iran. In India it is explored on the Western Ghats and the hills of Deccan plateau. It is an erect herb 3-4 ft in height; stem is fistular, leaves are pinnate or bipinnate, flowers are yellow and umbel shaped. Fruits (mericarps) are long, obovate or broadly elliptical, winged, reddish yellow lines in the middle, having strong lemon like scent and are extensively used in medicine. The fruits release light yellow essential oil having powerful essence similar to carrot oil. Ibn Sina reported that Duqu are the seeds of wild carrot (Asif *et al.*, 2019; Sina Iba, 1011) ^[14, 2]. The temperament of Duqu in Unani System of Medicine are assumed as Hot 3° and Dry 2°. (Asif *et al.*, 2019; Hkm M. *et al.*, 1011) ^[14, 3]. Hakeem Syed Saifuddin Ali in Unani advia emufarrada, explained the role of fruits in Unani Medicine and has been reported to possess important biological properties. (Asif *et al.*, 2019; Ali *et al.*, 2004; Anonymous, 1987) ^[14, 4, 5] It is also an important ingredient of several formulations *viz.*, Dawaul Kurkum, Majoon Yadullah and Amrosiya used as a diuretic as well as lithotriptic. (Asif *et al.*, 2019; Khwaja R, 2003; Kabeeruddin H, 1938) ^[14, 6, 7]. *Peucedanum grande* may be considered as a natural biosynthetic laboratory for distinct secondary metabolites like alkaloids, flavonoids, glycosides, saponins and volatile oils which contribute to its various biological properties (Baig *et al.*, 2019; Aslam *et al.*, 2012) ^[13]. Folklore claims for the plant is that it is most useful in kidney and gastrointestinal tract disorders. (Baig *et al.*, 2019) ^[13]. The fruits have different pharmacological activities and hence used by Unani Physicians as deobstruent, stimulant, gastric tonic, digestive, carminative, diuretic, antihelminthic, aphrodisiac, anti-inflammatory, expectorant, spermatogogue etc. (Asif *et al.*, 2019; Sina Iba, 1011; Ali HSS, 2004; Kabiruddin HM, 2007; Ghani N, 2010; Kabiruddin HM, 2010, Tariq HNA, 2010) ^[2, 5, 8-11]. Some of the important biological properties are ability to induce apoptosis, antibacterial, hepatoprotective, vasorelaxant, cyclooxygenase inhibitory and antitumor activities. (Asif *et al.*, 2019; Pae *et al.*, 2002) ^[14, 34] Methanolic extract of *P. grande* have been reported to express the nephroprotective activity against mercuric chloride induced acute renal failure and oxidative stress. (Asif *et al.*, 2019; Aslam *et al.*, b2012)

^[14, 23] So keeping this view in mind the current study has been conducted for the pharmacognostical appraisal, for the preparation of formulations and for documentation in the form of a monograph.

The quality assurance and quality control of ASU. Herbal crude drugs and formulated products are important in justifying their acceptability in modern system of medicine. Hence it is required to conduct the research on drugs standardization and product validation to provide effective, curable and safe drugs to the needy mass suffering from various ailments (Sagar *et al.*, c2024; 2023; a2020; b2020) ^[3, 9, 11, 12]. The quality assurance and quality control of herbal crude drugs and formulated products are important in justifying their acceptability in modern system of medicine. Hence it is required to conduct the research on drugs standardization and product validation to provide effective, curable and safe drugs to the needy mass suffering from various ailments (Sagar *et al.*, a, b, c, d, e, f, g2024; 2023; 2022; a, b2020) ^[1-7, 9, 10, 11, 12].

Bio-Active Phytochemical Constituents:

The active chemical constituents reported in Baphali are coumarins, 5-geranoxypsoralen, osthol, camphene, bergapten, imperatorin, isoimperatorin, hercalenin, geraniolorin, columbianadin, alloimperatorin, 5 methoxy-8 - HydroxyPsoralen, byakangelicin and essential oils. (Baig *et al.*, 2019; Gildmiester, 1997; Kirtikar and Basu, 1987; Desai *et al.*, 1973; Aslam *et al.*, 2012) ^[13, 22-24] Aslam *et al.* (2012) have investigated phytoconstituents in methanolic extract of fruits of *P. grande* and identified three coumarins and naphthanyl labdanoate diarabinoside characterized as 5-hydroxy-6-isopropenyl coumarin (1), 5, 6-furanocoumarin (2), 7-methoxy-5, 6 furanocoumarine (3) and labdanyl-3 α -ol-18-(3''-methoxy-2-naphthyl-oate)-3 α -L-arabinofuranosyl-(2'-1'')- α -L-arabinofuranoside (4). Identification of compounds was on the basis of spectral data analysis and chemical reactions. Isolated compound (4). *Peucedanum grande* may be considered as a natural biosynthetic laboratory for distinct secondary metabolites like alkaloids, flavonoids, glycosides, saponins and volatile oils which contribute to its various biological properties. (Baig *et al.*, 2019; Aslam *et al.*, 2012) ^[13, 22-24].

Biodiversity and Ethnobotanical uses

PG. is a succulent herb, belongs to the family Apiaceae earlier known as Umbellifereae. It is commonly found in Europe, Asia, North East Africa, South West America and Iran. In India it is found on the Western Ghats and the hills of Deccan plateau. It is an erect herb 3-4 ft in height; stem is fistular, leaves are pinnate or bipinnate, flowers are yellow compound umbels. In Occurrence Forests Areas and climatically biodiversity growing in rich form of P G. Presence of biodiversity of P.G in Southern region of India. Study area of Tamil Nadu, Karnataka, Kerala and Weston region Maharashtra of India, Ethnobotanical uses by Tribal's from Thane district, Ethnobotanical studies of edible plants from three different locations in Thane district *viz.* areas near Asangaon, forest areas in Jawahar taluk (Region of Palghar district) and forest near Thane city were carried out. Information was gathered from tribal women of different age groups (50 years and above, 30 to 35 years, 18 to 30 years. Collected data covered about 54 plant species which are edible and consumable. One of them is *P. grande* C.B. Clarke. It belongs to Apiaceae family and used as ½ to one ounce like that of fennel seeds as stimulant, carminative, diuretic in

flatulence and for GI disorders (properties (Baig *et al.*, 2019; Oak *et al.*, 2015) [13, 18]. A survey was carried out for the ethnobotanical information (details) obtained from the trial's of Nandurbar district (Maharashtra). It is mentioned that *P. grande* C.B. Clarke belongs to Apiaceae has vernacular names

like Bopari and plant parts used are roots for ailments of indigestion properties. (Baig *et al.*, 2019; Murugeswaran *et al.*, 2017; Patil *et al.*, 2012; b2012 and Patil and Tayde, 2005) [13, 15, 19, 20, 30].

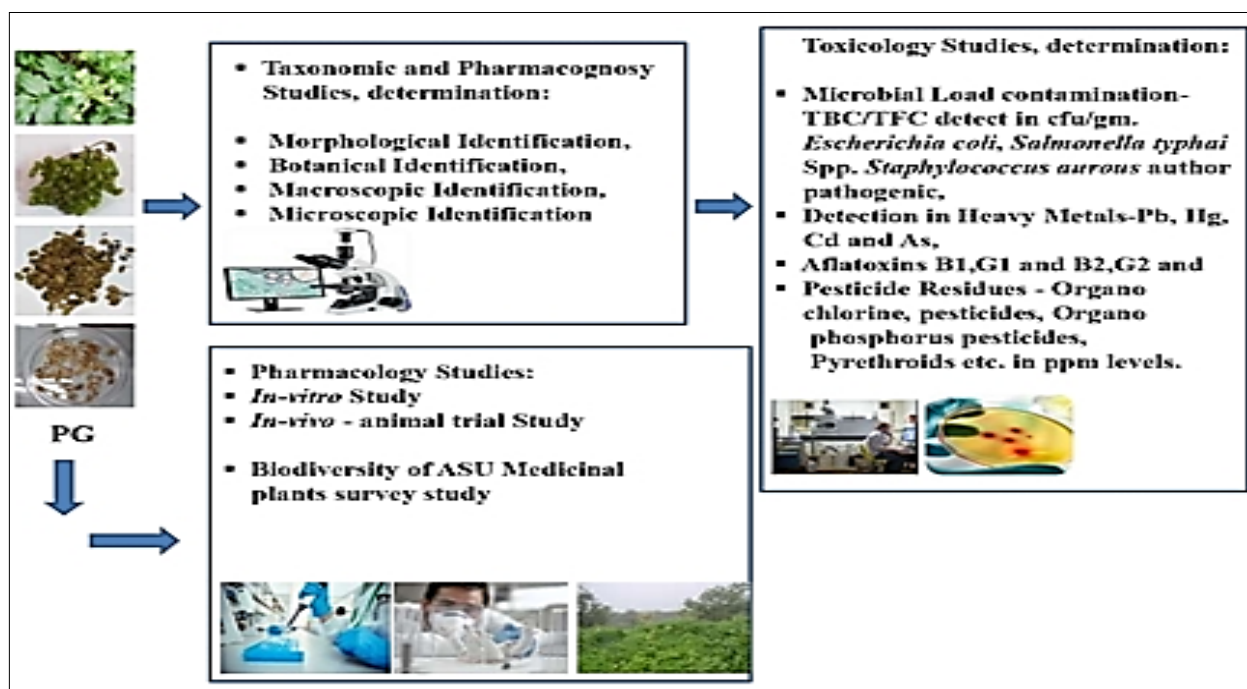


Fig 1: Graphical Illustration

Taxonomical classification: (Baig *et al.*, 2019; Asif *et al.*, 2019) [13]

Kingdom	Plantae	Order:	Apiales
Sub kingdom	Tracheobionta	Family:	Apiaceae
Super division	Spermatophyta	Genus:	<i>Peucedanum</i>
Division	Magnoliophyta	Species:	<i>grande</i> C.B Clarke.
Subclass	Rosidae		

Vernacular names: (Baig *et al.*, 2019; Asif *et al.*, 2019) [13, 14]

Persian	Tukhme gazar	English:	Wild carrot
Hindi	Duku	Queen Anne's lace	Birds Nest
Urdu	Duqu	Bombay:	Baphali
Arabic	Bazar Jazarul Buri	Gujarati:	Baphali
Sanskrit	Baspika, Ela	Synonyms:	Baphali
Tamil	Carrot, Kalung		

Important ASU Formulation prepare using as an ingredient: (Baig *et al.*, 2019; Asif *et al.*, 2019; Ghani *et al.*, 2010; Kabiruddin *et al.*, 2010; Tariq *et al.*, 2010; Kabirudin,

2007; Ali, 2004; Khawaja, 2003; Hkm MH, 2002; Kabirudin *et al.*, 1938; Sina, 1011; Anonymous, Tribal's Hiller's) [13, 14, 25-27, 31, 32, 39, 40].

Dawaul Kurkum, Majnoon Yadullah, Amrosiya used as diuretic and lithotriptic	Baig <i>et al.</i> , 2019 [13]; Khwaja <i>et al.</i> , 2003 [32]
Qurs-e-Laboob, Bazarjali, Ayarij Shabyar	Tariq, 2010 [27]; Ghani, 2010 [25]; Kabeeruddin, 2010 [26]
Antidote and Anti-poisonous fresh past of Arial part of Baphali / Duku / Duqu, PG.	Baig <i>et al.</i> , 2019 [13]; Anonymous, Tribal's Hiller's

Material and Methods: [1-7, 9, 10, 11, 12, 14, 37].

Taxonomical and Pharmacognostical Studies: The seeds of the plant *Peucedanum grande* C.B. Clarke were procured from the local market of Central NCR Region, New Delhi, India, Southern Region, Tamil Nadu State, India, Northern Region of Uttarakhand State, India and authenticated by Botany and Pharmacognosy Laboratory Section, Researcher Scientific Staff of Regional Research Institute of Unani Medicine, Royapuram, TN. State, Drug Standardization Research Institute, Ghaziabad, UP. and PCIM&H, Ghaziabad

UP. Hand section of the seeds with the help of potato pith was taken, stained and mounted following usual microscopical-techniques. (Asif *et al.*, 2019; Primenov *et al.*, 1993; Johansen DA, 1940) [14, 37] and representative diagrams were taken with the help of digital microscope for photo documentation (Motic). Standard Methods applied for Detection of Toxicology parameters WHO/ AYUSH Pharmacopeial permissible standard Limits in as Microbial Load contamination - TBC/TFC detect in cfu/gm. *Escherichia coli*, *Salmonella typhai* Spp. *Staphylococcus aureus* author

pathogenic, detection and in Heavy Metals-Pb, Hg, Cd and As, Aflatoxins B1, B2 and G1, G2 and Pesticide Residues - Organo chlorine, pesticides, Organo phosphorus pesticides, Pyrethroids etc. (Sagar *et al.*, a, b, c, d, e, f, g 2024; 2023; 2022; a, b 2020) [1-7, 9, 10-12].

Fresh herbaceous plant with flowers and fresh and dried fruits, dried seeds of *Peucedanum grande* and Graphical Illustration shown respectively in Figure 1, Figure-2 a, b and Figure-3, a, b, c.

Result and Discussion

Macroscopical study: Baphali / Duku / Duqu PG. are the seeds of wild carrot, resembling ajwain odour and taste is sour. Due to their small size fruits are called as seeds. The seed is obovate or broadly elliptical, long, narrow winged, reddish yellow colour and excessively used in the medicine preparation (Figure 4).

Microscopical study: The microscopic characters of PG generally resemble the structure of an umbelliferous fruit

(Seeds) and section showed the tubular epicarp followed by a fibrous mesocarp. The endosperm contains aleurone grains and oil droplets. Each mericarp has four vital on dorsal surfaces. The outer epidermis has prominent cuticle and the mesocarp contains lignified reticulate parenchyma. The endosperm having large flattened cells. The test a consists of parenchymatous cells containing fixed oils and aleurone grains (Figure 4).

Powder Microscopy Study: The diagnostic features of powder microscopy showed the presence of segments of epicarp with uniform thickening and cuticular striations; in surface view sclereids of the mesocarp appeared, composed of thick walled cells surface with rectangular in outline having large number of prominent pits. The figure showed the presence of reticulate parenchyma that are formed of thick wall lignified walls. The fragments of fibro-vascular tissues are made up of fibres and vessels showing annular thickening (Figure 4).



Fig 2: a and b. *Peucedanum grande* fresh herbaceous plant with flowers



Fig 3: a, b and c. *Peucedanum grande* herbaceous plant with fresh and dried fruits, dried seeds.

Powder Microscopy Study

The segments of epicarp with uniform thickening and cuticular striations; in surface view sclereids of the mesocarp appeared, composed of thick-walled cells surface with rectangular in outline having large number of prominent pits, The reticulate parenchyma are formed of thick wall lignified walls. The fragments of fibro-vascular tissues are made up of fibres and vessels showing annular thickening.

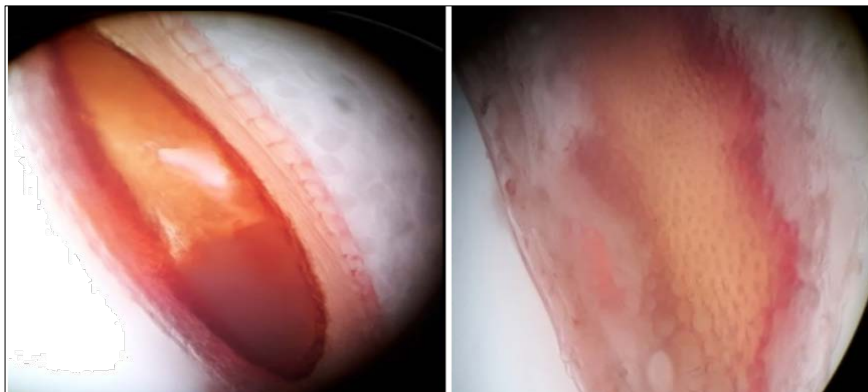
The investigated herbaceous medicinal plant seed part of PG. was shown and exposed geographically and climatically very rich biodiversity in worldwide occurred and found in Europe, Asia, North East Africa, South West America and Iran country. In India it is found on the Western Ghats and the hills of Deccan plateau and Weston region of India Maharashtra, Southern States in Tamil Nadu, Karnataka, Kerala climatically and biodiversity presence appeared of herbaceous medicinal plant PG. having investigated bioactive

phytochemical constituents with immense pharmacological action properties shown in Table-1 respectively, and Toxicologically investigated seed part of PG medicinal plant shown, complies QC / QA Toxicology Parameters with in prescribed WHO/ AYUSH Pharmacopeial permissible standard Limits in as Microbial Load contamination - TBC/TFC detect in cfu/gm. *Escherichia coli*, *Salmonella typhai* Spp. *Staphylococcus aureus* author pathogenic, detection and in Heavy Metals-Pb, Hg, Cd and As, Aflatoxins B1.B2 and G1, G2 and Pesticide Residues - Organo chlorine, pesticides, Organo phosphorus pesticides, Pyrethroids etc., potentially toxic elements detections in ppb. Levels. Resulted the all investigated Toxicology parameters found that study medicinal plant shown not any hazardous or highly toxic contamination the investigated drug had feet for internal used. Shown in investigated Table-2, 3, 4 and 5 respectively.



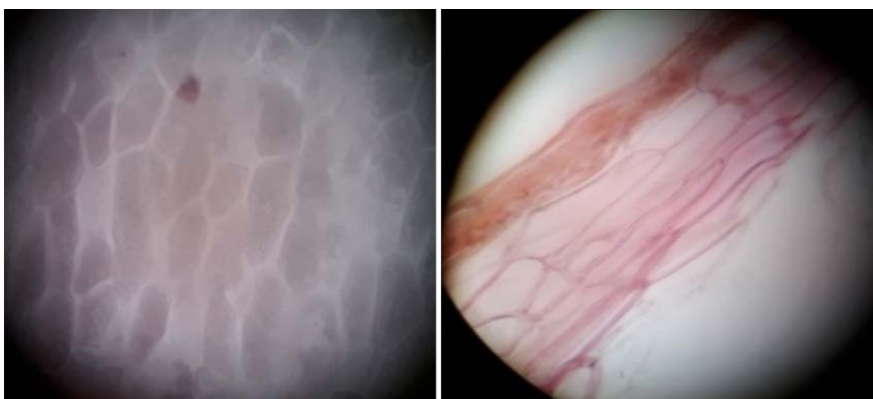
Seeds in petridish

Enlarge view of the seed wings with four vittae

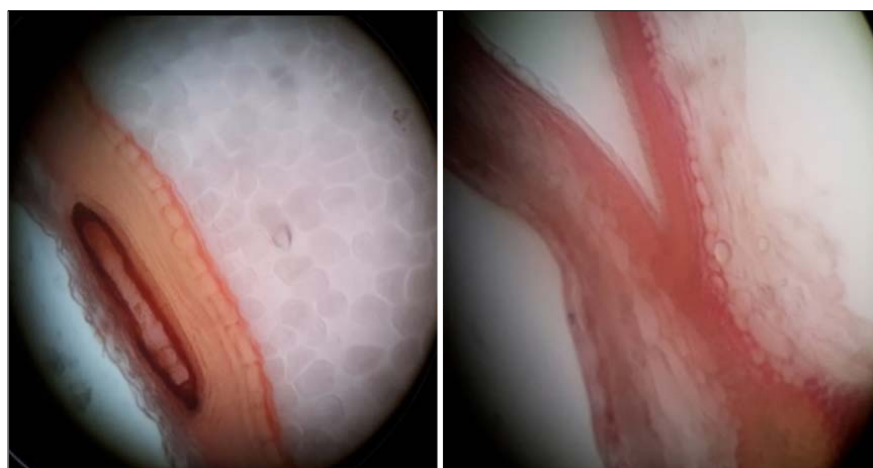


Vittae on dorsal surface

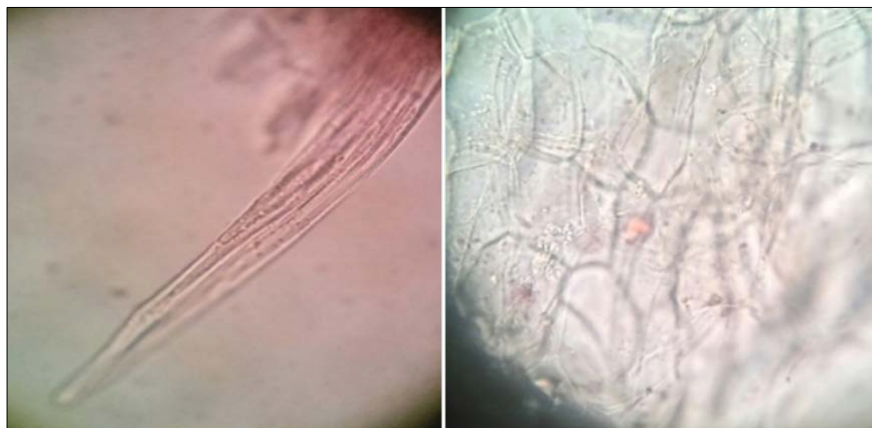
Epidermis has prominent cuticle



Endosperm with aleurone grains and oil globules Cuticle with thin layer parenchyma cells

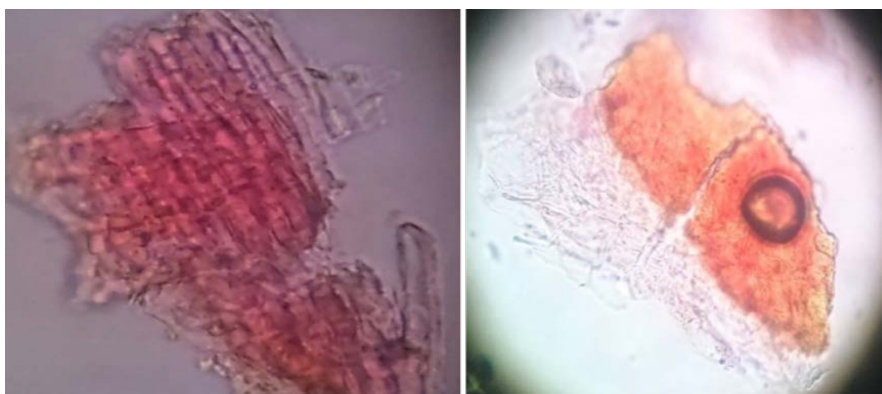


Fibrous mesocarp and thick walled elongated endocarp Lignified reticulate parenchyma



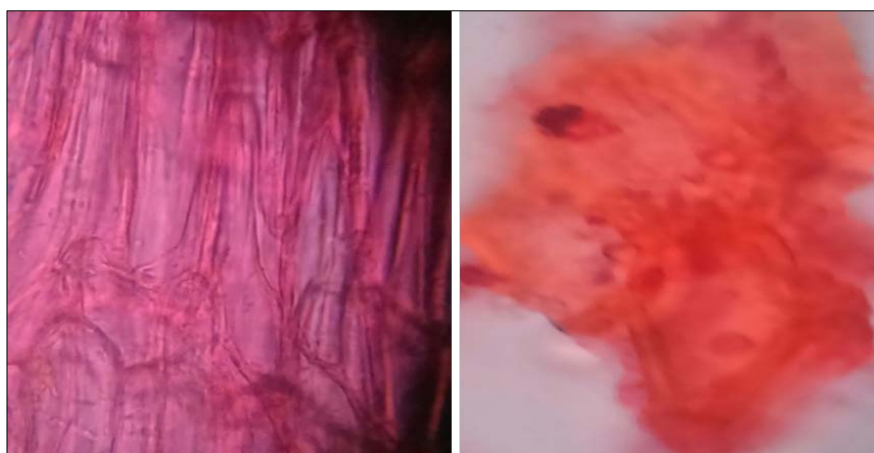
Fiber cells with narrow Lumen

Endospermic cells with oil globules



Sclerenchyma cells

Cuticular stratifications, epidermal cell



Thick walled sclerenchymatous cells with sclerids

Endospermic cells with starch grains



Thick walled sclerenchymatous cells with sclerids Endospermic cells with starch grains Epiracarp and mesocarp

Fig 3: Powder microscopy study of *Peucedanum grande* seed

Table 1: Pharmacological properties

Reported and investigated in <i>in vivo</i> study Antilithiatic effect of <i>Peucedanum grande</i> C. B. Clarke in chemically induced urolithiasis in rats	Kumar <i>et al.</i> , 2016 ^[17]
Pharmacological reported investigation as deobstruent, stimulant, gastric tonic, digestive, carminative, diuretic, antihelminthic, aphrodisiac, anti-inflammatory, expectorant, spermatogogue etc.	Asif <i>et al.</i> , 2019 ^[14] ; Sina Iba, 1011 ^[40] ; Ali HSS, 2004 ^[31] ; Kabiruddin HM, 2007 ^[29] ; Ghani N, 2010 ^[25] ; Kabiruddin HM, 2010 ^[26] ; Tariq HNA, 2010 ^[27]
Reported and investigated in <i>in vivo</i> study Nephroprotective action against Mercuric chloride induced renal toxicity:	Baig <i>et al.</i> , 2019 ^[13] ; Aslam <i>et al.</i> , 2012 ^[13]
Reported and investigated in <i>in vivo</i> study Nephroprotective action against Cadmium chloride induced renal toxicity	Baig <i>et al.</i> , 2019 ^[13] ; Aslam <i>et al.</i> , 2012 ^[13]
Reported and investigated in <i>in vivo</i> study Nephroprotective effect of methanolic extract against K2Cr2O7	Baig <i>et al.</i> , 2019 ^[13]
Reported and investigated in <i>In-vitro</i> study Diuretic and emmenagogue activity	Baig <i>et al.</i> , 2019 ^[13] ; Asif <i>et al.</i> , 2019 ^[14]
Reported and investigated in <i>in vivo</i> study Antilithiatic effects of <i>P. grande</i> in clinically induced urolithiasis in rats	Baig <i>et al.</i> , 2019 ^[13] ; Kumar <i>et al.</i> 2016 ^[17]
Reported and investigated in <i>In-vivo</i> study Ameliorative effects of <i>P. grande</i> on lartrozole induced polycystic ovary syndrome in Wistar rats	Baig <i>et al.</i> , 2019 ^[13]
Pharmacological reported investigation as biological properties are ability to induce apoptosis, antibacterial, hepatoprotective, vasorelaxant, cyclooxygenase inhibitory and antitumor activities	Asif <i>et al.</i> , 2019 ^[14] ; Pae <i>et al.</i> , 2002 ^[34]
Reported and investigated in <i>In-vivo</i> and <i>In-vitro</i> studies Anti-lithiatic, Carminative, Demulcent, Diaphoretic, Anti-Inflammatory, Stimulant, Expectoant, Deobstruent, Lithotriptic, Emmenagogue.	Asif <i>et al.</i> , 2019 ^[14] ; Sina Iba, 1011 ^[40] ; Ali HSS, 2004 ^[31]
It is mentioned that duqu possess antidote feature. Hence a paste of honey and duqu is applied over the bite of poisonous animals.	Baig <i>et al.</i> , 2019 ^[13]

Toxicological Study: (Sagar *et al.*, a, b, c, d, e, f, g 2024; 2023; 2022; a, b2020; Srinivasan *et al.*, 2007) ^[1-7, 9, 10, 11, 12, 28].

Table 2: Analysis of Microbial load

S. No.	Parameter Analyzed	Results	WHO Limit
1	Total Bacterial Count	580 cfu/gm	10 ² cfu/gm
2	Total Fungal Count	630 cfu/gm	10 ³ cfu/gm
3	<i>Escherichia coli</i>	Absent	Absent
4	<i>Salmonella typhai Spp.</i>	Absent	Absent
5	<i>Staphylococcus aureus</i>	Absent	Absent

Table 3: Estimation of heavy metals

S. No.	Parameter Analyzed	Results	WHO Limit
1	Lead	3.02ppm	10ppm
2	Cadmium	0.04ppb	0.3ppm
3	Mercury	Not detected	1.0ppm
4	Arsenic	0.05 ppm	3.0ppm

Table 4: Estimation of aflatoxins

S. No.	Parameter Analyzed	Results	WHO Limit
1	Aflatoxins, B1	Not detected	0.5ppm
2	Aflatoxins, B2	Not detected	0.1ppm
3	Aflatoxine, G1	Not detected	0.5ppm
4	Aflatoxine, G2	Not detected	0.1ppm

Table 5: Estimation of pesticide residues

S. No.	Parameter Analyzed	Results	WHO Limit (mg/kg)
1	DDT (all isomers, sum of ρ , ρ' -DDT, α , ρ'' DDT, ρ , ρ' -DDE and ρ , ρ' -TDE (DDD expressed as DDT)	Not detected	1.0
2	HCH (sum of all isomers)	Not detected	0.3
3	Endosulphan (all isomers)	Not detected	3.0
4	Azinphos-methyl	Not detected	1.0
5	Alachlor	Not detected	0.02
6	Aldrin (Aldrin and dieldrin combined expressed as dieldrin)	Not detected	0.05
7	Chlordane (cis& tans)	Not detected	0.05
8	Chlorfenvinphos	Not detected	0.5
9	Heptachlor (sum of heptachlor and heptachlor epoxide expressed as heptachlor)	Not detected	0.05
10	Endrin	Not detected	0.05
11	Ethion	Not detected	2.0
12	Chlorpyrifos	Not detected	0.2
13	Chlorpyrifos-methyl	Not detected	0.1
14	Parathion methyl	Not detected	0.2
15	Malathion	Not detected	1.0
16	Parathion	Not detected	0.5
17	Diazinon	Not detected	0.5
18	Dichlorvos	Not detected	1.0
19	Methidathion	Not detected	0.2
20	Phosalone	Not detected	0.1
21	Fenvalerate	Not detected	1.5
22	Cypermethrin (including other mixtures of constituent isomers sum of isomers)	Not detected	1.0
23	Fenitrothion	Not detected	0.5
24	Deltamethrin	Not detected	0.5
25	Permethrin (sum of isomers)	Not detected	1.0
26	Pirimiphos methyl	Not detected	4, 0

Conclusions

The revalidated, tested drug was found to be of very good quality and devoid of any impurities or free from any hazardous, toxic contamination and adulterations according to the drug DSRR, QC / QA revealed results data's basis. The ranges of all the Pharmacognosy and Toxicology constants used for the quality analysis of the entire PG. seeds plant part are normal. Numerous secondary metabolites have been detected and reconfirmed in the Pharmacognosy and Pharmacology investigation of Analysis applied advance methods and sophisticated instruments. The Toxicology investigation potential research data shows that Thus the Seeds of the plant shows safe and feet for internal use as a drug. The Seeds of herbaceous medicinal plant PG. was climatically and biodiversity more rich form in wild occurrence. As a result of its potent quality, safety and toxicity studies of properties, PG. may be treat and therapeutically used as an Anti-lithiatic, Carminative, Demulcent, Diaphoretic, Anti-Inflammatory, Anti-dote for poisonous reptile animal bite, Stimulant, Expectorant, Deobstruent, Lithotriptic, Emmenagogue disorder. PG drug can be incorporated of Pharmacopeial standard monograph. However, further advance research studies on the isolation and characterisation, Structural detection upon GC-MS, LC-MS, XRD, SEM-EDX of these investigated drug scan still be carried out.

Limitations and Future remarks of the study

The present study's Pharmacognosy and Toxicology profiles show the reconfirmation and presence of DSR, QC, QA of Seed part of PG. plant. In the future, investigated data may be used to Drug Standardization Research, Pharmacopeial monographs profiling and confirm these investigated resulted data.

Ethical approval

As the work is purely an in-vitro study, ethical clearance is not required.

Author contributions:

Dr Pawan Kumar Sagar (Chemistry), Work designed, carried out Instrumental, Chemistry part and Manuscript written and supervised. Dr. MW Ahmed (Unani), Unani expert, and revised manuscript review. Dr. S Mageswari, carried out Pharmacognosy and taxonomy work designed. Dr. P Meera Devi Sri and S. Kashyap (Chemistry), Toxicology, Microbiological and Analytical data analysis.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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