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Revand Chini (Chinese rhubarb): A review on historical and unani classical prospect

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Abstract

Revand Chini (Chinese Rhubarb) in Unani medical system is in used since antiquity. Many Unani scholars had mentioned this drug in his treatises. The father of Chinese agriculture and medicine Shen-Nung, Unani scholar Desqooridous (Dioscorides) also mentioned under the name of Huang-Hang and Rha or Rheon respectively in his books. It comes to Bukhara during 114 BC during trading form Northern China. Ibn-e-Sina also mentioned this under the name of Ribas (Riwas) and in Ayurveda firstly it is mentioned under the name of Amlavetes by Revan' in Arqe-Prakash. In this paper the historical, botanical description of the drug is mention along with the action and uses mentioned in unani classical literature.

Keywords: Revand chini, unani classical, Chinese agriculture

Introduction

Rhubarb is the dried rhizomes of the species of *Rheum* (Polygonaceae). The Chinese appear to have been acquainted with the properties of Rhubarb so called "Pen-king" from a period long anterior to the Christian era. It was attributed to the Emperor "Shen-nung" the father of Chinese agriculture and medicine, who reigned about 2700 B.C. The drug is named there "Huang-Hang" (means yellow, excellent) and "Ta-huang" (means the great yellow). The later name was retained for 2000 years by the traders who collected it in Tibet and the province of Kansu.

As regards Western Asia and Europe, we find a root called 'Rha' or 'Rheon' mentioned by "Dioscorides" as brought from beyond the Bosphorus. "Pliny" describes a root termed 'Rhacoma' which, when pounded, yielded a colour like that of wine, but inclining to saffron, and was brought from beyond "Pontus". The drug thus described is usually regarded as Rhubarb, or atleast as the root of some species of *Rheum*. "Lassen" has shown that trading caravanas from Shensi in Northern China arrived at Bokhara as early as the year 114 BC ^[1]. "Riwas" was known to the ancient Persians and the same name is still applied to a species of *Rheum* is called *R. ribes*.

Ibn-e-Sina (978-1023 AD) notices both the plant "Ribas" (Riwas, Persian) and the drug "Rewand" (Rawand, Persian). The first an acid plant, and the second evidently Chinese Rhubarb. "Mesue" (Masih), early in the 11th century, distinguishes between Chinese and Khorasan Rhubarb ^[1-3]. "Haji Zein-al-Attar" (1368 Hijri) considered "Rewand" to be the same as "Ribas". According to "Ibn-e-Jazla", there are two kinds of Rhubarb, China and Khorasan Rhubarb, and that the later is known as 'Rewand-aldawaab', and is used in veterinary practice, whilst the Chinese is reserved for human beings. The later is the best kind, and when powdered, is of a saffron colour. The fractured surface has the grain of a cow's hump and is friable; It is called 'Rewand-i-lahmi' (meaty Rhubarb), and should be in large pieces like a horse's hoof and not worm eaten ^[1].

While in view of 'Dymock', there are three kinds of Rhubarb in his experience as Chinese, Khorasan and Indian Rhubarb. It is also reported with the reference of Noor Karim, the author of 'Makhzan-al-Advia' that the Rhubarb is called Riwas, Riway and Chukri in Persian language. Rhubarb is an herbaceous plant, a cubit in height, from the centre spring one or two flattened stems, two fingers by one finger in thickness, having a pubescent bark, the lower portion of which is purplish and the upper green, like the stem of a lettuce. Internally the stem is white, soft and juicy; it has a sour and some what astringent taste. The top of the stem is branched, and between the branches are green rough bracts. The flowers are red, and have a slightly acidic and sweetish taste. The plant grows in the cold snowy mountains; the best is the Persian, white, delicate, succulent and subacid, with a stout tall stalk.

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The root of this plant is Rhubarb (Rewand), and it is called "Ribas-i-Mu' amiri", because one Mu'ammir of Nishapur was the first to discover this ^[1]. 'Abu Rehan Baruni' has also considered by the name of Bekh-e-ribas. The plant of Rhubarb was introduced to Europe in 1867, and limited cultivation led to further names such as English, German, Bucharest, Dutch and French Rhubarb ^[4].

The plant of Rhubarb was known in old Ayurveda with the name 'Amlavetes', but they did not know about its rhizome and root and its action. Firstly Rhubarb was described in Ayurveda by 'Revan' in 'Arqe-Prakash', who actually has taken it from Unani literature ^[5]. The Garden Rhubarb (*R. officinalis*) was introduced to Western Europe in 1608. It is grown for its edible leaf stalks. The flowering branches of *R. ribes* are eaten and the root is used in colouring leather. *R. tataricum* is found in Hari-rud valley, known as 'Rewash-i-dewana' or Fools Rhubarb ^[4].

The Rhubarb found in the Indian market is a very inferior kind, in long stick pieces, shipped to Calcutta and Bombay from the Eastern ports. It comes from China and has hardly any aroma, a bitter taste, and but slightly purgative action. When fresh, it is covered with a yellow dust, like ordinary Rhubarb. None of the commercial Rhubarb known as East India Rhubarb is imported into Bombay unless specially ordered from China, Bombay druggists, native and European usually obtain their Rhubarb from London. On accounts of its low price, the former always import English Rhubarb. In the Pharmacopoeia of India, the market sample of Rhubarb in India is attributed to *R. emodi*, *R. moorcroftianum* and *R. webbianum*. All Himalayan species are said to be of two kinds, large and small. The first kind so exactly corresponds with the stick Rhubarb imported from China, which we are of opinion that it was not Himalayan Rhubarb, whilst the second probably was of Indian origin. Trials made with Himalayan Rhubarb by 'Prof. Royle' and 'Mr. Twining' are reported to have been satisfactory, and 'Hugh Claghoru', who furnishes some interesting remarks on Himalayan Rhubarb, states that it is only an inferior variety that reaches the plains of Hindustan. He tested the action of the fresh root, and found it to resemble the action of Russian Rhubarb ^[1].

Methodology

Libraries of Central Council for Research in Unani Medicine (CCRUM), Headquarters, New Delhi. School of Unani Medicine and Medical Research, Hakim Mohd Said Central Library, Jamia Hamdard, New Delhi, Seminar Department of Ilmul Advia, AMU Aligarh were searched for ethnobotanical and Unani classical texts.

Nomenclature of Revand Chini

Ravind described by Greek's physicians as named 'Rha'. There are different statements about the nomenclature of Revand Chini.

1. 'Rha' was a famous river in Eastern Russia about 2200 miles long, which is called now "Volga" where it grows abundantly in adjoining area of river. So on the bases of name of river, old physicians are called to it named 'Rha' or 'Rheon' ^[6].
2. Rhubarb word is similar to Baberum, which means Fibre Barberi. According to writer of 'Pus-i-ski Nama', Barberi people of Asia imported it, so it called Rha-bar-berum which changed into English as Rhubarb. The meaning of Persian name 'Ravind' is same ^[7-9].

3. According to some researchers, Rhubarb is exported to Bukhara from China and then it reaches to Europe through Behr-e-Aswad, where it is called Rha-ponticum, because the ponticum means is Behr-e-aswad. And which Rhubarb exported through Way River Sindh, that is called 'Rha-barberum' and Rhubarb is changed form of 'Rha-barberum' ^[8-10]. Rhubarb describes to 'Rha' into 'Ra' and 'Rheon' into 'Raeon' in 'Makhzan' and 'Moheet' ^[9]. Old Irani physician described to it with the name of Rewas and Bekh-e-Revaj ^[7, 8]. Botanical name of the Indian Rhubarb is *Rheum emodi* or *R. webbianum*. Emodi refers to the emodin content; webbianum to the Indian taxonomist ^[6].

Botanical sources of Indian rhubarb

The rhizomes of Rhubarb in India are got from *R. emodi*, *R. webbianum*, *R. moorcroftianum* and *R. spiciforme*. The pieces of rhizomes of these above plants are sold in mixed form in Indian market as Revand chini.

R. palmatum is the main source for Rhubarb in China, and it is used most commonly as medicine there. It is also called Chinghai Rhubarb. In Sikkim, Rhubarb is got from *R. palmatum*, *R. nobile* and *R. undulatum* ^[11, 12].

Cultivation

It has been suggested that cultivation of this herb may be tried in Kashmir and Himachal Pradesh at an altitude of about 2000 meter. The herb is drought resistant and can be propagated either by seed or by dividing the crown (rhizome) into a number of portions each bearing a bud. The latter method is being preferred. The plant requires deep rich soil mixed with well rotten manure. The cuttings are planted in early spring at a spacing of 1.2 to 1.5 metre with the crown, 10 cm. beneath the surface ^[10, 11].

Garden Rhubarb (1608) first cultivated at padue botanic garden by Prosper Alpinus and widely grown in eighteen century⁴. It is cultivated in Kangra and Kullu's hills, Kumayun, Nepal and Sikkim. In Sikkim and Assam, its leaves are consumed as a vegetable ^[11, 13].

Collection

The drug is obtained from both wild and cultivated plants. The rhizomes and roots are harvested in autumn. They are dug up late in September from 6 - 10 years old plants just before the flowering season, and washed, the crown and small branches removed, and after removal of most of the bark, are either cut into pieces or segments. The big rhizomes are cut longitudinally into small pieces and known as flats Rhubarb. Small rhizomes are kept as such or cut into transverse slices and are known as round. These slices are dried by boring holes and passing thread into them and hanging between shades of trees. Where the climate is not favourable Rhubarb is dried on heated stones which are previously heated by wood fire. Drug dried in this way is called high dried and as it is dried more, is usually darker in colour and acquires an empyreumatic odour and is considered inferior ^[11, 14-19]. It is recorded that 11000 kg of rhizomes and roots are annually collected from Kullu and Kangra ^[20].

Types and Species of Revand

The classical Unani literature survey revealed that a number of species of Revand and their varieties were known to

Unani physicians. They classified the Revand, on the basis of their colours, origin and morphological features of the plant. Some are reported in the literature, listed below [7-9, 21];

1. Revand Chini
2. Revand Turki
3. Revand Khurasanee (Revand Dawaab)
4. Revand Shammi (Revand Jabli)
5. Revand Hindi
6. Revand Rusi
7. Revand Franceece
8. Revand Japanee
9. Revand Farsi
10. Revand Junji (*Black Revand*)
11. Ribas-e-Pahan (*R. palmatum*)
12. Ribas-e-Tibbi (*R. officinale*)
13. Ribas-e-Barbari (*R. rhaponticum*)
14. Ribas-e-Sulab (*R. compactum*)
15. Ribas-e-Mawaaaj (*R. undulatum*)

According to Unani physicians, the term Revand is applied only the following ones [7, 9, 21]:

- a) Revand Chini
- b) Revand Junji
- c) Revand Turki or Farsi
- d) Revand Shammi

Ibn-e-Baitar (1197-1248) mentioned four types of Revand e.g. Revand Chini, Revand Turki, Revand Junji and Revand Shammi. In which Revand Shammi is not imported from China and has unlike action of rest of three [9]. According to Minhajud-dukan's author that Revand Turki was considered as New Revand and *Rhubarb* is called as Old Revand [22]. Three kinds of Revand were discussed in Persian works on *Materia Medica* [9-10, 23].

1. Cheene
2. Khurasanee
3. Hindi

Among these *Rhubarb* was considered best one, and Indian *Rhubarb* stands after this [9]. Revand Khurasanee (Revand dawaab) is used as veterinary medicine. Presently three types of *Rhubarb* is available which are as under:

1. **Chinese *Rhubarb*:** The rhizome of either *R. palmatum* or *R. officinale* are considered as Chinese *Rhubarb*. Important commercial varieties are Shensi, Canton and high dried. The shensi is got from *R. palmatum*. It is esteemed as the best type which is some times marketed under the name as Chinghai.
2. **Indian / Himalayan *Rhubarb*:** It consists of dried rhizome of (*R. emodi*, or *R. webbianum*, or *R. moorcroftianum* or *R. spiciforme*).
3. **Rhapontic *Rhubarb*:** The rhizomes of *R. rhaponticum* are considered as Rhapontic *Rhubarb*. It causes gripe and is not official in the *Pharmacopoeias* [11]. It contains rhaponticin, a stilbene derivative, having estrogenic action [14].

The genus *rheum* comprises about 50 species [17]. In which some are used in medicinally, some for culinary purposes, few others are grown as ornament and some are grown as vegetable [11].

Vernacular names

Rhubarb is known in various regions and languages as follows

1. Afghanistan : Chukri, Rawash
2. Arabic : Rawind, Revande hindi, Rebas, Rewand
3. Bengal : Rheu chini, Bangala revanchini, Render chini
4. Bhutan : Thuza
5. Canarese : Reval chini, Natreval chini, Natreva chini
6. Chinese : Huang-hang, Da-huang
7. Deccan : Nat Kirevan chini
8. English : *Rhubarb*, Himalayan *Rhubarb*, Indian *Rhubarb*
9. French : *Rhubarbe*, deperse
10. Garhwal : Archu, Dolu
11. German : Rhabarber
12. Greek : Reon
13. Gujrat : Gamni revan chini, Ladaki revanda chini
14. Himachal P. : Ladu, Chuchi
15. Hindi : Revand chini, Dolu, Hindi Revand chini, Rewan chini, Rewand Khatai - Khatan
16. Kannar : Nat-Reva-chinni, Reval chini
17. Kashmir : Chutial, Pumb chalen
18. Kumaun : Archu, Dolu
19. Ladakh : Lachu
20. Latin : *Rheum emodi* wall. Rhei radix
21. Maharashtra : Ladaki revanda chini
22. Marathi : Mulka-cha-reval chinni, Revachini, Aarcha
23. Nepal : Padam chal
24. Persian : Tursak, Ravind, Rebas, Revand, Bekh-e-jigri Bekh-e-rebas
25. Punjab : Chutial, Chuki, Khabium, Khandaul, Lachu, Pambash, Atsu, Ribas (Stalks), Rewand chini (Roots), Revand chini, Arts, Artso, Chotial, Chuchi, chukri
26. Sanskrit : Gandhini, Pitamulika, Revat chini Pita, Amla vetasa, Rasavat chini
27. Spiti : Lachu
28. Tamil : Nattu-ireval chinni, Variyattu, Nattu-manjal-china Kizha angu, Natti reval chinni, Nattu manjat chinna Kkilangu
29. Telgu : Nattu pampu china gadda, Nattu reval chinni, Nattu pasupu- chinni gadda, Nattu ireval chinni
30. Turkish : Bekh-e-Ashqoon
31. Unani : Rewan chini
32. Urdu : Rewand chini

Description of plant and drug: The plant of *Rhubarb* is a perennial stout herb; belong to a large genus '*Rheum*' [11, 24]. The height of herb is about 1.5 - 3.0 meter [11, 13, 25]. It has woody large roots, large leaves and branched leafy stem [26]. Flowering occurs in July - August, and fruiting in September - October. The rhizome (Drug) is collected in October - November [27].

Leaves: The leaves are soft, very large often 60 cm in diameter, orbicular or broadly ovate, obtuse, base cordate, 5-7 nerved, papillose beneath subscaberulous [11, 25]. The leaves are radical with long petioled about 30-45 cm long [13]. The leaves are large toothed or lobed or palmately, stipules scarious [24, 26]. Leaves are in basal clumps [24].

Stem: The stem of *Rhubarb* is very stout; branched and panicle leafy [26-27]. There is streaked green and brown colour on stem [25].

Flower: Flowers are small about 3.2 mm diameter, in tall, borne in axillary panicles. Flowers are dark purple or pale

red colour. Flowering occurs in July-August [11, 13, 25]. Flowers clustered in penicled racemes and usually bisexual. Sepals are 5 in number. Stamens are 6 to 9 in number.

Ovary: 2-4 angled, styles 2-4, stigmas dilated capitate or horse shoe shaped. Nut: 2-4 winged, very much larger than the usually unchanged sepals [26].

Fruit and Seed: Fruits are ovoid - oblong, 13 mm long, purple in colour, base cordate, apex notched, wings narrower than the disk [26]. On riping seeds are flat and grey in colour [27].

Root and Rhizome: Root of Indian Rhubarb is darker, inferior in arome, coarser and untrimmed, is not decorticated [28]. Roots are thick woody²⁴ and very stout [11, 13, 26].

Rhizome - Naturally fresh rhizome is 6 to 12 inch long pungent. The freshly fractured surface is dull orange to yellowish brown. The taste is bitter astringent [18, 27]. The quality of rhizome improves with the higher altitude [18].

Macroscopic: Rhubarb rhizome occurs in pieces which are described as 'flats' and 'rounds'. The flats are formed from large rhizomes which have been divided longitudinally and are plano-convex, tapering slightly towards each end and are about 7 to 10 cm long and 3 to 6 cm thick at the middle point. 'Rounds' are formed from rather smaller rhizomes, which are not divided longitudinally and consequently are cylindrical, barrel-shaped or conical, being about 8 to 10 cm long and 4 cm thick. The outer surface is commonly dusted over with powdered rhubarb in the form of a fine brownish yellow powder [1], to give them a good appearance. After removing the powder, the surface shows flattish longitudinal areas, resulting from the use of a knife for cutting away the bark, and may also show marks produced by filling or scraping, which is done after drying so as to remove discoloured patches. Dark areas may still be found here and there [16].

The pieces of rhizomes are much shrunken, light in weight and easily cut, some times with adherent bark [17]. Many pieces are pierced with a hole. Pieces are almost odourless or some what fragrant with bitter astringent taste [11, 14, 18]. Fractures are irregular and granular [15]. The Drug, when chewed, it is very gritty between the teeth, a character due to the calcium oxalate, which occurs in considerable quantity in large cluster crystals.

Microscopic: The transverse section show just within the outer margin, a fairly continuous cambium line with portions of phloem external to it, excepting where this has been cut away during the preparation of the drug. Within the cambium is a ring, about 5 mm wide of radiate secondary xylem with reddish-orange medullary rays; the remainder of the surface is occupied by the large pith. In the periphery of the pith, immediately within the secondary xylem, is an almost continuous ring of star-spots and scattered throughout the remainder of the pith are star-spots and irregular markings composed of more or less parallel straight or undulating reddish orange lines embedded in a starchy, parenchymatous matrix.

The abundant parenchyma, present in all parts, contains starch grains, which are either simple or two to five compound, individual grains being 4 to 18 μ in size; the

compound grains may reach a diameter of 30 μ . Single gains are rounded, components of compound grains are often muller-shaped and the hilum frequently has the form of a radiate split. Many cells of the parenchyma contain cluster crystals of calcium oxalate, having a diameter of 20 to 200 μ , including a considerable number over 100 μ ; they are so large that many of them are broken into fragments during the process of powdering the drug. The cells of the modullary rays, both in the normal radiate xylem and phloem and in the star-spots, contain yellow masses, which are insoluble in alcohol, but soluble in water, and are coloured reddish-pink by solution of ammonia and deep blood-red by caustic alkali. The xylem vessels are mostly reticulate and are remarkable because their walls are cellulosic and give no reactions for lignin. The star-spots have a small amount of collapsed phloem at the centre; this is surrounded by phloem developed from the cambium, which arises around the original strand of phloem; externally the cambium forms xylem with large vessels; the radiating orange arms of the star are the medullary rays. The older star-spots frequently show mucilage cavities in the phloem just within the cambiform tissue [16]. Cortex cells has starch, grane, tannins, calcium oxalate, yellow colour substance which is 90% insoluble in alcohol but soluble in water [27-29]. The star-spots arise as a result of the development in the pith of supernumerary concentric bundles having phloem towards the centre and xylem externally. In the periphery of the pith are a number of vertical strands of phloem and at the nodes there are numerous similar horizontal strands forming a kind of network diaphragm across each node. All these strands become surrounded by cambia which develop phloem on the inside and xylem outside with radiating slightly curved medullary ray; when cut across transversely a star-spot results. One finds, therefore in a transverse section of a rhizome a fairly continuous ring of star spot just with in the inner margin of the secondary xylem, and distributed through the pith, are similar bundles cut longitudinally and in oblique directions [16].

There is a controversy in Unani literature, quoted by some Unani Tabeeps that Rhubarb is a root of Ribas [7, 22, 30]. But mostly Unani Tabeeps described Rhubarb and Ribas separately in their text books [9, 31]. Rhubarb is a root of herb. The plant is 5-6 fit in height. The root is curved and round. The colour is yellowish brown. There is a yellow brown powder on the surface of root. Surface is fractured with many star shape appearance. Taste is bitter, astringent with a specific smell. There is a crickling sound on chewing the Rhubarb [9, 32-33]. Saliva becomes yellow on chewing it. After eating the Urine colour becomes dark brown [9].

Geographical origin and Distribution: The Rhubarb distributed in the temperate and sub tropical region of the world, chiefly in Asia. About ten species occur in India. The Indian Rhubarb which is official in Indian pharmacopoeia, gained importance during world war-II, when the supplies of the Chinese Rhubarb became scare. In Indian market the rhizomes are mixed of *R. emodi*, *R. webbiamum*, *R. moorcraftianum* and *R. Spicifarme* [6, 11].

R. emodi is distributed in the Himalaya, Kashmir, Pakistan, Himachal Pradesh, Nepal, Bhutan, Tibet, Kangra, Kullu, Kumaon and Sikkim etc. at altitude of 3300 to 5200 meter [11, 17, 28]. *R. officinale* (medicinal rhubarb) and *R. palmatum* (Chinese rhubarb) is distributed in the adjacent territory of

south east Tibet, North-West China and Assam. It is exported to India, Russia, Turkey and London etc. So Chinese Rhubarb known as various name East Indian, Turkey, Russian Rhubarb etc. [4, 28]. The drug (Revand chini) obtained from both wild and cultivated plants. It is recorded that 11000 kg of rhizomes and roots are annually collected from Kullu and Kangra [20]. *R. rhaponticum* and *R. leucorhizum* are found in several parts of Russia [17].

Mijaz (Temperament): A lot of difference of opinion is found among the Unani scholars regarding Mizaj of Revand

chini. Most of them categorized it as Murakkabul Quwa and Hot and Dry in IInd degree [9, 31, 35], While some Tabibs described it as Hot and Dry in Ist degree [36], and some mentioned in IIIrd degree [7, 9]. According to some other Tabibs it is hot in IIIrd degree and Dry in Ist degree and it has also reported as Cold and Dry in IInd degree [30].

Medicinal properties and uses

Actions of Rhubarb mentioned in Ethnobotanical literature as:

Table 1: Actions

Alexeretic/Antibiotic [26].	Decreased renal secretion [39, 40].	Laxative [11, 13, 15-16, 36-38, 46].
Analgesic [5, 19, 36].	Digestive [5, 39, 40, 42].	Liver stimulant [19].
Antibiotic [37].	Diuretics [26, 31].	Purgative/Cathartic [3, 6, 10, 11, 14, 16, 18-19, 26, 29, 37-39, 41, 45-47, 49].
Anti cancer [38].	Emmenagogue [26].	Spasmodic [36, 38].
Anti septic [38].	Expectorant [5].	Stomachic [10, 11, 13-14, 19, 38, 42-44, 46, 48].
Aperient [11, 36, 38-43].	Hypotensive [38].	Vermifuge [19, 37, 46].
Astringent [6, 11-11, 13, 26, 36-38, 40-48].	Increased peristalsis movement [5, 39, 40].	

Uses of Revand chini mentioned in Ethnobotanical literature as following:

Table 2: Uses

Acidity [27].	Duodenal catarrh [10, 11, 28, 40, 45].	Mammary carcinoma [38].
Anorexia [13, 38].	Dysentary [10, 11, 28, 40, 45].	Ophthalmic disease [44].
Asthama [26, 36].	Disturbance in liver function [27].	Pain bruises [26].
Atonic Dyspepsia [11, 13, 45].	Dropsy [38].	Pigmentation [27, 36, 42].
Biliousness [26].	Eczema [27, 36].	Piles [26].
Boil/Abscess [25].	Ehrlich-ascities carcinomata [38].	Skin disease [10, 11, 28, 40, 45]+
Bronchitis [26, 36].	Fever [38].	Smoking [36].
Catarrh of biliary duct [10-11, 28, 40, 45].	Headache [38].	Sores [38].
Carcinoma Sarcoma [38].	Indigestion [13, 16, 40].	Sores eyes [26].
Coryza [26].	Jaundice [10, 11, 28, 38, 40, 45].	Teething [10, 11, 28, 40, 45].
Constipation [13, 44].	Lumbago [26].	Thermal burns [38].
Conjunctivitis [27].	Lymphocytic leukaemia [38].	Urticaria [13].
Diarrhoea [10, 11, 13, 28, 38, 40, 45].	Malaria [38].	Wound/ulcers [5, 11, 13, 36, 42].

The majority of authors considered that purgative activity of Revand chini is due to the presence of chryso-robin and after that it produces constipation due to rheotannic acid [11, 39-40]. Some authors narrated that the Revand chinin produced constipation in low dose, and purgation in high doses [20, 42-43]. Chopra *et al.* quoted that Revand chini should not use in constipation and a continuous aperient although its seldom act as an irritant [10, 13, 40]. In a case of sluggish bowl it is used with ginger [11, 13] and in children diarrhoea due to indigestion, is used with NaHCO₃ and Magnesia [29, 40, 50]. Cooked stalks acts as a powerful purgation [40]. Decoction of root bark is bitter tonic in wines [13, 26, 39].

Chinese Rhubarb used as a flavour component in alcoholic and non alcoholic beverages, backed goods, candy, frozen dairy, desserts, gelatin and puddings [38, 46]. After taking to Revand chini the colour of urine changed to bloody red

colour [13]. Strong water solution burn to Aluminium and form a hole due to high acid contents. A pack of *R. officinale* in hot water applied on hair for 30 minute change the colour golden to light brown or fair hair [39]. Stem of *R. officinale* and *R. rhaponticum* are used as a food [11, 40, 43], and flowers and leaf stalks also [41].

It is used as dyeing fabrics with maddar and potash [11, 45, 47]. A colour obtained in Bhutan [5]. Chrysophanol passed in mother milk and produce diarrhoea in children [43]. Revand chini is commonly used in ailments of children [10]. Watt is said, that Rhubarb is used externally as an ingredient in certain preparations applied to wounds and in ophthalmia [44].

The actions of Revand chini in classical Unani literature are mentioned

Table 3: Actions

Dafe Bukhar [51].	Mufarrah [30, 63].	Musakkin-e-Safra [30].
Fade Zehar [7, 9, 21, 22, 31, 52-60].	Mujaffif [7, 21, 22, 52-58, 67, 68, 71].	Muqawei-e-Aza [30-32, 55, 63, 72, 74].
Hazim [61-63].	Mukhrij-e-Balgham [9, 34, 70].	Muqawie-e-Jigar [7-9, 21-22, 34, 54, 56, 62, 69-70].
Jaali [31, 52, 55, 58, 60, 64-65-68].	Munzij [7, 21, 22, 52, 54, 56-58, 60, 67-68].	Muqawei-e-Meda [8, 31-32, 57, 62, 69, 72-73].
Mohallil [7, 9, 21, 34, 54-56, 68].	Munaqqi-e-Demagh [7, 21, 22, 52, 54, 55, 57-58].	Mulattif [30, 55, 56, 68].
Mudir-e-Boul [7, 8, 21, 22, 34, 52, 54-58, 62, 67, 69, 70].	Mushil [7-9, 21, 22, 34, 52-54, 56, 61, 64, 69-70, 73].	Qabiz [8, 9, 22, 31, 53, 56-59, 61, 69].
Mudir-e-Haiz [7, 9, 21, 22, 52, 54-60, 65, 66, 69, 70].	Mushtahi [30].	Tahleel-eRiyah wa Nafakh [7, 21, 22, 31, 52, 54, 56, 58, 60, 65, 66].
Muffatte-e-Hisat [9, 53, 55].	Musakhkhin [55, 71].	
Muffatte-e-Sudd [9, 22, 51-53, 55, 56, 65, 66, 68].	Musakkin-e-Dard [7, 9, 21, 52, 54].	

Unani Physicians mentioned the used to Revand chini in classical literature are:

Table 4: Indications

Aaram-e-Harra [55].	Irqun-Nisa [31, 68].	Sudda-e-Meda [9, 53-53, 65-66, 68-69].
Abdominal spasm [9, 31, 75].	Istarkhaa [31, 59].	Tafarruq-e-Ittasal [9, 22, 59-60, 68].
Ama-e-Sil [7, 21, 54].	Kalaf [7, 9, 53, 55, 59, 69, 70].	Tap-e-Rabaya [7, 21, 22, 54, 56, 70].
Bad-e-surkh [30].	Khafqan [30, 51].	Tukhma [22, 56].
Bawaseer [7, 21, 22, 54, 56].	Magash [22, 56].	Warm-e-Jigar Har [55].
Chronic fever [9, 57].	Namash [7, 9, 53, 55, 59, 69, 70].	Warm-e-Jigar [34].
Daad [7, 9, 53, 55, 59, 69, 70].	Namla [30].	Warm-e-Muzmin Barid [21, 56].
Dafe-e-Nazla [7, 9, 21, 22, 54].	Nafsud-Dum [57].	
Dard-e-Gurda [22, 31, 51, 55, 56, 58-60, 75].	Qarha-e-Ama [59].	Warm-e-Tihal [9, 31, 75].
Dard-e-Masana [22, 31, 51, 55, 56, 58-60, 75].	Qarha-e-Meda [59].	Warm-e-Muzmin [68, 75].
Dard-e-Reham [22, 31, 51, 55, 56, 58-60, 75].	Qula [21, 58, 60].	Wounds [9, 22, 53, 69].
Dard-e-Meda [31, 69].	Scorpion Bite [9, 55].	Yarqan [34].
Dard-e-Jigar [31, 69].	Saqta wa Zarba-e-Mufasil [9, 31, 53, 55, 59, 68].	Zof-e-Meda [31, 59].
Fataq [9, 22, 59, 60, 68].	Sil [22, 31, 53, 55, 56, 69].	Zof-e-Kabid [58-60].
Fowaq [9, 57, 59].	Soal / Surfaa Muzmin [7, 9, 21].	Zof-e-Meda [58-60].
Iltehab-e-Sahoeb [59].	Soo-e-Hazm [61].	Zof-e-Qalb [58-60].
Ishal-e-kohna [22].	Sudda-e-Jigar [9, 53, 72].	Zeequn Nafas [7, 21-22, 34, 70].
Istisqa [7, 34, 53, 55].	Sudda-e-Yarquan [9, 53-53, 65, 66, 68-69].	Zoosantaria [9, 31, 58, 60].

Some authorities mentioned that Revand chini produces dryness [52, 65, 66] and makes moatadil quam to madda [9, 66, 69]. Some told that it is useful in cold diseases. Revand chini increased the movements of stomach and intestine and its secretion and decreased salivation and produces purgation with spasm [8]. Galen' and some other unani physicians quoted that Revand chini acts as astringent. But clinically it produces purgation [72]. In large doses it produced yellow watery stool with spasm, after that it produced Qabz due to rheotannic acid. When Revand chini used with carminatine, no produces spasm [62]. 'Sharah Gazrooni' mentioned its actions as Qabz, Mohallil and Nuzaj due to its different constituents. It is commonly used in infantile dyspepsia and indigestion. It is also employed externally as Jali, Lazah, Mohallil and Musakkin-e-alam etc. [70].

Toxicity of Rhubarb

It is reported that all the species of Rhubarb have some toxins viz: Oxalic acid, tannic acid etc. [28, 37-38]. Rhubarb leaves are also poisonous, which cause symptoms like nausea, vomiting, stomach pain, weakness, dyspnoea, burning of mouth, throat and internal bleeding. In some cases it may cause coma and even death also. For the treatment of toxicity produced by Rhubarb leaves, 'Hardin' and 'Arena' (1985) suggested gastric lavage or emesis with lime water, chalk or calcium salts. Calcium gluconate and parental fluids and supported treatment was also advised [38].

Some authorities mentioned that it acts on whole bowel as an irritant with spasm in large doses and produces yellow watery motions in 4 to 5 hours. But in low doses, it sluggishes the bowl moments and produces constipation [4, 10, 40]. Hakeem Shareef Khan mentioned that Rhubarb should be used with Abe-Gulab [62].

Musleh (Correctives)

In Unani System of Medicine, the correctives for the untoward effects of are mentioned as - Unnab, Samag-e-Arabi [52, 66], Behdana Sheeren [64, 70]. Gond Kateera, Babool, Water extract of Kasni, Zarishk or Banslochan [7, 9].

Therapeutic Dose

Almost all the authorities mentioned the therapeutic dose of Rhubarb as 2-7 gram [9, 70, 51]. When it is used in Sharbat form, the dose is mentioned as 5 gram [65, 69]. But some Tabibs mentioned the dose as 7 gram [22, 55] 'Ibne-Baitar' and some other Unani Tabibs mentioned that the dose is equal to Ghareeqoon [31, 55, 57]. Hakeem Kabiruddin mentioned that the dose of Rhubarb for constipation is 125 to 375 mg and dose for diarrhoea is 1½ - 2 gram [70]. The dose of extract of Rhubarb is 125 - 500 mg [37]. The dose of Rhubarb mentioned in the pharmacopoeia of India is 0.6 to 4 gm [28].

Badal (Substitutes)

Most of the Tabibs mentioned that the substitute of Rhubarb is 1½ time of Gul-e-Surkh or 1/5 part of Sumbulul-Asafeer [22, 52, 34]. But Hakeem Azam Khan quoted in 'Moohit-e-Azam' that the substitute of it, for the diseases of stomach and liver is Gul-e-Surkh or Sumbul-ut-Teeb or Sumbulul-asafeer or Zarawand or Zarishk or Zafran or Usara-e-Afsanateen [9, 51]. Indian Rhubarb is used extensively in India in place of Chinese Rhubarb [14, 76-78]. Many species of *Rumex* dock root contain anthraquinone derivatives and have been used as substitutes for Rhubarb [16].

Adulteration

The root of *Rumex napalenis* which grown abundantly in some parts of India is sold under the name of Rhubarb in the market of Bengal. It has purgative property similar to Rhubarb but no definite information is available regarding its usefulness as a substitute for the commercial Rhubarb [10, 16, 44]. The roots of other species of *Rheum* specially *R. acuminatum*, *R. nobile* and *R. webbianum* are used as substitutes for *R. emodi* [10]. 'Ibne-Sina' has mentioned in his magnum opus 'Al-Qanoon-fil-Tibb' that the pieces of Rhubarb are sold in market after getting its extract (Usara-e-Revand) [55].

Contraindications

The Revad Chini is contraindicated in a case of gout, rheumatism, epilepsy, uremia, renal and urinary calculi and Uric acid troubles due to calcium oxalate or oxalic acid [4-5].

11, 28]. James A. Duke' mentioned that the Rhubarb is not recommended for haemorrhoid patients, puerpural mothers and an expectorant [38]. Rhubarb is not recommended in children, old persons [52, 64, 65, 69, 70].

Conclusion

It is presentation on Revand chini mentioned in unani classical literature and in ethnobotanical and botanical books mentioning its action, uses, therapeutic dose, its side effect and adverse effects, substitutes, contraindication in which it may not be used or used with its correctives have been discussed. Unani scholars used this medicine since a long for different purposes. Recently some studies have been published on the drug for nephroprotection [79], antibacterial [80], antitumor [81], antidiabetic [82] etc. in a clinical study a role of revand chini in dysmenorrhoea has been conducted [83]. It is suggested some more studies may be conducted on the other aspect of drug in the light of action mentioned in Unani classical literature.

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