



## ***KHUBS AL-ḤADĪD* (IRON RUST): MINERAL ORIGIN DRUG OF A HIGH VALUE OF MEDICINAL PROPERTIES**

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### **ABSTRACT**

Unani System of Medicine is a treasure of remedies in which various medicinal compounds are widely prepared by using mineral, animal, and plant sources called *Mawālīd Thalātha* (three sources). Unani physicians used them in their day to day practice for the treatment of various ailments includes haemorrhoids, digestive problems, sexual weakness, gingivitis, pyorrhea, loosening of teeth etc. *Khubs al-Ḥadīd* (iron rust) is one of the most important drugs of the mineral source, which has profound application in pharmaceuticals as main ingredients in various compound formulations. This attempt has been made to accumulate all scattered literature in one place for easy and better understanding and to explore the importance of *Khubs al-Ḥadīd* (iron rust) and its safety profile with special reference to the

therapeutic uses, adverse effect, detoxification and substitute as per Unani perspective along with its chemical constituents and pharmacological studies etc.

**KEYWORDS:** Unani System of Medicine, *Khubs al-Ḥadīd*, Iron deficiency anemia.

### **INTRODUCTION**

Unani System of Medicine is well documented Indian System of Medicine which is based on the concept of four humours given by Hippocrates of Greece in 460-370 BC. According to him, the diseases occur due to the imbalance of the body fluids called humours, which are maintained by the drugs derived from natural resources i.e. *Nabāt* (plants), *Mā'dan* (minerals) and *Haiwān* (animals) which are collectively known as *Mawālīd Thalātha* (three sources). In Unani system of medicine there are descriptions of many mineral based medicines under *Adwiya ma'daniya* (mineral origin drugs) which has a unique range of

economical, effective and precious medicines, particularly iron, lead, copper, gold, silver, black salt, sulphur from minerals and metals; and diamond, agate, ruby etc. from gems. These drugs have been used by Unani physicians since time immemorial to cure various ailments. Among them, *Khubs al-Ḥadīd* is very well known drug obtained from mineral source *Ḥadīd* (iron). *Khubs al-Ḥadīd*, the Arabic term is given due to the iron which becomes rusted when it comes under the contact of air regularly for a long time. Its various names like *Tobal al-Ḥadīd* (Arabic); Dross, Iron rust, impure oxide of Iron (English); *Mandu*, *Manduarā* (Hindi); *Charak-i-Āhan*, *Zang Āhan*, *Rim-i Āhan* (Persian); *Manduram* (Sanskrit); *Lohe kā zang*, *Lohe ki mail* (Urdu) etc.<sup>[1,2,3]</sup> also indicates toward this characteristic of the iron. This rusted iron (*Khubs al-Ḥadīd*) is used medicinally after detoxification by a specific method called *tadbīr* and *maghsūl*. After the detoxification process, it becomes useful for medicinal purpose and has been used for the treatment of various ailments from the time immemorial as such and as an ingredient in multidrug formulations. The survey of Unani literature revealed that *Khubs al-Hadid* (iron rust) has a long history of its use as an important drug for the treatment of the diseases in which the blood loss occurs viz. haemorrhoids, menorrhagia etc. It is said to be better for medicinal use which becomes a hundred years old. There are various other drosses are also found like, *Khubs al-Nuḥās* (copper dross), *Khubs al-Zahab* (silver dross), *Khubs al-raṣāṣ* (lead dross), but the most siccative dross is the *Khubs al-Ḥadīd* (iron dross) as mentioned by various Unani physicians.<sup>[1,4,5,6,7]</sup> There are various methods to detoxify the *Khubs al-Ḥadīd* in which two types are described frequently in the different text of Unani medicine. The first method is that small pieces of *Khubs al-Hadid* heated in the charcoal fire until it becomes red and then immersed in *Āb-i-Tirphala* (triphala juice) or *Sirka naishkar* (sugarcane vinegar) by holding each piece with a tongue. It becomes *mudabbar* (detoxify) when the whole process is repeated seven times. The second method is that the *Khubs al-Ḥadīd* ground to powder form and kept immersed in *Sirka naishkar* (sugarcane vinegar) or *Sharāb-i-angūri* (brandy). The level of either of the two should be 5 cm above the level of the powder. After 14 days, *Sirka naishkar* (sugarcane vinegar) or *Sharāb-i-angūri* (brandy) is decanted, the powder is dried and fried in *Roghan-i-bādām* (almond oil).<sup>[8]</sup> Since literature available on this important drug is very scant, therefore, in the present paper an attempt has been made to compile the available information on *Khubs al-Hadid* and its different formulations so as to bring to light the therapeutic potential of this drug. **Description in Unani literature:** It consists of a mineral source from hydrated iron oxides and iron oxide hydroxide which is available in the form of particles. It obtained from the iron which is rusted after reaction of iron and oxygen in the

presence of air and moisture when it is in open. After incineration the rust particle is separated by hammering; these particles are called *Khubs al-Ḥadīd*, which is of dark red or black coloured; taste is insipid, marred and astringent. The best quality is collected from the iron rust which is found in ruined cities or destroyed villages on high rocks. In these places, it is found in the form of pieces like coal having spores. The one which is about 4 years old is said to be better. Particles separated from iron are used as medicine after processing in the form of calx (*Kushta*) which is performed by a specific procedure called *Kushtasāzi* (calcination). Sometimes it is used after detoxification by soaking its powder in vinegar and then dried. The great Roman philosopher, Pliny considered the rusting of iron to be a penalty of gods.<sup>[1,2]</sup>

**Vernacular names:** Arabic: *Tobāl al-Ḥadīd*; English: Iron dross, Iron rust, impure oxide of Iron, Magnetite, Magnetic Iron Oxide; Hindi: *Mandu, Mandurā*; Marathi: *loh ket*; Persian: *Charak-i-Āhan, Zang Āhan, Rim-i-Āhan*; Sanskrit: *Manduram*; Urdu: *Lohe kā Zang, Lohe ki mail* etc. (8).

**Temperament (*mizaj*):** Its temperament is Hot<sup>[2]</sup> and dry<sup>[3][4]</sup>, Iron and copper dross are dry in the 3<sup>rd</sup> degree and all others are less in hotness.<sup>[3]</sup>

**Action (*af'al*):** It has *Qābiḍ* (astringent), *Mujaffif* (siccative), *Habis* (styptic), *Muqawwi-i-mi'da* (stomachic), *Muqawwi-i-jigar* (hepato-tonic), *Muqawwi-i-bāh* (aphrodisiac), *Muqawwi-i-qalb* (cardiac tonic), *Muqawwi-i-dimāgh* (brain tonic), *Muqawwi-i-mathana* (tonic to urinary bladder), *Muhallil Awram-i-Har* (resolvent of hot inflammations), *Mani' ḥamal* (anticonceptive), *Mani' Khūn Ḥayḍ*, *Mani' nazfuddam* (antihemorrhagic), *Hābis-i-bawl*, *Muwallid-i-dam* (haemopoietic), etc. properties.<sup>[1,5,6,7]</sup>

**Uses (*Iste'malat*):** It is used for the treatment of *Kathrat-i-tamth* (menorrhagia), *Fuqr al-dam* (anemia), *Bawāsīr* (bleeding piles), *Ihtibās-i-tamth* (amenorrhoea), *Sura't-i-inzāl* (premature ejaculation), *Jaryān* (spermatorrhoea), *Riqqa al-mani* (liquefied semen), *Ishāl* (diarrhoea), *Du'f al-Jigar* (hepatargia), chronic intestinal diseases, *Quruh Am'ā* (duodenal ulcer), *Quruh Mathana* (ulcer in urinary bladder), *Su-i-Hadm* (dyspesia), *Nafs al-dam* (haemoptysis), *Didan-i-Am'ā* (intestinal worms), *Amrāz-i-ā'sāb* (nervine diseases), *Du'f al-Bāh* (sexual weakness), *Amrāz-i-gurda* (renal diseases) especially *Bawl-i-Abiyaz* (albuminurea) and *Du'f al-Gurda*, *Sals al-Bawl* (frequency of micturition). It is a good remedy for *Du'f al-Am* (general weakness) and *Yarqān* (jaundice), *Warm-i-littha* (gingivitis), *Littha-i-damiya*

(pyorrhoea), loosening of teeth etc.<sup>[1,5,6,7,9]</sup> It dissolves hot swelling and useful in hardening of eyelids. It absorbs moisture and removes atony of the stomach and strengthens it by removing *fuzlat-i-mi'da*, especially when taken with old *nabidh* or *tilā* (a kind of wine made from gold).<sup>[3]</sup> It stops bleeding from piles particularly when the patient is given *Ābzan* (sitz bath) in a mixture of the dross with the old *nabidh*. It prevents pregnancy and possesses a unique property to normalize irregular menstruation. Its local application strengthens the anal musculature.<sup>[3]</sup> It uses with *Sikanjabin* to reduce the toxicity produced by the *Khāniq al-namir* (*Aconitum paradalianches*) poisoning. It also increases sexual power, and remove the inflammation of spleen.<sup>[10]</sup> A drop made with *charak-i-āhan* in *sirka angūri* (grape vinegar) is useful in otorrhoea, it stops the discharge from the ear due to the highly *mujaffif* (siccative) property. With honey it is used as linctus and clears the voice; with egg yolk, it is used to improve sex power. Locally the *Khubs al-Ḥadīd maghsūl* (detoxified iron rust by washing after soaking in vinegar) is applied to remove *Warm-i-hād* (acute inflammation) and *Injimād-i-shīr* (coagulation of milk) in the breast. It is taken in quantity of 4 *ratti* (500mg) with boiled egg yolk for sexual weakness which occurs due to the cold.<sup>[1]</sup> In the case of menorrhagia, the wool sprinkled with *Khubs al-Ḥadīd* is used as *firzaja* (suppository) to stops the excessive bleeding.<sup>[1]</sup>

**Dose (*Miqdar Khurak*):** It is used in the quantity of 2-3 *ratti* (125-375 mg).<sup>[4]</sup>

**Adverse effects (*Mazarrat*):** It causes constipation and also produces harmful effects on the lungs. It may be due to its hot and dry temperament and *Qābiḍ* (astringent), *Mujaffif* (siccative) and *Habis* (styptic) properties.<sup>[4]</sup>

**Corrective/s (*Musleh*):** *Khubs al-Ḥadīd* has been described to be harmful to the lung, therefore milk, ghee, katira (gum tragacanth), shahd (honey) and wet things are used as corrective agents to reduce its harmful effect.<sup>[1,4,9]</sup> Since it possesses hot in the 2<sup>nd</sup> degree and dry temperament in the 3<sup>rd</sup> degree, so to reduce its desiccative property a little, the drug is combined with milk, ghee and wet things. It ensures the efficacy and safety of *Khubs al-Ḥadīd*.

**Substitute/s (*Badal*):** *Khākastar post baiza* (incinerated egg shells), *Kushta Faulād* (Iron calx), *Hālawn* (*Lipidium sativum*) are used as the substitute and some mentioned *Itrifal Saghīr* is a substitute for *Khubs al-Ḥadīd*.<sup>[1,9]</sup>

**Major compound formulations:** Various compound formulations like *Habb-i-Sandarus*, *Habb-i-Khubs al-Ḥadīd*, *Itrifal Khabs al-Ḥadīd*, *Kushta Khubs al-Ḥadīd*<sup>[11,12]</sup>, *Mājūn Khubs al-Ḥadīd*, *Majun Muqawwi Mi'dā*, *Mājūn Murawwah al-Arwāḥ*; *Qurs Salajit*<sup>[11,12]</sup>; *Sanūn Chobchīnī*,<sup>[12]</sup> *Sufūf Khubs al-Ḥadīd Mujarrab*<sup>[13]</sup> are available in which *Khubs al-Ḥadīd* is used as one of the most important ingredients, which are used for the treatment of various ailments since time immemorial (see for detail in Table: 01).

**Chemical constituents:** Rust consists of hydrated iron (III) oxides  $\text{Fe}_2\text{O}_3 \cdot n\text{H}_2\text{O}$  and iron (III) oxide-hydroxide ( $\text{Fe O (OH)}$ ),  $\text{Fe (OH)}_3$ .<sup>[8]</sup>

**Pharmacological studies:** Clinically *Khubs al-Ḥadīd* is used in the form of *Kushta* (calx) and used as an ingredient in various compound formulations such as *Mājūn Fanjnosh*, *Mājūn Murawwah al-arwāḥ*, *Sūnūn Chobchīnī*, *Mājūn Khubs al-Ḥadīd* etc. after detoxifying by specific methods. Some formulations have been studied and the effect has been shown to be promising on various diseases.

Haemoglobin enhancing effect of *Mājūn Khubs al-Ḥadīd*, an Unani compound formulation containing *Khubs al-Ḥadīd* as one of the main ingredients, on the patient of *Su' al-Qinya ba sabab qillat-i-fawlād* (iron deficiency anaemia) was reported by Wasi *et al.*, 2011.<sup>[14]</sup>

*Sufūf Khubs al-Ḥadīd* has been also studied on the patients of iron deficiency anaemia during pregnancy and improvement was found same as the test drug Fefol capsule.<sup>[15]</sup>

Anti-diabetic effect of *Dolabi*, a herbomineral compound formulation containing *Khubs al-Ḥadīd* as one of its constituents was reported by Rahul *et al.* 2012<sup>[16]</sup>; in vitro, anti-oxidant activity with the IC50 value of 232.11  $\mu\text{g/ml}$  was also reported by the same researchers.<sup>[16]</sup>

**Table 01: Compound formulations of *Khubs al-Hadid*, with their doses, action and indications.**

S.N.	Compound formulations	Doses	Action and indication
01.	<i>Anushdaru</i>	5-7gm	It is a gastric tonic, liver tonic, aphrodisiac and avaricious drug and used for the treatment of the weakness of stomach, anemia, dropsy, incontinence of urine etc. <sup>[21]</sup>
02.	<i>Dawa-i-Atiya Allah</i>	Per orally, Dose not mentioned	It is an appetizer, sexual stimulant, diuretic, antidote and used for the treatment of hemorrhoids, indigestion, coldness of stomach etc. <sup>[17]</sup>
03.	<i>Habb-i-Khubs al-Hadid</i>	3 pills per orally two time with water	It is used for the treatment of external hemorrhoids, internal hemorrhoids, weakness of kidney, chronic gonorrhoea etc. <sup>[12]</sup>
04.	<i>Habb-i-Sandaros</i>	1.5 to 3 g.	It has haemostatic action and used for the treatment of bleeding piles. <sup>[19]</sup>
05.	<i>Itrifal Khubs Al-Hadid</i>	2-10gm	Actions are carminative, stomachic, nerve tonic and used for the treatment of amenorrhoea, hemorrhoids, loss of appetite, flatulence, low backache etc. <sup>[19]</sup>
06.	<i>Jawarish Khuzi</i>	5-10gm twice a day	It is used for the treatment of weakness of stomach and intestine <sup>[18]</sup>
07.	<i>Kushta Khubs al-Hadid</i>	125-250mg per orally with <i>Jawarish Jalinus</i>	It is a digestive tonic useful for liver and stomach diseases, such as weakness of stomach, hepatargia and anemia etc. <sup>[12, 20]</sup>
08.	<i>Mājūn Khubs al-hadid</i>	3-7gm per orally at morning with water or Arq Gawzuban	It is used for the treatment of internal hemorrhoids, weakness of stomach, hepatargia and anemia etc. <sup>[12,20]</sup>
09.	<i>Mājūn Murawwah al-Arwah</i>	1gm with milk	It is used for the treatment of sexual weakness, hepatargia, weakness of stomach, mental disturbance etc. <sup>[12]</sup>
10.	<i>Majun Muqawwi Mi'da,</i>	5 g twice a day	It is used for the treatment of weakness of stomach, dyspepsia etc. <sup>[20]</sup>
11.	<i>Qurs Salajit</i>	2 tablets (each 260 mg)	It is used in general weakness, spermatorrhoea, and frequency of micturition etc. <sup>[20]</sup>
12.	<i>Sufuf Khubs al-Hadid Mujarrab</i>	6gm-10gm	It is used for the treatment of anemia <sup>[13]</sup>
13.	<i>Sunun Chobchini</i>	Locally as tooth powder	It is used for the treatment of gingivitis, pyorrhea, loosening of teeth etc. <sup>[12]</sup>

**CONCLUSION**

Based on the information amassed as above, it can be concluded that the mineral and metal-based medicines have always played a significant role in the healing practices in Unani System of Medicine. However as compared to the ethnopharmacological documentation the



therapeutic use of mineral and metal origin drugs have been little researched. The present article is first ever attempted to document all scattered knowledge of *Khubs al-Ḥadīd* related to its medicinal uses and clinical researches. Sufficient information in respect of morphological, physicochemical and ethnomedicinal properties of *Khubs al-Ḥadīd* are available but very few pharmacological and clinical studies have been conducted. So there is a need for extensive scientific studies to validate most of the claims of traditional medicines regarding *Khubs al- Ḥadīd*.

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