Abstract
Since long times ago, cinder of different plants has been used for medical and health purposes. It has been referred to as one of the best medical approaches in pharmacy in old scrolls and tablets dating back to millennium before Christ. Nevertheless, no research has been performed on the properties and features of cinder, especially cinder as a medicine for therapeutic and health purposes, its utilization and instructions. In this regard, some experiments conducted in the traditional medicine can come to aid the conventional medicine in the mentioned fields.

In this study, first, having reviewed written sources, the researchers found some evidence of cinder therapy in the literature. Next, oral history was utilized as a research method to develop and maintain original historical information from memory of individuals witnessed certain historical events, although some information found was already mentioned in contemporary reports and field studies. Therefore, in general, multiple witnesses and cases for medical applications of cinder were explored.

To reinforce the comments, opinions of ancient medics are referred to. Cinder was used as a medicine in multiple cases including: wounds disinfection, bleeding prevention, sour stomach reduction, pain and contusion therapy, toothache therapy, wen and warts therapy, and gum therapy. In the cases mentioned, cinder was sometimes prescribed alone and sometimes in combination with other substances. Moreover, it was sometimes emphasized to be used warm/hot to function efficiently.

Conclusion: however the use of cinder as a medicine in traditional Iran.
Introduction

Fire has long been regarded as one of the key elements of human life, and has always been considered sacred and respected. Igniting fire as well as performing special rituals for the fire and naming the newborns in the names of Azar, Atash, and the like have shown the importance of fire in Iranian life since ancient times. One of the important properties of fire along with its many other properties is its healing property. Not only fire itself has been shown to have healing property, but its ashes also could heal wounds. “The ash of stove has a magical power.”1 Paying attention to the healing properties of ash has long been common; as in Vendidad, part 51 is about one of the religious orders of women that: “Ahuramazda replied: three or six or nine cups of urine mixed with ash should be drunk to wash the grave in her womb”.2

Medicine is a practical knowledge with the purpose of maintaining and improving health, treating diseases, and rehabilitating the injured; an objective which can be fulfilled through knowing the diseases, diagnosing, treating, and preventing their happening. Humans have for long tried to cure diseases and injuries with variety approaches. In this regard, some achievements stem from religious beliefs and teachings, while some others have been transferred from one generation to the next as folk medicine, of course with some improvements over time learned through experience. In fact, repeatability and mobility through generations are features of popular culture or folk knowledge. When the correctness and applicability of this knowledge are compared and tested with modern science and accepted, regarding the experience of older generations and the areas in which it has been used as nativemedicine, then, the findings can be more practical and effective. It is worth mentioning in this regard that in Iranian plateau which has hosted ancient civilizations with many medical achievements, Persian Medicine dating back to more than 4000 years ago, combined with various medical traditions from Mesopotamia, Egypt, India, China, and Greece, has formed the basis of medical activities in the thir-
teenth-century-European countries, while some of the remedies and therapies of Iranian medicine still remain in Iranian oral or folk medicine or in medical text books, they are not used by modern medicine. On this basis, the present study is an attempt to address historical implementation of cinder in traditional medicine of Iran and its application in curing the diseases and discuss the medical properties and instructions found in written and oral sources.

Materials and Methods
The current study is a qualitative research that is mainly performed through library research; and in some few cases through field study. In this study, using targeted sampling approach, the pharmacological and therapeutic properties of ash have been investigated which include extraction and classification of literature from centuries ago up to present, accompanied by some conclusion. The “cinder” keyword was searched in official bases of profile of papers in combination with “traditional medicine”.

Medical Properties of Fire and Cinder
Fire has been considered as a primal element for human life and has also been considered sacred and honorable. Lighting up fire, retaining exclusive rites, and naming the children with names such as Azar (Ember), Atash (Fire), Atashak (little fire), etc. suggest the importance of fire in lives of the Iranians since long ages. In Iranian texts, some therapeutic methods, including fire therapy (ataxš- bešazišnih), are pointed out. Of course, this treatment is probably done by some of the existing medical expertise and there should be no special doctors who would treat these diseases exclusively. Rather, this therapeutic method might have been used by surgeons, medical herbalists, and other medics of the time. Nevertheless, this method of treatment is often seen with five groups of experts who are mentioned in chapter 157 of the book Dēnkard “(Book III) which are: 1- Holy word, 2-Fire, 3-Plants, and 4-Knife, 5-Hot.”Hot probably means fumigating some aromatic plants; since fire destroys corruption, removes the dirt of illness, and purges the air3.

In fact, in traditional medicine and among the Arabs, cauterization and phlebotomy have been the conventional therapies4. There is a Hadith from the prophet Muhammed “healing for the patients is in three ways: drinking honey, phlebotomy with lancet, and cauterization. I forbid my nation of the latter one.” Hence, at that time cauterization was in trend, but
due to lack of skill in this regard and the probable danger exposed the patient to, the prophet forbade people and the medics to employ this. Nevertheless, this way of treatment kept on going. It is even quoted from the first Imam of Shi`as in his book of words, Nahj al-Balagha, “And if I can’t find a deluxe medicine, there is cauterizing” (و اذا لم اجد بدًا فآخر الدّوا، الکّی). It is worth mentioning here that at that time it wasn’t only cauterizing that helped cauterizers and fire medics, but also burning the plants or some fabrics and skins and using cinder were conventional therapy methods dating back to far millenniums in history of Iran and Mesopotamia (which gave away a part of its heritage to Iran and Arabia civilizations. Therefore, medical properties of fire was considered to have important properties. Not only fire itself had healing power, but also its cinder. “Oven cinder has enchanting powers”.

Simple substances and medical derivatives of cinder (herbal and animal) were mentioned in works of great Iranian medics. These cases included deer bone and cow bone cinder (Ghanaun, Al-Mansoori, Al-Hawi), Chestnut wood cinder, cabbage cinder, vine cinder (Ghanaun, Al-Mansoori, Al-Hawi), fig wood cinder, shell cinder (Ghanaun, Al-Hawi), paper ply (ash) (Ghanaun, Al-Hawi), human hair cinder (Ghanaun, Al-Tasrif, Al-Hawi).

Medical usage of cinder was also mentioned in popular beliefs as well. In this regard, in an oral narrative in The Seven Labors Of Rostam, using demon ash to cure blindness of Kay Kāvus army was mentioned as: Rostam said “aren’t their eyes curable?” the demon responded “those are curable if you burn liver of the white demon and apply the ash on them” then Rostam said “this is very easy” then he ignited a fire, burned the liver, and applied its ash on eyes of the army so they all healed. Though in some cases, such kind of healings were considered as superstitions and not scientific; as in the case of people who borrowed ash from their neighbors, specially of the Seyyeds, to cure their children, or people who put oven cinder in mouth of the sick children and got gifts as blessing from the lady of the house. But in most cases in traditional medicine of Iran, cinder was used for multiple purposes to cure diseases and dirt which will be discussed in this paper. In addition to its therapeutic purposes, cinder was used to eliminate tattoos which were common in the ancient world. According to records, in Iranian traditional medicine, if mixed mastaki (Roman’s gum- sacchaeus species and fragrant like frankincense) with fig cinder, and

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6- Mohaghegh, 1999: 60.
7- Garossy, 1994: 93-94.
8- Ahvazi, 2008: 274.
10- Ahvazi, 2008: 274.
11- Omid Salar, 2016: 34.
12- Ferdowsi, 2007: 44.
14- Kiiani, 2013: 396.
spotted on the spot (emerged from tattoo), it would be removed\textsuperscript{15}. Accordingly, based on some the findings of some reports, the following is an overview of different applications of using cinder.

\textbf{1- Curing Wounds and Infections with Cinder}

In some ancient prescriptions, cinder was used as a dirt-removing material. In Sumerian pharmacology plates, remained from the third millennium before the Christ, preparation method of disinfectant and sanitary materials was mentioned. Alkalis achieved from plant cinder, was known for its dirt-removing and disinfecting feature. In the existing prescriptions, alkaline salts, in combination with natural fat, were mentioned to have soap properties. Moreover, edible salt and Potassium nitrate were used for cleaning. Salt is a disinfecting substance and Potassium nitrate is astringent. To make Potassium nitrate, lime was combined with a nitrogenous parser to form Calcium Nitrate which was next boiled up with firewood ash containing Potassium Carbonate. Potassium nitrate remained after evaporation\textsuperscript{16}. Considering the medical properties of cinder in disinfectants was common in old ages, so that in the holy book of ancient Persian in Vendidad (section 51), it was mentioned about one of religious orders: Ahouramazda responded “She must drink three or six or nine cups of urine combined with cinder until the grave of her womb be cleaned.”\textsuperscript{17}

Stopping the bleeding and disinfection were two other features of cinder. This medical therapeutic method was mentioned in medical writings of Persia, for which the surgeon opened the artery which was closed to stop the bleeding and cauterized the point to stop bleeding and then put some jasmine oil or almond oil mixed with “warm cinder” on the wound. The wound was then closed. It was believed that the wound would heal completely in four days\textsuperscript{18}. So in this therapeutic method, cinder was used as a medicine both to stop bleeding, and to heal the wound faster. Ash was also among the medicine which were prescribed in Islamic-Arabic medicine, as mentioned in the Hadith and narratives and Sunnah (known as Prophetic Medicine). In this case, cinder of mat is mentioned along with the nigella sativa, kohl or sulfate (for ophthalmia), aloe vera, and milk power as astringent\textsuperscript{19}.

According to Ibn Sina, human urine poultice mixed with sandalwood cinder would stop bleeding\textsuperscript{20}. He also mentioned issues related to cleaning the surgery spot with water and cinder. Moreover, Majusi Ahvaazi (known as Haly Abbas) em-

\textsuperscript{15} Razi, 2000, Vol. 80, Chapter 23, Vol. 2: 10.
\textsuperscript{16} Kramer, 2008: 53.
\textsuperscript{17} Doostkhah, 1991: 715.
\textsuperscript{18} Elgood, 1978: 185-186.
\textsuperscript{19} Brown, 1962: 25.
\textsuperscript{20} Avicenna, 1877: 279.
phasisizes in his book “The whole medical industry” the need to ash on poultices needed after surgery. He instructs to cauterize the edge of the eyelid with excessive hair first. Then, mix depilatory, soap, armenian borax. Combine the formation with oak cinder and fig cinder and urine of immature baby. Apply the medicine on the eyelid. Therefore, cinder was used both alone and combined with other substances to form efficient medicine to prevent bleeding. In this regard, Razi proposed the combination of “aloe vera”, frankincense, glair, dracaena cinnabari, gypsum, mill powder, and oak apple ash. The use of bardy ash and paper fuel provided by papyrus was particularly more common to stop bleeding and heal and dry the wound. Razi quoted even ancient medical practitioners with the phrase,”Bardy: its property is to bind blood because it is burnt”.

Many applications for ash have been observed in popular medicine as well in healing wounds and infections. In some villages, cinder was used to stop bleeding and infection of some wound locations caused when picking sheep wool. In the past, the circumcisers used ash, merbromin, and a tape to stop bleeding. This method is still conventional in villages. In some regions, the location was put in cinder bag to remain for three days to heal after circumcision. Sometimes, sheep wool was used to stop bleeding. For this purpose, some dry sheep wool was burned and the resulting cinder was put on the wound to stop bleeding. In the traditions of the Islamic era and within the era of the prophet, it was mentioned:” The face of the prophet was wounded. When Fatimah (peace be upon her) saw that bleeding did not stop, she took a piece of mat or wool and burned it and put the ash on the wound to stop it.”

Cinder was used in a combined medicine to heal the wounds (even in surgeries). According to Ibn-Qaf’s prescription, in the case of clipped fingers- congenital or by burn or wound-, cut it by lancet and poured the mixture of cinder and rose otto between two parts so that it would not stick again, and balm it. This method is still used in oral and traditional Persian medicine. In this regard, someone’s hand was cut when cutting straw and alfalfa. The grandmother burns a fabric and combines the ash with some sugar to stop the bleeding, and said:”It will block the blood.” Sour pomegranate juice and cinder were mixed to form a medicine to heal anthrax. Furthermore, hot cinder was used as effective prescriptions. In this regard, as mentioned in traditional medicine, pregnant women, after giving birth, would sit in semi-hot cinder to

21- Ahvazi, 2008: 274.
23- Haghighi, 2015: 45.
24- Sedigh, 1974: 71.
27- Ibn Qaf, 1937: 221.
29- A’zami Sangsari, 1972: 56.
stop their bleeding so the pain was relieved and healed\textsuperscript{30}. This kind of therapy is still conventional in some regions of Iran, including West Azerbaijan (Oshnavieh region) and among medics of old ways\textsuperscript{31}. Also some hot cinder was poured on the wound to accelerate the wound healing\textsuperscript{32}.

Cinder was sometimes used for healing rare wounds as well. In the past, in case of sore throat, it was believed that uvula was dropped. So women put their finger in throat of the children or infants that sometimes led to injury. Then, the treatment was completed by applying ash to the throat\textsuperscript{33}.

Cinder was not only limited to oven firewood. Sometimes the soot on pot played the role. It was conventional to remove the pot soot and to put it on belly button of the new born with recent navel falling\textsuperscript{34}.

Cinder at times played the role of cleaning and disinfecting the target indirectly. Rural women cooked onions under the ashes to treat pus ulcers and infectious poultry pests and seal the pus away. They also healed the crushings under the wings of poultry by using ash\textsuperscript{35}. Ash is sometimes used to stop bleeding caused by fracture to prevent infection. In case of head fracture, a piece of mat was burned and put on the fracture site\textsuperscript{36}.

\section*{2- Ash and Acerbated Stomach}

According to Iranian traditional medicine, some muds and soils can be used as medicines for gastrointestinal or digestion diseases and doctors prescribed them for the sick. Zakaria Razi wrote a book entitled “Nishaburian muds”. Other doctors used some muds as powders or tablets for treating the diseases\textsuperscript{37}. Even now, according to some unofficial reports, some pregnant women like to eat muds as the result of their pregnancy. “Akhvini” identified two types of tendency in pregnant women: the first one, the desire to eat mud, is caused by the closure of period blood and accumulation of bad things in the pregnant women’s stomach. This condition is resolved with the growth of the fetus\textsuperscript{38}. The second one, the desire to eat ashes, is present because they think it is effective in quenching and alleviating alarms (physically and often mentally). So, eating cinders and burnt tobacco were the tendencies reported in pregnant women\textsuperscript{39, 40}. According to folk medicine of Iran, cinder as well as soil was used for some stomach diseases. For instance, oak ash was used to cure an acerbated stomach\textsuperscript{41, 42}.
3- Ash and Pain, Swelling And Bruising Treatment

Ash can be used for treating bruising and pain lessening; first we heat the ash and some salt; then we add some hot water on it and put it on the particular point and put some clothes on it. This combination is called “salt-based ash”\(^{43}\). As it is seen in the recent case, and some other evidence cinder has to be hot in some cases to be effective. Rubbing hot ash on painful sites was considered as a treatment\(^{44}\). Zakaria Razi in Al-Havi’s book suggested anesthetic agents to relieve pain from fractures. The agent, among other substances, contained cinder. According to his prescription for nasal fractures, “mix white wheat flour and frankincense flour which are baked with rose water and sprinkle the ash on it before putting them on the nose”\(^{45}\). He also suggested cabbage cinder with aged tallow to improve the loosened joints\(^{46}\). Yusefi Heravi who was a famous doctor of Mongol era regarding the pain relief and calming cinder “black poppy cinder”, said: “It is cold and dry, and it is said that if a unit of it is eaten, it can remove humidity of womb and improve your sleep and your liver function. And if it is burnt and its ash is combined with mud oil, vinegar and a piece of gold and then go to the bath and stay there for an hour to sweat, it can ultimately be beneficial”\(^{47}\).

Occasionally, herbs burnt or semi-burnt were used for treatment. Semi-burnt walnut kernels were used for removing fatigue and legs swellings\(^{48}\). Majusi Ahvazi suggested water containing ash of vinegar for swelling as follows: “[Burn] the wood of the vinegar and pour water on its ash and leave it for one night, then pour some vinegar to make it more watery and then put a cloth on the swelling point.”\(^{49}\) In some cases, it was emphasized to use hot or warm ash for its effectiveness: In Ardebil, people made an iron hot in the oven and put it very briefly on the patient’s neck and then rub hot ash on the forehead gently\(^{50}\). This type of treatment was practiced for years in traditional Iranian medicine; and was even found in reminiscent writings of Qajar era, as Ein al-Saltanah (Nasser al-Din Shah’s nephew) wrote this: “my leg is better now, but still I feel the pain. I put some warm ash on it and then I washed my leg with warm water…”\(^{51}\).

4- Ash and Tooth Treatment

Considering the Iranian medical literature on the use of cinder in the treatment of dental diseases, as well as its maintenance, cleanliness and beauty, these topics are discussed. Concerning hot and warm drugs for curing dental diseases, Ibn Sina classified them into two types: either warm itself or...
they obtained warmth. Examples for what is warm in nature are burnt salt, burnt artichoke, burnt and non-burnt musk; cinnamon, honey, grave blossom plant, flame, cedar leaf, bugle leaf (burnt and non-burnt), ash of borug; female zaravand (Aristolochia), the ash of the wood of vinegar tree, ash pine, burnt dates. For the latter category, we have waxy ash, ash of branch of vinegar; straw ash and the like52.

One of the pests of the teeth is discoloration which is a precursor to tooth decay. Ibn Sina recommended ash for the treatment of discoloration53. Jorjani also mentioned the beneficent properties of burnt agalloch in the “Yadegar”54.

Persian poets due to their familiarity with the sciences of their own times were called Hakim. Some scientific knowledge and information, especially in the field of medical knowledge that has been common in the community, has become a subject for illustrating poets, as well as the expression of one’s knowledge alongside the art of poetry, and accordingly some common therapeutic practices and applications can be learned from these Hakims and their poems or sayings. Hakim Nizami and Khaghani are among these poets who had many references in their poems to the sciences of their times, including medical science. Concerning the subject of the present study, these two poets also referred to the use of cinder and whitening teeth, as well as the fragrance of the mouth, and found it useful in lute cinder, willow and burnt shells.

Those who are good whiten their teeth with ashes of lute and willow55

When he clean his teeth with ash of lute, lute of soil is seen on his mouth56

Be black like the ash of lute because it whitens the teeth57.

As seen, using ashes and willow for whitening teeth have been emphasized in these verses.

They are full of fear and hope / and because of burnt shells have white teeth58

In this verse, burnt shells have been mentioned as effective for whitening teeth.59

Also Ibn Baitar believed that ash of burnt hoof with mineral salt was effective for removing yellowing and green traces on teeth.

According to existing oral history records, (in the contemporary era) in Torbat-e-Jam and Taybad, people burn a paper in a glazed plate and put its ash on their teeth to relieve pain. In this particular case, it is further argued that the paper must be burnt only in the glazed plate60, and be combined with the
oil ash. Other uses of cinder to treat toothache, putting burnt opium on the corrosive part of the tooth… Some people use cinder of lace lights for this purpose.61

5- Ash and Gum Treatment

Along with the numerous benefits of cinder for dental diseases and cleanliness, it was used to relieve mouth problems and gingival reinforcement was used to combine the cinder of some other substances and as a result an effective mouthwash for gum and teeth was obtained. Ibn Sina suggested a combination of ashes of deer’s horn, ash of cedar leaf ash, and ash of adiantum capillus-veneris (parsiyavashan) together with other plants to be used as a mouthwash for treating gum and teeth.62

Before Ibn Sina, Hunayn ibn Is-hagh (Johannitius), who was Christian from Hirah city and was very good at medicine and brilliant at of Greek, Syriac, and Arabic literature,63 suggested a different mouthwash: ashes of oregano, sedar, valeriana officinalis (Sonbolitib), anacyclus pyrethrum (agh-ergherha), cinnamon, mastaki and salt must be wiped within a silk cloth and rinse the mouth with it. When gum turns red and its temperature goes up, a mouthwash of Tamarix, cuercus, Punica granatum var, (Double flowered pomegranate), pomegranate skin and crystalline alum must be used. Thus, gum burn treatment is one of the other medical uses of ash to its enhancement, so that pure ash, barley ash, sa’d ash with equal size and honey is applied to the gum.65 On the other hand, some Iranian doctors consider bardi cinder, especially burnt paper, to be effective in treating purulent mouth ulcer.66, 67

6-Ash and Treatment of Dole and Wart

Ash was used for treating dole and wart. It was noticed that villagers heated the 1-year old of dung and put it on the dole. This made it explode and then they let it dry.

Sometimes a combination of dung with other substances was used.

According to objective observations from a folklore medical treatment, Hakim removed the dole, and then put the mixture of dung, which was well crushed under the sheep’s feet. After that, he poured rose water on it and then wrapped it with a cloth.

The spider web was taken, soaked in vinegar, and combined with ash of feather of crow.68 About the ash of Aspa Miz (a wild bush similar to Jaj and its dry bush burns fast

64- Hunain ibn Is-haq, 2014: 34.
65- Qasemlou, 2015: 45.
67- Avicenna, 1877: 278.
and becomes ash), it was mixed with some water and a dough
was produced. This dough was put in the shell of walnut or
almond or hazelnut or pistachios and put it on the dole
and wrapped it. This dough exploded dole. Ash was also
combined with other substances for treating patients. Cinder
of burnt eggplant along with vinegar was used for treating
warts.

Sometimes, ash was used indirectly to treat dole; they put
some tree juice of Archen and wrapped in a wet cloth and put
it under warm ash to be softened; then put it on the dole to
explode it. Sometimes, mastaki combined with ash of fig
was used to treat mottle so that its color faded away.

Conclusion
This study, having reviewed library sources and medical
texts of Farsi and oral information, concludes that accord-
ing to traditional medicine, there were varieties of methods
for treating certain diseases some of which appeared to be
effective over the time. Importantly, in some remote areas
and among some tribes and villages, there are people who do
not embrace modern medicine and use traditional medicine
practices. Meanwhile, as evidenced in medical and historical
texts of cinder treatment and the utilization of the cinder of
various plants in the field of hygiene and the elimination of
some superficial and even acute diseases. As seen, there are a
lot of pieces of evidence in medical and historical texts about
ash treatment for simple or acute diseases. Importantly, ash
treatment was used as a method for blocking blood and pre-
venting wound by surgeons. What is for sure is that ash can
be used alone or in combination with other substances as an
effective medicine for treating and controlling bleeding and
infection, upset stomachs, pain and bruise lessening, tooth-
ache and discoloration of teeth, treating dole, wart, and gum.

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