



Epilepsy and its Management in Unani Medicine

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Received: July 24, 2020

Published: August 17, 2020

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Abstract

Epilepsy is one of the oldest ailments that have been affecting the human beings. As per World Health Organization (WHO), epilepsy is a chronic non communicable brain disease that may affects people of all ages. It is characterized by two or more provoked seizures, which are brief episodes of involuntary movement that may involve the whole body or a part of the body. Near about 50 million people is suffering from epilepsy worldwide, and approximately 5 million people are diagnosed with epilepsy each year making it the most common neurological disease globally. Discrimination and social stigma is still associated with epilepsy in the world and it impact on the patient's quality of life and their families as well. Most of epilepsy patients live in developing countries and unable to get the proper treatment for the disease.

In Unani system of medicine, epilepsy is described as Sar'. Classification of epilepsy in this ancient system of medicine has been done on the basis of temperament, predominance of humor involved, internal and external factors etc. In this paper an attempt has been made to explore the concept of epilepsy in Unani medicine, its type, etiology and management through various modes of Unani treatment. This article will help in reducing the burden of this common neurological problem and development of new intervention for the disease.

Keywords: *Epilepsy; Sara; Brain Disease; Unani Medicine*

Epilepsy - Brief overview

Epilepsy refers to a condition in which a person has recurrent seizures. It is a clinical phenomenon rather than a single disease entity [1]. WHO defined epilepsy as a chronic neurological disease, characterized by two or more provoked seizures which are episodes of involuntary movements involving a part or whole body, may be accompanied with loss of consciousness [2]. Seizure occurs due to electric discharge from brain cells. It can vary from the briefest lapses of attention or muscle jerks to prolonged convul-

sions. Seizures can also vary in frequency, from less than 1 per year to several per month. It is the second most common neurological problem after stroke [3].

Epilepsy shows a prevalence rate in 1-2% of the world population [4]. Active epilepsy in general population at a given time is about 4 to 10 in per 1000 people. The estimated 5 million people diagnosed with epilepsy each year globally It affects an estimated 7 million people in India and near about 50 million peoples are

epileptic worldwide [5]. In 1981, International League Against Epilepsy, classified epilepsy seizures covering all types of epilepsy seizures under the three main headings as Partial seizures, Generalized seizures and Unclassified seizures. Partial seizures also known as focal or local seizures may be simple or complex. Generalized seizures are further classified as atypical and typical under absence seizures, Myoclonic seizures, clonic seizures, Tonic seizures, tonic-clonic seizures and atonic seizures.

Epilepsy may result from changes in the brain affecting neurotransmitters release and transport, the properties of receptors and channels, regulation of gene expression, synaptic reorganization etc. [6]. But the causes of epilepsy remain unknown in about 50% cases. Many factors can lead to epilepsy. So the causes of epilepsy are categorized as structural, genetic, infectious, metabolic and unknown causes. However, among the many causes of epilepsy there are various epileptic syndromes in which the clinical and pathologic characteristics are unique and suggest a specific etiology [1]. Epilepsy can be controlled with modern anticonvulsants. However, over 30% of people with epilepsy have uncontrolled seizures even with the best available drugs in conventional medicine. Other difficulties in the treatment of epilepsy are severe side effects and chronic toxicity of the drugs. Therefore there is an increasing interest and faith of the people in the traditional medicines for the management of epilepsy and other diseases. In this study, we reviewed the concept, etiology to management of epilepsy discussed in Unani classics and some scientific studies conducted on Unani drugs for their antiepileptic effects which would help in finding the new intervention for this neurological ailment.

Epilepsy in unani system of medicine

Unani physicians first coined the word epilepsy means 'to attack'. Buqrat (Hippocrates) wrote about this disease in his book *ebizemia* (The Sacred Disease). He wrote about the epilepsy that it is not divine or more sacred than any other disease, but it has a natural cause. Buqrat who put the theory of four humours and mentioned that epilepsy or any other disease occurs due to qualitative and quantitative changes in humoral balance. Aristotle (384-322 BC) believed that raddi bukharat (bad vapors) produced during digestion of food reaches to the brain through veins causes epilepsy. According to Soranus (98-138 AD) mechanical factors like head injury, contusion in brain may also cause epilepsy [7]. Jalinoos (129-199 AD) elaborated that epilepsy occur due to affection of brain: epilepsy resulted from obstruction of Batan-i Dimagh

(cerebral ventricles) by phlegmatic and melancholic humours, while sympathetic epilepsy originated from other parts of the body, involving the brain subsequently. He was the first person who described the 'aura' i.e. symptoms before epileptic fit [8]. Later other physicians such as Rabban Tabri, Zakariya Razi, Ibn Sina, Baghdadi, Qamri, Azam Khan furthered the transmission of ancient knowledge by translating the old medical literature into Arabic and Persian and adding their research work on epilepsy in their writings.

Materials and Methods

The classic and relevant books of Unani Medicine were studied on epilepsy; the literature and claims in support of this article were taken from these books. The databases utilized for obtaining information are scientific research publications from journals indexed/available through Google Scholar, Scopus, PubMed, and Science Direct. Relevant facts were also obtained from general databases such as Google.

Introduction of epilepsy in Unani medicine

Unani physicians discussed epilepsy as Sar', meaning the falling sickness [8].

Epilepsy (sar') is defined as a convulsive brain disorder that proves to be deterrent for the normal sensory and motor functions of related organs [9,10]. It is an episodic disease in which sensory and motor functions of the related organs are stopped. According to Razi, epilepsy (sar') is a type of spasmodic condition of the body The patient falls down and experiences convulsion and frothing from the mouth [8]. It is a condition that occurs due to partial obstruction in the passage of Ruh Nafsan (psychic pneuma) [11]. Epilepsy is the cessation of all sensory faculties of a person and the person suddenly falls on the ground with involuntary movement of face and spasm of both upper and lower limbs accompanied with a frothy salivary discharge from mouth [12].

Etiology of epilepsy in Unani medicine

The etiology of epilepsy has also discussed elaborately by Unani physicians. The main cause of epileptic seizure is an incomplete obstruction at the origin of nerve by viscous cold humours [8,11]. The obstructive matter may be *viscous* phlegm, melancholic humour or viscous vapours that are accumulated in cerebral ventricles, meninges or blood vessels supplying the brain which prevents complete imbibitions of mental pneuma (Ruh nafsaneya) in the nerve [11]. Accumulation of morbid materials which is supposed to be

habitually evacuated from the body viz; menstruation also leads to epilepsy or it is secondary when only the pathology lies in the brain whereas the real source of disease is either the stomach, uterus or other organ of the body [9,13]. It may be caused by endogenous factors (hormonal i.e. epilepsy seen during pregnancy which is often cured after delivery) [8]. Epileptogenic factors that increase the risk of developing epilepsy (trauma, birth injury, etc.) [8,9].

Pre disposing factors for epilepsy

It is more common in children, then adults and rarely affects elderly [8].

Avicenna mentioned that seizures often occur spontaneously without apparent inciting cause in most individuals and are precipitated by external or internal stimuli like extreme weather, swimming, prolonged bathing, exhaustion, long exposures to bright and shiny objects, euphoria, alcohol intake, hunger, overfeeding, sleep deprivation, seeing the moving objects, helminthiasis etc. [9].

Classification of epilepsy (Sar') in Unani medicine

- Epilepsy is classified under two main categories [12]:
- Primary epilepsy (Sar'or Sar'Asli) - A condition where the cause of epilepsy lies in the brain itself. It is further classified on the bases of causative humour such as Primary Phlegmatic epilepsy (Sar' Dimaghi Balghami), Primary melancholic epilepsy (Sar' Dimaghi Sawdavi), Primary sanguineous epilepsy (Sar'Dimaghi Damvi) and Primary bilious epilepsy (Sar'Dimaghi Safravi) (Ikseer).
- Secondary epilepsy (Sar' Shirki) - A condition when epilepsy occurs due to other diseases of the body. Secondary epilepsy classified into sub types depending upon the involvement of organ of the body such as epilepsy due to disease of spleen (Sar'Tihali), epilepsy associated with intestinal ailments (Sar' Ama'i). Each sub type is further classified on the bases of causative humour as phlegmatic, melancholic, sanguineous and bilious (Ikseer).

Epilepsy of various types are summarized with their etiology in Unani perspective and their correlation with modern aspects is given below [12,14]:

- Primary epilepsy (Sar' Dimaghi or Sar' Asli)- A condition where the cause of epilepsy lies in the brain itself.

- Secondary epilepsy (Sar' Shirki)- A condition when epilepsy occurs due to other diseases of the body.
- Sar' Hissi- It is a type of epilepsy in which seizures occurs due to the increased sensitivity of the brain.
- Traumatic epilepsy (Sar' Darbi)- A type of epilepsy that occurs due to head injury.
- Reflex epilepsy (Sar' Badani)- Seizures in this type of epilepsy occurs when Radi bukharat (putrefied gases) from the body get collected in the brain.
- Epileptic aura (Sar'Atrafi)- Epilepsy of this type occurs when Radi (putrified gases) from hand and legs get collected in the brain.
- Sting epilepsy (Sar' Las'i)- Epileptic seizures that occurs due to scorpion or insect bite.
- Hysterical epilepsy (Sar'Rahimi)-A type of secondary epilepsy that occurs due to the involvement of uterus.
- Cardiac epilepsy (Sar' Qalbi)- A type of epilepsy associated with some cardiac diseases.
- Hypochondriacal epilepsy (Sar' Maraqi)- It is a type of epilepsy associated with peritoneal ailment.
- Petit mal Epilepsy (Sar' Khafif)- In this type of epilepsy intensity of convulsions is mild. Seizures usually accompanied with tinnitus, congestion and tension but without heaviness of head.
- Grand mal seizures (Sar'Shadid)- In this type of Sar'(epilepsy) intensity of convulsions is severe.
- Infantile epilepsy (Sar'al-Atfal)- Epilepsy that occurs in infants/children. Affected child experiences convulsions with frothing from mouth. Most physicians think that Umm al-Sibyan and Rih al-Sibyan are one and the same as is Sar' al-Atfal, but some physicians do not support this statement. They think that Umm al-Sibyan is a type of Sar'(epilepsy) which is accompanied with high fever (febrile convulsion).
- Procursive epilepsy (Sar' Khababi)- In this type of epilepsy episode of convulsion occurs due to fast running or exercise.
- Nocturnal epilepsy (Sar' Layli)- A type of epilepsy in which seizures occur at night.
- Diurnal epilepsy (Sar' Nahari)- In this type of epilepsy episodic convulsions occur at daytime.

Sign and symptoms

Famous physician Rabban Tabri stated that as the seizure starts, the patient falls to the ground [15] and froths comes out from the mouth and occasionally accompanied by the occurrence of urinary and bowel incontinence [8]. Sometimes patient complains of prodromal symptoms (aura) such as heaviness in head, vertigo, gloominess, yellowish discoloration of face, tongue paresthesia, spreading extremities paraesthesia, incoherent speech, nightmares and sadness, epigastric discomfort [8,9,13]. Symptoms also depend on predominance of humour which helps in diagnosis of causative factor and treatment. Based on formation of morbid black bile (Sawda Gahyr Tabai) such as- if it is from exhaustion of dam (blood) then patient is fond of laughter, sportive and thinks exhilarant; if it is formed from exhaustion of yellow bile (safra) then patient is mentally hard working and are very hyperactive but irritable and insomnia is present and seizure usually appear when stomach is empty. In case of predominance of phlegm (balgham), seizure last for short time and symptoms are less severe, more saline frothing from mouth occurs during seizure and patient is gloomy and lethargic. The features of seizure in saudavi variety (melancholic) are severe, and patient like loneliness and remains silent mostly [15]. Sometimes post-ictal state occurs, in which patient regaining consciousness complains of headaches and depression, muscle pain in the lumbar and sacral region, hiccups and tremors may be present [9,13]. Excessive or frequent epileptic seizures (now known as status epilepticus) may leads to death [8].

Diagnosis of epilepsy

Approach of Unani physicians to the diagnosis of epilepsy relies mainly on the pulse and urine examination with history taking. The pulse of epileptics is irregular, protracted with varied strength and rate. Whereas urine becomes translucent and viscous and bubbles are seen in the urine [9,12]. Bluish discoloration of sublingual veins is observed after fit. These veins become more prominent [8]. Presence of specific symptoms of predominant humour also help in diagnosis of type of epilepsy [12].

Principles of treatment (Usool-i Ilaj) of epilepsy:

- Evacuation (Tanqiya-i Badan) [16]
- Cleansing of brain (Tanqiya-i Dimāgh) [16]
- Alterative of temperament (Tadil-i Mizaj) [8,12]
- Regimens for moderation of humoral abnormality (Tada-beer-i Talteef) [16]

- Brain tonics are given for strengthening of brain (Taqwiyat-i Dimagh) [8,13]
- Treatment of underlying disease [8,12].

Treatment of epilepsy in Unani medicine:

The epileptic treatment strategy is the treatment of epileptic convulsion at the time of panic attack and prophylactic and preventive measures for recurrent attacks [12,13].

During attack

- Keep the sharp and harmful objects away from the patient.
- Avoid tongue bite by keeping soft cloth or cotton in the mouth.

Remedies effective during convulsion [8,12]

- Lukewarm Roghan Gul is rubbed over the body.
- Local application of Roghan banafsha mixed with milk, on the forehead [12].
- Shamoom (compound for smelling) prepared with Hildeet (*Ferula assafoetida*, Linn.).
- Instillation of Hildeet (*Ferula assafoetida*, Linn.) and Jundbedastar (Castoreum) mixed with vinegar, in the nose [8,11,12].
- Instillation of Aab-i Marzanjosh (Juice of *Origanum majorana*, Linn.) as nasal drops in the nose. [8]
- *Ood saleb* (*Paeonia officinalis*, Linn.) in form of powder is blown in the nose [18].
- Smelling of Suddab (*Ruta graveolens* Linn.) [8,9].
- Hijama (cupping) at the lower side of ribs [8].

During rest

- Ayaraj-i Rofas is given as purgative and is very effective [8].
- Ayaraj-i Jalinoos/Ayaraj-i Loghaziya/Ayaraj-i Fayqra is given for detoxification of the body [12].
- Oral administration of Sheham-i Hanzal for purgation of morbid phlegm [11].
- Oral administration of Majoon prepared with equal part of powdered Aqarqarha (root of *Anacyclus pyrethrum* DC.) and honey [8].
- Mixture of Sirka 'Unsuli and Ayaraj-i Fayqra is used for gargling [12].

Unani Single drugs (anti-epileptics) effective for epilepsy

S. No.	Name of the drugs
	Aftimoon (<i>Cuscuta epithymum</i> Linn.) [8,11,17,18]
	Anisoon (<i>Pimpinella anisimum</i>) [19]
	Aqarqarha (<i>Anacyclus pyrethrum</i> DC.) [8,12]
	Bunduq Hindi (<i>Sapindus trifoliatus</i> Linn.) [8,9]
	Fawaniya (<i>Paeonia officinalis</i> Linn.) [8,9]
	Filfil (<i>Piper nigrum</i> Linn.) [8]
	Ghariqoon (<i>Agaricus alba</i>) [9,11,17,18]
	Hilteet (<i>Ferula foetida regel.</i>) [8,18]
	Halayla siyah (<i>Terminalia chebula</i> Retz.) [18]
	Jadwar (<i>Delphinium denudatum</i> wall.) [19]
	Jaosheer [17,18]
	Kazbarra (<i>Coriandrum sativum</i> Linn.) [8,18]
	Kharbaq siyah (<i>Helleborus niger</i> Linn.) [12,17,18]
	Qinnab (<i>Cannabis sativa</i> Linn.) [18]
	Sakbinaj (<i>Ferula persica</i> Willd.) [8,17,18]
	Sisaliyus (<i>Levisticum officinale</i> Koch.) [8,17,18]
	Suddab (<i>Ruta graveolens</i> Linn.) [8,13]
	Ustukhudus (<i>Lavandula stoechas</i> Linn.) [8-12,17,18,19]
	Waj (<i>Acorus calamus</i> Linn.) [19] KA 348
	Zarawand Mudharaj (<i>Aristolochia rotundus</i>) [8,19]
	Zarawand Taweel (<i>Aristolochia longa</i>) [8,19]

Table 1

Compound drugs

S. No.	Compound
	Ayaraj-i Rofas [8]
	Dawa al-Misk Hulw [11]
	Habb-i Sar' [12]
	Khamira-i Gāozaban Ambari Jadwar ood Salib Wala [12]
	Majoon-i Najah [12]
	Majun-i Zabeeb [12]
	Sikanjabin Unsuli [8]
	Tiryayq Arbaa [11,12]
	Tiryayq Samaniya [12]

Table 2

Regimenal Therapy (Ilaj bil tadbeer)

- Bloodletting (Fasd) through cephalic vein (wareed Qaiphah) is effective in Sanguineous epilepsy (Sar' Damvi) [11,12]. Emesis (Qay) and Purgation (Ishal) is indicated other humoral types and secondary epilepsy [8,11,12].
- Dalak (massage) general body massage followed by head massage. For this purpose Roghan Suddab, Roghan Qust, Roghan Gul or Roghan Aas are used [8].
- Riyazat Exercise- mild to moderate exercises are recommended [9].
- Huqna (Enema) [12,16].
- Hammām (Bath) with warm water. But prolonged stay in Hammam room should be avoided [8,9].
- Hijama (Cupping): Cupping on calf muscles is effective in epilepsy [11,15].
- Takmeed Haar (hot fomentation) is done over head [8].

Dietotherapy (Ilaj bil Ghiza)

Diet plays an important role in prevention of epileptic fits, as Avicenna wrote, "Most illnesses arise due to long-continued errors of diet and regimens.

Unani physicians recommended following dietary instructions to the epileptics.

Diet that produces less quantity of blood and cold in nature is effective in sanguineous epilepsy [11,12]. Soft and easy digestible diet is recommended such as:

- Khas (Lettuce), Hindba (cichorium), Ma al-Jubn (whey), Ma al-Hummas (gram water), Ma al-unsul (drink prepared with onion and honey), mutton and bread dipped in pomegranate juice [8,11].

Dietary restrictions

Less digestible diet [8,12], diet with Acrid taste [8] and diet that produces viscous phlegm or black bile and flatulence like cow meat, garlic, lentil, cabbage, turnip, wine, cheese and other dairy products and moist fruits [8,15].

Things that trigger seizures should be avoided like Sedentary life style, smelling of moderate to strong fragrances, constipation and indigestion, loud noise, seeing rotating objects, Excessive hunger, alcohol consumption, excessive wakefulness [9,11,16].

Research studies on some Unani drugs

Although herbs and their preparations are used since hundreds of years to cure epilepsy by the physicians of Unani system of medicine, but evidence from the experimental and clinical models to determine the efficacy and safety of the described drugs is lacking. Here some scientific studies are mentioned to prove antiepileptic effects of Unani drugs:

- **Anisoon (*Pimpinella anisum*):** Anticonvulsant activity of essential oil of the fruits of *Pimpinella anisum* in mice was reported by Pourgholami, *et al* [20].
- In another study methanolic extract of the anise seeds in doses of 12.5 - 400 mg/Kg was investigated for anticonvulsant activity in mice using Picrotoxin model. The results revealed that the extract showed a significant anticonvulsant activity in a dose of 200 mg/Kg compared to the control groups [21].
- **Aqar qarha (*Anacyclus pyrethrum*):** In a study conducted on rat model reported that the administration of hydro alcoholic extract of *Anacyclus pyrethrum* root shows promising anti seizure activity in PTZ induced seizures and maximal electroshock induced seizures [22]. Zaidi, *et al.* studied anticonvulsant, antioxidant, and neuropharmacological activities of the chloroform fraction of *Anacyclus pyrethrum* roots at a dose range of 100–800 mg/kg (i.p.) in mice using PTZ and increasing current electroshock (ICES) models. The result indicated potential anti seizure activity of chloroform fraction of *Anacyclus pyrethrum* root extract along with additional neuro-pharmacological effects [23]. Pahuja, *et al.* reported anticonvulsive effect of orally administration of hydroalcoholic extracts of *A. pyrethrum* root in the doses of 100, 250 and 500 mg/kg in the PTZ-induced kindling, spatial memory, oxidative stress, and rho kinase (ROCK II) in albino mice [24].
- **Halayla (*Terminalia chebula Retz.*):** Debnath, *et al.* reported that ethanolic extract of *Terminalia chebula* in doses of 200 and 500 mg/kg shows anticonvulsant activity against electroshock seizure (MES) test, pentylenetetrazole (PTZ), and picrotoxin test in albino mice [25].
- **Qinnab (Cannabis):** Δ^9 -tetrahydrocannabinol and Δ^9 -tetrahydrocannabivarin (the propyl variant of Δ^9 -tetrahydrocannabinol) are main psychoactive agents of the ingredients of cannabis, and both of them show anti-seizure effect on acute generalized seizure models, including MES- and pentylenetetrazol-induced seizures [26].
- **Kalonji (*Nigella sativa*):** Ilhan, *et al.* reported antiepileptogenic effects of *Nigella sativa* oil against pentylenetetrazol induced kindling in mice [27].
- Akhondian, *et al.* reported the efficacy of the aqueous extract of *Nigella sativa* in reducing the frequency of seizures in childhood refractory epilepsy. This study was a double-blind crossover clinical trial conducted on children with refractory epilepsy. The extract was administered as an adjunct therapy, and the effects were compared with those of a placebo. The mean frequency of seizures decreased significantly during the treatment with the water extract of *Nigella sativa* L. in children with refractory seizures [28].
- **Hilteet (*Ferula asafoetida*):** The anticonvulsant effect of *Ferula asafoetida* gum ethanolic extract was investigated using PTZ-induced kindling method in male mice. The result revealed that hydro alcoholic extract of the gum of *F. asafoetida* reduces PTZ-induced seizures by an enzyme-mediated antioxidant effect [29].
- **Jadwar (*Delphinium denudatum Wall.*):** In a study, anticonvulsant screening of the ethanolic extract (EE) and aqueous fraction (AF) of this plant utilizing the maximal electroshock (MEST) and subcutaneous pentylenetetrazole (scPTZ), bicuculline (scBIC), picrotoxin (scPTX) and strychnine (scSTN) tests in mice model. The results suggested the presence of potent anticonvulsant compounds in AF of *D. denudatum* [30].
- **Ustukhuddus (*Lavendula stoechas*):** A study was conducted on The aqueous-methanolic extract of *L. stoechas* flowers for its possible anticonvulsant and antispasmodic activities in mice. The extract (600 mg/kg) significantly reduced the severity and increased the latency of convulsions induced by PTZ and also reduced PTZ's lethality. *L. stoechas* extract up to a dose of 600 mg/kg was found devoid of any hypnotic effect in mice; however, animals were found to be dull, calm, and relaxed. The sedative effect of the plant extract was confirmed [31].
- **Majoon Najah:** Majoon Najah is a compound used for treatment of epilepsy in Unani medicine. Zeba, *et al.* reported

anticonvulsant activity of Majoon Najah (compound drug of Unani medicine) in swiss albino mice [32].

Conclusion

Unani physicians were the first to discuss epilepsy as a neurological problem. In Unani classics, four methods of treatment are mentioned for the treatment of disease these are dietotherapy (Ilaj bil Ghiza), pharmacotherapy (Ilaj bil Dawa), Regimenal Therapy (Ilaj bil Tadbeer) and Surgery (Ilaj bil yad). Unani physicians have used mainly first three methods of treatment for management of epilepsy. Treatment of epilepsy is comprised on pharmacotherapy, life style modification and dietotherapy. Various drugs of plants origin were used by them, regimenal therapies such as hijama, fasd etc. have been noted to be beneficial for epileptics. These drugs and other regimens are natural and free from side effects. They have also mentioned treatment of underlying cause and avoidance of conditions that trigger the seizure. Unani system of medicine which is enriched with paragon of tradition with documented knowledge of classical texts dealing not only the concept of epilepsy but also its management with various modes of treatment which if pursued will mitigate the suffering humanity to a great extent. Research studies carried out on some Unani drugs proved antiepileptic on scientific parameters. There is a need to explore and carry out more research in the field.

Bibliography

1. KB Fauci and HL Jameson. "Harrison's Principle of Internal Medicine". Mc Graw Hill Medical Publishing division, USA 2 (2005): 2357-59.
2. <https://www.who.int/news-room/fact-sheets/detail/epilepsy>
3. Scheuer ML and Pedley TA. "The evaluation and treatment of seizure". *The New England Journal of Medicine* 323 (1990): 1468-1474.
4. Kamboj P, et al. "Anticonvulsants from nature". *Pharmacognosy Reviews* 3.5 (2009): 108-117.
5. Reddy DS. "Pharmacotherapy of catamenial epilepsy". *Indian Journal of Pharmacology* 37.5 (2005): 288-293.
6. Sierra-Paredas G. "Recent advances in the neurochemistry of epilepsy". *European Neurology Review* 3.1 (2008): 96-98.
7. Chaudhary UJ, et al. "A dialogue with historical concepts of epilepsy from the Babylonians to Hughlings Jackson: persistent beliefs". *Epilepsy Behavior* 21.2 (2011): 109-114.
8. Razi MBZ. *Kitab al-Hawi*, Volume I (Urdu Translation), CCRUM, New Delhi (1997): 106-130.
9. Ibn Sina. *Al-Qanun fi'l-Tibb*, Volume III, Part I (Arabic), Jamia Hamdard, New Delhi (1411 H): 114-123.
10. Ibn Zuhri. *Kitab al-Taysir fi'l-Mudawa wa-al-Tadbeer* (Urdu Translation), CCRUM, New Delhi (1986): 55.
11. Baghdadi H. *Kitab al-Mukhtarat*, Vol-III, (Urdu Translation), CCRUM, New Delhi (2004): 45-49.
12. Khan M A. *Iksir-i Azam*, Volume II, (Persian), Matba Nami Nawal Kishor, Lucknow (1906): 238-265.
13. Qamri A M H. *Ghina Muna* (Arabic), CCRUM, New Delhi (2008): 18-24.
14. Anonymous. *Standard Unani Medical Terminology*, CCRUM, New Delhi (2012): 87-188.
15. Tabri R. *Firdaws al-Hikmat* (Urdu translation by Rasheed Ashraf Nadvi), CCRUM, New Delhi (2010): 306-308, 313.
16. Nafis b. Iwaz. *Sharah al-Asbab wa-al-Alamat*, part I (Arabic), Matba' Nami Munshi Naval Kishor, Lucknow (1326H): 86-87.
17. Ibn Sina. *Al-Qanun fi'l-Tibb*, Vol. II (Urdu translation), Matba Munshi Naval kishor Lucknow (1931): 39-40,67,162-164,220-21, 232
18. Ibn Hubal, *Kitab al-Mukhtarat*, Vol-II, (A), Daira Ma'arifa Usmania, Hyderabad 16,53,67,68-69,89,108,115,138, 195,204-5.218,222,255.
19. Ghani MN. *Khazainul Advia*, Idara kitab al-Shhifa, Dariyaganj, New Delhi (NM): 226, 348, 756, 552.
20. MH Pourgholami, et al. "The fruit essential oil of *Pimpinella anisum* exerts anticonvulsant effects in mice". *Journal of Ethnopharmacology* 66.2 (1999): 211-215.
21. MH Heidari and M Aieli. "Effects of methyl alcoholic extract of *Pimpinella anisum* L. on picrotoxin induced seizure in mice and its probable mechanism". *Scientific Journal of Kurdistan University of Medical Sciences* 10.3 (2005): 1-8.

22. MA Kalam., *et al.* "Evaluation of anticonvulsant activity of Aqar qerha root in experimental animals". *Hippocratic Journal of Unani medicine* 10.4 (2015): 1-12.
23. MA Zaidi., *et al.* "Anticonvulsant and neuropharmacological studies of Anacyclus pyrethrum root extract". *Neuroscience Research* 65.1 (2009).
24. Pahuja M., *et al.* "Effect of Anacyclus pyrethrum on pentylene-tetrazole-induced kindling, spatial memory, oxidative stress and rho-kinase II expression in mice". *Neurochemical Research* 38.3 (2013): 547-556.
25. J Debnath., *et al.* "Anticonvulsant activity of ethanolic extract of fruits of Terminalia chebula on experimental animals". *International Journal of Drug Development and Research* 2.4 (2010): 764-768.
26. Wei Liu., *et al.* "Effects of herbal medicine on epilepsy". *Oncotarget* 8.29 (2017): 48385-48397.
27. Ilhan A., *et al.* "Antiepileptogenic and antioxidant effects of Nigella sativa oil against pentylene-tetrazol induced kindling in mice". *Journal of Neuropharmacology* 49.4 (2005): 456-464.
28. J Akhondian., *et al.* "The effect of Nigella sativa L. (black cumin seed) on intractable pediatric seizures". *Medical Science Monitor* 13.12 (2007): 555-CR559.
29. Z Kiasalari., *et al.* "Investigation of Anti-convulsant effect of alcoholic Ferula asafoetida Gum extract ptz-induced kindling model in mice". *Daneshvar Medicine* 18.10 (2010): 25-32.
30. Raza M., *et al.* "Anticonvulsant activities of ethanolic extract and aqueous fraction isolated from Delphinium denudatum". *Journal of Ethnopharmacology* 78.1 (2001): 73-78.
31. AH Gilani., *et al.* "Ethnopharmacological evaluation of the anticonvulsant, sedative and antispasmodic activities of Lavandula stoechas Linn". *Journal of Ethnopharmacology* 71.1-2 (2000): 161-167.
32. Zeba Afreen., *et al.* "Evaluation of anticonvulsant activity of Majoon Najah in experimental animal model". *Asian Journal of Pharmacy and Pharmacology* 5.4 (2019): 660-668.

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