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Review

The Role of *Tarantula cubensis* Extract in Homeopathic Treatment

Merve AVCIOĞLU[1]*, Murat BOYACIOĞLU[2]

[1]*Aydın Adnan Menderes University, Health Sciences Institute, Department of Pharmacology and Toxicology, Aydın, TÜRKİYE*

[2]*Aydın Adnan Menderes University, Faculty of Veterinary Medicine, Department of Pharmacology and Toxicology, Aydın, TÜRKİYE*

ABSTRACT

Homeopathy is a method that offers natural, side-effect-free, complementary, and long-lasting treatment. The primary objective of homeopathy is to enhance the body's self-healing abilities by providing it with the necessary energy. Homeopathic remedies are derived from natural substances and administered through natural methods. These natural ingredients include animal tissues, plants, minerals, natural secretions, and disease secretions. *Tarantula cubensis* (*T. cubensis*) is a commonly used source of animal-derived homeopathic materials. *T. cubensis* extract promotes blood circulation and absorption in veterinary medicine for conditions like foot bruises, ulcers, abscesses, and various inflammatory and necrotic cases, leading to rapid recovery with a single dose. This review discusses information about homeopathy, its principles, and the role of *T. cubensis* extract in veterinary medicine.

***Keywords**: Homeopathy, remedy, Tarantula cubensis extract.*

Homeopatik Tedavide *Tarantula cubensis* Ekstraktının Rolü

ÖZET

Homeopati, doğal, yan etkisi olmayan, tamamlayıcı ve kalıcı tedavi sağlayan bir yöntemdir. Homeopatinin temel amacı vücuda ihtiyacı olduğu enerjiyi yükleyerek onun kendi kendine iyileşme gücünü artırabilmektir. Homeopatik ilaçlar doğada bulunan maddelerden elde edilir ve doğal yöntemlerle uygulanır. Bu doğal maddeler; hayvan dokuları, bitkiler, mineraller, doğal salgılar ve hastalık salgılarıdır. *Tarantula cubensis* (*T. cubensis*) en sık kullanılan hayvansal kaynaklı homeopatik materyallerden biridir. *T. cubensis* ekstraktı veteriner hekimlikte ayak çürükleri, ülser, apseler, her türlü yangılı ve nekrotik olgularda kan akımını ve emilimi sağlayarak tek dozda çok hızlı bir iyileşme sağlamaktadır. Bu derlemede homeopati, ilkeleri ve *T. cubensis* ektraktının veteriner hekimlikteki rolü ve önemi hakkında bilgiler ele alınmıştır.

***Anahtar kelimeler**: Homeopati, remedi, Tarantula cubensis ekstraktı.*

***Corresponding Author:** Merve AVCIOĞLU, Aydın Adnan Menderes University, Health Sciences Institute, Department of Pharmacology and Toxicology, Aydın, TÜRKİYE. merveavcioglu@gmail.com*

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Introduction

Classical medicine, often referred to as allopathy, is the most widely practiced system worldwide and treats diseases using drugs with opposing effects. In addition to classical medicine, there are various complementary and alternative treatments available. These include mind/body therapies like hypnosis and imagery, acupuncture, and the use of certain nutritional supplements such as nutraceuticals and botanicals, which are now being integrated into conventional medical practices (Merrell and Shalts, 2002).

According to the World Health Organization (WHO), homeopathy, one of these alternative methods, is among the most frequently used traditional and complementary medical practices worldwide. Homeopathy treats diseases using diluted and potentized drugs with similar effects, offering a natural approach to healing with minimal side effects (WHO, 2009).

Homeopathy derives its name from the Greek words 'homeos' (similar) and 'pathos' (suffering or disease), reflecting its fundamental principle of 'like cures like.' This holistic treatment system uses the patient's mental, spiritual, and physical history, making it particularly suitable for addressing chronic, psychological, and conditions unrecognized or incurable by modern medicine (Sahani, 2007; Pekmezci and Gültiken, 2015).

The primary goal of homeopathy is to enhance the body's self-healing power by stimulating the necessary energy (Sahani, 2007). This treatment method was developed by German physician Friedrich Samuel Hahnemann between 1796 and 1843 (Fisher, 2012). Hahnemann's research led to the conclusion that a substance causing various effects, including harmful ones when administered in large quantities to a healthy individual, can have a curative effect when given in extremely small amounts to someone with similar symptoms. This phenomenon is known as the 'Rule of Similars' (*Similia similibus curantur* or like cures like) (Altıntaş and Özpek, 2019).

Classical homeopathy, as pioneered by Hahnemann, is based on three fundamental principles: the principle of similarity, the life force theory, and the rule of using a single drug in the minimum effective dose (Pekmezci and Gültiken, 2015).

The Principle of Similarity (Similia Similibus Curantur)

According to homeopathic philosophy, the symptoms that arise during an illness are considered reactions that help the body adapt to factors such as infectious agents and stress. In this context, a substance that would induce similar symptoms when administered in high doses can trigger the body's defense mechanism when given in very small amounts (Vockeroth, 1999). Following this concept, rather than attempting to eliminate the symptoms, homeopathy focuses on strengthening the patient's life force by provoking similar symptoms. In essence, homeopathy is a treatment system founded on the principle of *'Similia similibus curantur*,' which translates to 'like cures like' (Kayne, 2006).

The Life Force Theory

According to the life force theory, for any treatment to be effective, the body's response must be sufficient. Each individual possesses a life energy defined as their vital force, which serves as the true curative power. The administration of a similar remedy in homeopathy aims to stimulate this vital force and facilitate healing (Owen, 2007).

Single Drug and Principle of the Minimum Effective Dose

Classical homeopathy, as developed by Hahnemann, adheres to the practice of using only one remedy that matches the patient's symptoms and disease presentation, with no mixing of different remedies. Studies evaluating the efficacy of homeopathic medicines are also conducted with single remedies. The effects of each remedy are detailed separately in the Materia Medica, a publication that explains the individual characteristics and effects of remedies. This approach is necessary because only one remedy should closely match the patient's condition. In cases of using multiple remedies, it becomes unclear which remedy is responsible for any observed effects. Using multiple remedies may lead to interactions that enhance or negate each other's effects (Pekmezci and Gültiken, 2015).

In addition to the principle of using a single remedy, another critical factor affecting the success of homeopathic treatment is the principle of the minimum effective dose. According to this principle, the specific therapeutic effects of a remedy tend to occur when given in the smallest yet most effective dose. Administering high doses may affect the vital force beyond its perceptual capacity, potentially resulting in treatment failure (Owen, 2007).

Potency

Depending on the dilution rate in homeopathy, the potency of a substance is expressed as low, medium, or high. "Low" indicates a low dilution (high amount of active ingredient), while "high potency" means a high dilution (low amount of active ingredient) (Kaya, 2013).

Dilutions can be made using either "D potency (Decimal) dilution" or "C potency (Centimal) dilution." D potency (Decimal) dilution is prepared at a 1/10 ratio, with 1 drop of the main ingredient diluted in 9 drops of alcohol by shaking. C potency (Centimal) dilution is prepared at a 1/100 ratio, with 1 drop of the main ingredient diluted in 99 drops of alcohol. M potency (Millesimal) dilution is prepared at a 1/1000 ratio and LM potency (50 Millesimal) dilution is prepared at a 1/50000 ratio (Chatterjee, 2003).

The more diluted a substance, the stronger its effect. According to this:

D1 – D12, C1 – C6, LM1 – LM2 represent low potency. D1 – D12; It shows that it has been diluted 12 times in 1/10 alcohol. C1 – C6; It shows that it has been diluted

6 times in 1/100 alcohol. LM1- LM2; It shows that is has been diluted 2 times in 1/50000 alcohol.

D13 – D21, C7 – C12, LM3 – LM5 indicate medium potency. D13 – D21; It shows that it has been diluted 8 times in 1/10 alcohol. C7 – C12; It shows that it has been diluted 5 times in 1/100 alcohol. LM3 - LM5; It shows that is has been diluted 2 times in 1/50000 alcohol.

≥ D22, ≥ C13, ≥ LM6, and M1 – M10 signify high potency. D22; It shows that it has been diluted more than 22 times in 1/10 alcohol. C13; It shows that it has been diluted more than 13 times in 1/100 alcohol. LM6; It shows that is has been diluted more than 6 times in 1/50000 alcohol. M1 – M10; It shows that it has been diluted 10 times in 1/1000 alcohol.

The potency of a homeopathic substance is expressed by appending the dilution or potency unit to its name, such as "*Achillea millefolium* D4," "*Arnica montana* 1M," and "*Aconitum napellus* D12." In homeopathy, the effectiveness of a substance is expressed through the energy it carries, which contrasts with the dose-effect relationship in pharmacology (Kaya, 2013).

Remedies

In homeopathy, a wide range of substances are used for remedies. These include:

- Herbal sources like *Atropa belladonna*, *Arnica montana*, and *Calendula officinalis*.

- Animal materials such as snakes, scorpions, dog milk, bees, blood, cartilage tissue, umbilical cord, and embryos.

- Diseased tissues like pus, saliva from a rabid dog, scabies, tuberculosis discharge, or cancer tissue.

- Mineral substances including gold, arsenic, phosphorus, zinc, and calcium.

- Chemical substances like sulfuric acid, ascorbic acid, sodium-calcium-magnesium, and potassium salts.

Among these, the most commonly used substances are herbal and mineral ones (Pekmezci and Gültiken, 2015). Approximately 70% of homeopathic medicines are plant-derived and can be prepared from various parts of the plant, including fruits, seeds, stems, bark, flowers, leaves, stigmas, and roots. Non-woody plants are also used in remedies (Yapar Alğın and Özdemirhan, 2020). Particular care is taken to ensure that these plants are grown under natural conditions and are free from foreign or contaminating substances.

Use of Homeopathy in Veterinary Medicine

Homeopathic treatment is now widely used in both veterinary and human medicine. Although the drugs used in homeopathy are the same as those used in humans, some features distinguish veterinary homeopathy from applications in humans. It is important to consider the patient's body type and personality characteristics when choosing the remedy. This involves asking the patient's owner numerous questions, and closely observing the animal during the anamnesis. During the anamnesis, the patient's habits, personality traits, and the animal's condition should be assessed, and treatment should be applied accordingly (Hamilton, 1999).

Homeopathy is used in the treatment of many diseases in both farm animals and small animals. Homeopathy is highly effective in farm animals, especially in cases of mastitis (Kuru and Oral, 2013). The medications are available in small tablets or liquid form, making them easy to administer and allowing for quick absorption under the tongue. It's essential that the treatment is administered by a qualified homeopath to avoid undesirable situations like incorrect drug selection or overdose (Vockeroth, 1999).

Homeopathic substances are utilized in veterinary medicine to help treat a wide range of conditions, including allergic reactions, uterine, urinary tract, and breast diseases, infertility, retention of pup membranes, joint and muscle inflammation and pain, smooth muscle spasms, jaundice, fatty liver, fever and heart failure (Kızıl and Atam, 2016).

Successful results have been achieved using homeopathic treatments for dogs and horses with Cushing's syndrome, thyroid tumors, or hypothyroidism. For the treatment of horses and dogs with Cushing's syndrome, a combination of C30 potency ACTH and Quercus robur was administered twice a day until clinical symptoms disappeared (Elliott, 2001).

According to the principle of similarity in homeopathy, the use of inflammation-stimulating substances in different doses in traditional laboratory environments inhibits the functions of many cells responsible for inflammation. It is stated that at homeopathic doses of *Apis mellifica* (*A. mellifica)* to inhibit basophil activation in an acute inflammation model (Bellavite et al., 2006a). Moreover, while it is well-known that high doses of bee venom (when delivered through a sting) can cause edema and erythema, it's also established that *A. mellifica* potencies have a therapeutic effect on edema and erythema (Bellavite et al., 2006b).

Homeopathic preparations of *Syzygium jambolanum* and *Cephalandra indica* have shown antidiabetic effects by enhancing insulin action through the activation of insulin signaling molecules in the skeletal muscle of type-2 diabetic rats (Sampath et al., 2013). *Cochliomyia hominivorax* (*C. hominivorax*) flies cause myiasis in livestock in Brazil. In a study, it was observed that homeopathic drugs Sulfur 12cH and Pyrogenium 12cH, as well as the nosode produced by the larvae of the *C. hominivorax* fly with potencies of 8cH and 12cH, had a significant inhibitory effect on the development of third-stage larvae of this insect under laboratory conditions (De Barros et al., 2019).

Tarantula cubensis (T. cubensis) Extract

T. cubensis, known as *Mygale cubanensis*, is a homeo-

pathic remedy prepared from the Cuban tarantula, a member of the *Mygale* genus known for its large, mouse-sized, hairy tarantulas. This spider species belongs to the *Theraphosidae* family (Richardson-Boedler, 2002). Venoms from spiders in the *Loxosceles* genus can induce severe arachnoidism, a dangerous systemic reaction that includes renal failure, severe intravascular coagulation, thrombocytopenia, coma, and convulsions (Karabacak et al., 2015). The bite of the *T. cubensis* spider causes necrotic lesions in its victims, including sloughing of fascia and tendons. It can also induce systemic effects that may be fatal, particularly in children. *T. cubensis* was first proposed as a potential source for a remedy by L. Laeta Nicolet in 1998. The remedy was distributed from its original habitat in South America to Central America, the United States, and even Canada (Richardson-Boedler, 2002). The venom of the *T. cubensis* spider paralyzes some creatures and can have lethal effects.

The commercial form of *T. cubensis* extract, prepared by diluting it with alcohol under laboratory conditions (typically purified 6 times - D6), is used in veterinary medicine to treat various diseases (Dolapcioglu et al., 2013). The target species for this product include horses, cattle, dogs, cats, pigs, sheep, and goats. It has been reported that in these animal species, the drug produces varying degrees of demarcation, regeneration, anti-inflammatory, and resorptive effects in cases of septic or toxic diseases, skin inflammation, inflammatory nail diseases (such as panarisium and foot rot), phlegmons, ulcers, abscesses, and purulent necrotic conditions (Coşkun, 2017).

T. cubensis extract possesses four main properties (Çaycı, 2006):

1. Demarcation involves the separation of all living and dead cellular elements in the damaged area and the removal of dead, foreign, and pathological tissues from the body.

2. Regeneration refers to the rapid healing and revival of all tissues that need healing or that have been removed.

3. Resorption eliminates edema, swelling, and abscesses that accumulate in tissues to expedite healing.

4. Anti-inflammatory properties contribute to returning inflamed tissues to their normal state by preventing the formation of severe inflammation, thus preventing the resulting symptoms.

T. cubensis is used therapeutically for infectious skin diseases, and its clinical applications extend to lethargy, typhoid, lethal diphtheria, respiratory problems (such as whooping cough and the end stages of pulmonary tuberculosis), gangrene, and left-sided chorea (a nervous disease that causes body tremors and jerking) (Richardson-Boedler, 2002).

The Role of T. cubensis Extract in Veterinary Medicine

T. cubensis extract, a homeopathic agent, is obtained by processing the venom of the *T. cubensis* spider according to the rules of the 'Pharmacopeia Germanica' and diluting it with alcohol. In veterinary medicine, it has been observed that *T. cubensis* extract provides rapid recovery in a single dose by promoting blood flow and facilitating the absorption in cases of foot bruises, ulcers, abscesses, and all types of inflammatory and necrotic conditions (Kaçar et al., 2007; Dik et al., 2016).

Mastitis, defined as inflammation of the mammary gland, is the most common disease in dairy cattle and leads to significant economic losses (Seegers et al., 2003). The disease reduces milk yield, alters milk composition, and shortens the productive life of affected dairy cattle (Janzen, 1970). In the treatment of mastitis, a combination of intramammary and systemic antibiotics is traditionally used (Erskine et al., 1993). Studies have demonstrated there has been used *T. cubensis* extract for subclinical and clinical mastitis (Akçay et al., 2014; Gürbulak et al., 2014).

In a study, it was reported that when *T. cubensis* was added to the standard treatment protocol for a cat with an ulcer on the upper lip and erosion on the tongue, the tongue's erosion completely disappeared after 14 days and re-epithelialization was observed in the lip ulcer (Coşkun, 2017).

Bluetongue disease is an insect-transmitted viral disease that affects sheep and, less commonly, cattle. It is caused by a virus from the Orbivirus genus called the Bluetongue Virus (BTV). Infection in cattle is typically asymptomatic, although a few animals may develop severe clinical signs. These signs include fever, lameness due to inflammation of the coronary bands and sensitive lamina of the feet, lip edema, catarrh, stomatitis, excessive salivation, rhinorrhea, and enteritis. Given that bluetongue disease is of viral origin, recovery from the disease is usually prolonged and leads to economic losses. In cases of viral diseases like this, alternative medicine such as homeopathy can be considered. In a study, cattle with bluetongue disease were administered *T. cubensis* extract, which led to a decrease in inflammation in oral mucosal lesions, thanks to its antiphlogistic effect. This finding suggests that this extract may serve as an alternative option for veterinarians working in the field (Albay et al., 2010).

Foot and mouth disease is a highly contagious, acute viral infection that affects ruminants and pigs. The morbidity of the disease is high and approaches 100% in susceptible cattle populations. Affected animals undergo an extended recovery period. In cattle, the disease begins with high fever, loss of appetite, depression, and decreased milk yield. The fever typically returns to normal within two days. On the second and third days, the virus settles in the oral cavity, particularly affecting the tongue, breast skin, and interdigital tissues, leading to the formation of vesicles ranging from 0.5 to 10 cm in diameter (İnce and Kanat, 2015). In the treatment of foot and mouth disease (FMD), a study compared different approaches. One group received only *T. cubensis* extract, while another group received a daily application of flu-

nixin meglumine, oxytetracycline, washing of foot and mouth lesions with 10% sodium bicarbonate, and antibiotic spray application as part of classical treatment for three days. The third group received both classical treatment and *T. cubensis* extract. The results of this study showed that faster recovery occurred when *T. cubensis* extract was administered in addition to the classical treatment (Duz et al., 2012). When *T. cubensis* extract was used in cows suffering from foot-and-mouth disease, it was observed that body temperature decreased, and oral lesions healed rapidly (Lotfollahzadeh et al., 2012).

In a study, the effects of *T. cubensis* extract on certain serum enzymes, trace elements, and the cardiovascular system in sheep were investigated. Seven sheep were used in the study, and *T. cubensis* extract was administered subcutaneously at a dose of 3 ml. The study found that serum urea, creatinine, alanine aminotransferase (ALT), alkaline phosphate (ALP), gamma glutamyl transferase (GGT), lactate dehydrogenase (LDH), calcium (Ca) and phosphorus (P) levels increased, while total protein, magnesium (Mg), copper (Cu), iron (Fe), zinc (Zn), and selenium (Se) levels decreased. After treatment, there was an increase in blood pressure and changes in the electrocardiogram (ECG) in the cardiovascular system. However, the study concluded that the use of *T. cubensis* extract may have side effects in sheep, and further research on its effectiveness is needed (Gonul et al., 2015).

In cows, the retention of calf membranes after birth, known as retentio secundinarum, is a serious problem that occurs in the final stage of birth and significantly impacts postpartum animal health, welfare, milk yield, and fertility (Mordak and Anthony, 2015). To address this issue in cows, *T. cubensis* extract treatment was administered. This treatment aimed to prevent the formation of retentio secundinarum through its demarcation effect during the separation of calf membranes after birth. It also sought to expedite uterine healing with its regenerative and anti-inflammatory properties, accelerate the absorption of fluids in the uterus, and ensure a trouble-free puerperal period. The study's results concluded that *T. cubensis* extract can indeed prevent the formation of retentio secundinarum, reduce vaginal discharge, and expedite uterine involution (Kaçar et al., 2007).

In a study involving 35 cows of different breeds diagnosed with retentio secundinarium, three groups were created and treated as follows: one group received *T. cubensis* extract, another group received an intrauterine bolus containing chlortetracycline and vitamin A, and a third group received only *T. cubensis* extract, and another only chlortetracycline and vitamin A. The results demonstrated that intrauterine bolus therapy containing *T. cubensis* extract, chlortetracycline, and vitamin A was effective (Gurbulak et al., 2010).

The application of *T. cubensis* extract in malignant mammary tumors in dogs resulted in a reduction in the hardness of the mammary tumor, and postoperative injection prevented tumor recurrence. It was determined that *T. cubensis* extract increases apoptosis and reduces cell proliferation in breast tumors (Gültiken and Vural, 2007).

For the treatment of papillomatosis in dogs, *T. cubensis* extract was applied 2 days a week for 3 weeks. Three dogs showed improvement in the 2nd week, while the remaining dogs showed improvement in the 3rd week (Icen et al., 2011). When *T. cubensis* extract is used in the treatment of papillomatosis in cows, it causes the lesions to dry, shrink and decrease (Çam et al. 2007). In another study conducted on the treatment of teat papillomas in cattle, the effectiveness of ivermectin and *T. cubensis* extract was examined. The results of this clinical study showed that *T. cubensis* extract was more effective than ivermectin in the treatment of bovine papillomatosis over 6 months (Babu et al., 2020).

Aflatoxins are toxic fungal metabolites with adverse effects on humans and animals. In a study conducted using aflatoxin in rats, the effects of *T. cubensis* extract on its toxic impact on the kidney, liver, and other organs were investigated. It was observed that malondialdehyde (MDA) levels increased in the kidney tissue of rats administered aflatoxin, while a decrease in MDA levels was noted with the administration of *T. cubensis* extract (Karabacak et al., 2015).

In an experimental study conducted in rabbits, it was determined that the application of *T. cubensis* extract in cases of superficial digital flexor tendon tears could improve pain, acute inflammation signs, and clinical symptoms (Oryan et al., 2012). It was reported that when antibiotics, anti-inflammatory drugs, and *T. cubensis* extract were applied to a rabbit with a mammary tumor, the treatment was successful, and the tumor did not recur (Küçükaslan et al., 2013).

In a study conducted with gentamicin in rats, the effects of *T. cubensis* extract on its toxic impact on the kidneys were investigated. It was observed that the levels of MDA increased in the blood and kidney tissue of rats administered gentamicin. However, these elevated MDA levels decreased following the administration of *T. cubensis* extract. Furthermore, in histopathological and immunohistochemical examinations, a decrease in pathological disorder and apoptosis was observed when *T. cubensis* extract was administered to the group in which gentamicin toxicity was induced. (Eren and Akşit, 2023).

Conclusion

Homeopathy posits that a living being is unwell as a whole, and therefore, it can be healed as a whole. Additionally, it interprets the symptoms we observe as signs of disease as changes in the body's fight against the ailment. Homeopathy, the second most commonly used treatment system in the world after modern medicine, yields excellent results in the treatment of chronic and psychological diseases, where modern medicine may not succeed, as well as in acute conditions. Moreover, it provides these treatments at a considerably lower cost compared to modern medicine. *T. cubensis*, used to create a

homeopathic remedy, is a dark brown, hairy Cuban spider, roughly the size of a mouse. Its venom is prepared following the German Homeopathic Pharmacopoeia guidelines after being macerated in alcohol. While it is used in human medicine, particularly for conditions like burns, abscesses, eczema, and smallpox, it has found a wide range of applications in veterinary medicine today. It is an extract that promotes rapid healing with a single dose by ensuring improved blood flow and absorption in cases of foot and nail caries, birth canal ulcers, abscesses, and various types of inflammatory and necrotic conditions in cattle, horses, sheep, goats, and dogs. *T. cubensis* extract serves as a valuable alternative treatment option, especially in the field of veterinary medicine. Although research on *T. cubensis* extract is currently limited, new studies may lead to the development of alternative treatment options, further advancing our knowledge of homeopathy and *T. cubensis* extract.

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Conflict of Interest

The authors declare that they have no conflict of interest in this study.

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