



## Homeopathic Remedies for Symptom Management in Foot and Mouth Disease

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### ABSTRACT

The role of homeopathic treatment in managing foot lesions, particularly those associated with conditions like Foot-and-Mouth Disease (FMD) in animals. Homeopathy offers a gentle and holistic approach to symptom management, utilizing highly diluted substances to address specific symptoms and promote healing. Common homeopathic remedies for foot lesions include *Rhus toxicodendron*, *Arnica montana*, *Calendula officinalis* and others, selected based on individual symptoms and characteristics. While homeopathy does not directly target the underlying cause of foot lesions, it aims to alleviate discomfort and support the body's natural healing processes. Consulting with a qualified veterinarian is essential to ensure personalized treatment recommendations tailored to the unique needs of the affected animal. Homeopathic treatment can complement conventional veterinary practices, offering an alternative option for symptom management and promoting overall well-being. However, further research is required to better understand the efficacy and safety of homeopathy in managing foot and mouth disease lesions and related conditions in animals.

### INTRODUCTION

Foot and Mouth Disease is an extremely infectious viral infection that specifically targets animals with divided hooves, such as cattle, pigs, sheep and goats. Foot-and-mouth disease is marked by fever, vesicular lesions and decreased efficiency, making it a major concern for the livestock sector due to its

swift transmission and effects on animal well-being and commerce. Traditional treatment methods emphasize containment, immunization and culling, but these measures can be expensive and cause significant disruption (Grubman and Baxt, 2004; Zewdie et al., 2023).

Homeopathy, an alternative medical practice that



follows the idea of "like cures like," provides a supplementary method for controlling symptoms of FMD. Homeopathic remedies utilize much diluted ingredients that are thought to stimulate the body's innate healing mechanisms. The goal is to alleviate specific symptoms without the adverse effects typically associated with conventional drugs (Jamal and Belsham, 2013).

The study investigated the effectiveness of homeopathic remedies in treating the symptoms of FMD in animals. The study examined if these alternative therapies can diminish the intensity and length of symptoms, enhance the welfare of animals and potentially decrease the necessity for forceful confinement measures. In addition, the study investigated the incorporation of homeopathy into current veterinary procedures to evaluate its potential as an adjunctive therapy in the management of FMD.

#### Overview of Foot-and-Mouth Disease

Foot-and-Mouth Disease is an extremely infectious viral disease that mostly impacts animals with divided hooves, including cattle, pigs, sheep, goats, and deer.

The etiology of FMD is attributed to a virus belonging to the Picornaviridae family, more specifically the Aphthovirus genus. The FMD virus consists of seven serotypes (O, A, C, SAT1, SAT2, SAT3, and Asia1), each with several strains, which contribute to its worldwide dissemination and intricate nature (Longjam et al., 2011).

The disease presents with pyrexia, anorexia, and



vesicular lesions on the foot, mouth, and teats. These blisters can result in lameness and discomfort (Figure 1), which can lead to a decrease in milk output in dairy animals and a loss of weight in livestock raised for meat production (Weir, 2001).

#### Symptoms

**Figure 1:** Symptoms of Foot & Mouth Disease

- Oral mucosal lesions (Source: CABI Digital Library)
- Foot lesions (Source: NADIS animal health skills)
- Hoof sloughing due to FMD (Source: Foot-and-mouth disease, Government of Australia)



#### Transmission:

Foot-and-mouth disease is transmitted through direct contact with diseased animals, contaminated feed, equipment, clothing, or vehicles. Short-range airborne transmission can occur, which further complicates containment efforts (Table 1).

**Table 1:** Transmission Routes of Foot-and-Mouth Disease

Transmission Route	Description
Direct Contact	Transmission occurs through direct contact with infected animals
Contaminated Objects	Spread via contaminated feed, equipment, clothing, or vehicles
Airborne Transmission	Short-range airborne transmission in confined spaces, such as barns

Human Carriers	Humans can spread the virus through contact with contaminated objects
Animal Movement	Accelerated transmission through movement of infected animals
Contaminated Feed or Byproducts	Potential transmission through contaminated feed or animal-derived products

### Consequences:

Foot-and-mouth disease has substantial economic and trade implications as it leads to decreased output, the need to slaughter animals, limits on their movement, and bans on international trade in affected areas. It is classified as a notifiable illness, indicating that any occurrences of outbreaks must be notified to international organizations such as the World Health Organization (Knight-Jones et al., 2013).

### Management and Control:

Approaches for overseeing FMD involve implementing quarantine, eliminating sick animals, administering vaccinations, and implementing biosecurity measures. Vaccination can confer immunity, however, the constant variation of virus strains need continuous surveillance and the development of new vaccines. Outbreaks frequently result in the implementation of stringent movement restrictions and, in more severe instances, the widespread extermination of affected individuals to halt the continued transmission (Yano et al., 2018). The challenges posed by FMD include its quick transmission, economic impact, and the need for intensive containment measures, making it a major concern for the animal health and agriculture industries. The disease's effect on food production and trade highlights the necessity for efficient control and prevention techniques, underlining the significance of researching alternative remedies, like homeopathy, to handle symptoms and minimize the consequences of outbreaks (Auty et al., 2019).

### Scope and Purpose of the Chapter

This book chapter aimed to investigate and assess the efficacy of homeopathic remedies in alleviating symptoms associated with FMD in cloven-hoofed animals. The purpose of this chapter was to thoroughly analyze different homeopathic treatments and how they work to relieve the symptoms of FMD, including fever, lesions, and lameness and to evaluate the effectiveness, safety, and feasibility of integrating homeopathic medicines into conventional veterinary practices by conducting a thorough examination of available research and case studies. It provided information on alternative

methods for managing symptoms, which can contribute to the ongoing discussion on sustainable and less intrusive strategies for controlling FMD. By doing so, it has the potential to decrease the need for aggressive containment measures and minimize the economic consequences of the disease on livestock industries.

### The Role of Homeopathy in Managing Symptoms

Homeopathy provides a comprehensive method for controlling symptoms by targeting the individual indicators rather than the root cause of the condition. Homeopathic remedies for FMD are selected according to the principle of "like cures like." This means that substances that cause identical symptoms in the healthy animal are used in much diluted quantities to treat those symptoms in the affected animals.

Homeopathy has a role in managing symptoms of FMD by specifically addressing concerns such as fever, sores, lameness, and general discomfort. These natural medicines are used to ease certain symptoms and facilitate healing. Homeopathy's holistic approach ensures that the therapy takes into account the animal's general health, which may lead to a decrease in stress and an improvement in recovery results (Ahmad et al., 2018).

Homeopathy can be used to control symptoms in FMD, offering an alternative approach to traditional veterinary techniques. This can potentially decrease the need for severe therapies and promote the animal's innate healing mechanisms (Table 2).

**Table 2:** Common Homeopathic Remedies for Foot Lesions

Remedy	Indications
Belladonna	High fever, inflammation
<i>Rhus toxicodendron</i>	Stiffness, lameness, pain worsened with initial movement but improved with continued motion
<i>Apis mellifica</i>	Swelling, inflammation, stinging pain
<i>Arnica montana</i>	Bruising, soreness, tenderness, especially with hot-to-touch areas
<i>Calendula officinalis</i>	Promotes wound healing, reduces inflammation, especially for open sores or cuts
<i>Hypericum perforatum</i>	Shooting or stabbing pains, particularly if nerves are involved
<i>Silicea</i>	Persistent lesions slow to heal, may involve pus formation
Graphites	Thick, cracked skin, tendency to ooze or bleed
<i>Kali bichromicum</i>	Helpful for mouth ulcers that are large, deep, and have a yellowish or bluish appearance
<i>Natrum</i>	Used for mouth ulcers triggered by

<i>muriaticum</i>	emotional stress or grief, tendency to crack and bleed
<i>Arsenicum album</i>	Suitable for mouth ulcers accompanied by burning pain and a sensation of dryness, often worsened at night
<i>Hepar sulphuris calcareum</i>	Indicated for painful mouth ulcers that are prone to infection and may have a foul odor

### Understanding Foot-and-Mouth Disease

To comprehend FMD, one must acknowledge its swift transmission, economic ramifications, and the imperative need for strong control measures. Investigation into alternative therapies, such as homeopathy, is attracting attention as a way to effectively handle symptoms and minimize the overall effects of the disease, offering prospective new approaches to regulating FMD in impacted areas.

### Causes and Transmission

#### Causes

FMDV is a tiny RNA virus that shows significant variety as a result of its high mutation rate. There are seven main serotypes (O, A, C, SAT1, SAT2, SAT3, and Asia1), each consisting of several strains. The wide range of strains poses a challenge in developing a universal vaccine (Woldemariam et al., 2023).

#### Hosts:

Foot-and-mouth disease virus predominantly infects animals that possess divided hooves. While humans are often not prone to FMD, they can serve as carriers by spreading the virus through infected clothing or equipment. Transmission refers to the process of sending or transferring disease from one place to another. FMDV is transmitted through direct contact between infected and healthy animals, typically through saliva, urine, feces, or respiratory secretions.

Indirect transmission occurs when the virus is spread by contact with contaminated things such as feeding troughs, equipment, cars, and clothing. Humans can unintentionally transmit FMDV by coming into contact with contaminated objects and subsequently handling animals (Prempeh et al., 2001).

#### Airborne Transmission:

Foot-and-mouth disease virus has the ability to travel through the air, especially in confined areas such as barns and livestock facilities, covering small distances. This form of transmission is prevalent in colder and more humid environments (Brown et al., 2022).

### Animal Movement:

The transmission of the virus can be accelerated by the movement of infected animals to various sites, highlighting the importance of implementing stringent controls on animal movement during outbreaks.

Contaminated feed or animal byproducts, like as meat or milk, can serve as a means of transmitting FMDV if they are not adequately processed.

The transmission channels of FMD pose a substantial risk to livestock businesses. To prevent large-scale outbreaks, it is necessary to implement strict biosecurity measures, ensure prompt identification, and employ thorough containment tactics (Auty et al., 2019).

### Symptoms and Clinical Presentation

Foot-and-Mouth Disease typically manifests as a high temperature, usually ranging from 40-41°C (104-106°F), along with a general feeling of fatigue and a decrease in appetite. Animals that are affected may display symptoms of despondency or lethargic to engage in physical activity.

The defining characteristic of FMD is the development of vesicles, which are akin to blister-like lesions. These lesions typically manifest in the oral cavity, specifically on the tongue, gums, lips, and inner cheeks. Upon the rupture of the vesicles, the resulting ulcers cause pain, which in turn leads to excessive salivation, impaired ability to chew, and a reluctance to consume liquids. In extreme instances, this might lead to a decrease in body weight as a result of diminished consumption of food (Zhang et al., 2022).

Vesicles can also develop on the feet, namely in the coronary band, which is the area where the hoof and skin connect. As a result, animals experience lameness and a lack of enthusiasm to walk, which leads to their lying down more often (Figure 1). The infection extends to the teats, it might lead to the formation of vesicles, which can impede the milking process, producing discomfort and a decrease in milk output (Gelasakis et al., 2019).

The disease's clinical manifestation varies according on the species, age, and strain of the virus. Juvenile animals may exhibit severe symptoms, such as cardiac problems that can result in abrupt fatality. The wide range of symptoms and their influence on the well-being of animals highlight the significance of promptly identifying and implementing efficient strategies to alleviate the consequences of FMD.

## Diagnosis and Prognosis

### Diagnosis

The diagnosis of FMD commences by monitoring clinical manifestations such as pyrexia, vesicles present in the oral cavity and on the extremities, excessive salivation, impaired mobility, and decreased lactation. Nevertheless, these symptoms may bear resemblance to other illnesses, thus necessitating test confirmation for a clear diagnosis (Table 3).

Several diagnostic tests are employed to detect FMD, including:

Viral isolation involves cultivating the virus from vesicle materials, such as fluid or tissue, in order to detect the FMDV (Sharma et al., 2015).

Polymerase Chain Reaction (PCR) is a very sensitive diagnostic technique that recognizes the genetic material of the virus, allowing for rapid and early diagnosis.

Serological assays are blood tests that can identify the presence of antibodies against FMDV, which indicates that an individual has been exposed to the virus. These are valuable for verifying infection after a certain period has elapsed (Valones et al., 2009).

Prompt identification is crucial for managing the dissemination of FMD, so swift testing and stringent biosecurity protocols are necessary upon incidence of an outbreak (Motley et al., 2020).

**Table 3:** Diagnostic Tests for Foot-and-Mouth Disease

Diagnostic Test	Description
Viral Isolation	Cultivation of the virus from vesicle materials to detect the FMDV
Polymerase Chain Reaction	Sensitive technique detecting genetic material of the virus, allowing rapid diagnosis
Serological Assays	Blood tests to identify antibodies against FMDV, indicating exposure to the virus

### Prognosis

The outcome for animals with FMD is contingent upon variables such as species, age, and the intensity of the infection. Typically, FMD has a relatively low fatality rate in mature animals, as the majority of them recuperate from the early symptoms over a span of one to two weeks. Nevertheless, the condition might result in enduring complications such as:

Vesicle damage can result in permanent lameness, decreased milk supply, and reduced weight gain, which negatively affects the animal's value and productivity.

Secondary infections may occur when open sores resulting from ruptured vesicles become contaminated with germs, necessitating further medical intervention.

**Cardiac Complications:** In juvenile animals, FMD can induce myocarditis, which is an inflammation of the myocardium, potentially resulting in abrupt fatality in extreme instances (Bravo et al., 2014) (Table 4).

**Table 4:** Prognosis Factors for Foot-and-Mouth Disease

Prognostic Factor	Description
Species and Age	Impact on the severity of symptoms and potential complications, with juveniles more vulnerable
Intensity of Infection	Determines the duration and severity of symptoms, potential for complications
Timeliness of Treatment	Early detection and prompt treatment improve prognosis, reducing the risk of complications
Overall Health	Healthier animals may have a better prognosis, with quicker recovery and fewer complications

### Fundamentals of Homeopathy

Homeopathy is an alternative medical approach that is founded on a set of fundamental principles. Samuel Hahnemann invented it in the late 18th century, and it has subsequently transformed into a widely adopted method of holistic therapy. The following are the fundamental principles of homeopathy:

The Principle of Similars is the fundamental premise of homeopathy, commonly referred to as "like cures like." It implies that a chemical that induces particular symptoms in an animal who is in good health can, when diluted, be employed to alleviate identical symptoms in infected animal (Loudon, 2006).

Homeopathic remedies are produced by diluting and vigorously shaking the substances, a process known as potentization. The initial drug undergoes many dilutions in a solvent, typically water or alcohol, and is subsequently agitated, based on the notion that this procedure amplifies the curative characteristics of

the treatment while reducing its toxicity.

Homeopathy stresses the administration of the minimum dose necessary to produce a therapeutic effect. As a result of the significant dilution, numerous medicines do not contain any measurable molecules of the original chemical. Advocates argue that these treatments possess a "recollection" of the substance and have the ability to stimulate the body's own healing mechanisms.

Homeopathy focuses on tailoring treatment to the specific needs of each individual, rather than solely targeting diseases. Practitioners choose medicines by considering an animal's distinct symptoms, animal traits, and overall well-being. This individualized approach seeks to target the underlying cause of the symptoms rather than simply managing the symptoms themselves (Prousky, 2018).

The holistic approach of homeopathy considers health to be a state of equilibrium encompassing physical, and physiological well-being. The goal of treatment was to achieve a state of balance by addressing all facets of well-being, rather than solely focusing on isolated symptoms.

### **Principles of Homeopathy**

Homeopathy adheres to a set of specific principles that govern its practice and philosophical perspective on health and healing. The following are the fundamental principles:

The Law of Similars, commonly referred to as "similia similibus curentur" (like cures like), is the foundational premise of homeopathy. It states that a medication that may induce specific symptoms in a healthy individual can be employed to treat comparable symptoms in an ill animal. This idea is the distinguishing factor that sets homeopathy apart from other kinds of medicine (Bellavite et al., 2005).

### **Minimal Dose**

Homeopathy employs the very minimal amount of medication required to provoke a curative reaction. The objective of this strategy was to reduce adverse effects by employing drugs that have been greatly diluted. The prevailing idea was that a smaller dosage of medication can enhance its efficacy and promote a more profound therapeutic impact (Jargin, 2015).

### **Single Remedy**

Homeopathy prioritizes the administration of a single remedy, even in cases where the patient's symptoms are intricate and varied. This approach is founded on the concept that a solitary remedy can

effectively target and resolve all facets of an animal's disease, so exemplifying the comprehensive and all-encompassing nature of homeopathic treatment.

Potentization refers to the method of increasing the medicinal benefits of a substance while removing any harmful side effects by a series of dilutions and forceful shaking known as succussion. Homeopaths hold the belief that this procedure gives a specific energetic or informational imprint to the solvent, which allows the treatment to provoke a healing reaction.

### **The Vital Force**

Homeopathy asserts that health is the manifestation of a harmonious equilibrium of the vital force, an energetic or life force that animates every individual. Illness is perceived as an interruption of this force, and homeopathic treatments are formulated to activate the body's innate healing mechanisms and reinstate this equilibrium (Haresnape, 2013).

### **Individualization of Treatment**

#### **Personalization of Treatment**

Homeopathy tailors the treatment to the specific characteristics of the diseased animal. Treatments are chosen after a comprehensive examination of the patient's symptoms, nervous condition, history, and constitutional type, which pertains to the animal's underlying physical and psychological traits.

### **History and Development of Homeopathic Practices**

Homeopathy has a rich history and has undergone significant development since its inception in the late 18th century. Here's a concise overview of its evolution:

#### **Founding by Samuel Hahnemann**

Homeopathy was founded by Samuel Hahnemann, a German physician, in the late 1700s. Disillusioned with the harsh medical practices of his time, such as bloodletting and the use of toxic substances, Hahnemann sought a gentler, more holistic approach to healing (Dean, 2006).

#### **The Law of Similars**

Hahnemann's discovery of homeopathy began with his translation of a medical text discussing the effects of cinchona bark, used to treat malaria. He observed that taking small doses of cinchona bark produced symptoms similar to malaria, leading him to formulate the "law of similars," the core principle of homeopathy, suggesting that "like cures like."

#### **Development of Potentization:**

Hahnemann's experiments with dilutions revealed

that lower concentrations often led to greater effectiveness, giving rise to the process of potentization. This process involves serial dilution and vigorous shaking (succussion), believed to enhance the remedy's efficacy while minimizing toxicity (Ullman, 2021).

#### **Publication of "Organon of the Healing Art"**

Hahnemann formalized his ideas in his book "Organon of the Healing Art," first published in 1810. This text outlined the principles of homeopathy and became the foundational guide for future homeopaths (Dean, 2006).

#### **Spread and Acceptance**

Homeopathy spread throughout Europe and North America in the 19th century, gaining popularity for its gentler approach compared to conventional medical practices of the time. It was embraced by many, including physicians and lay practitioners, leading to the establishment of homeopathic schools and hospitals.

#### **Decline and Resurgence**

The rise of modern medicine in the early 20th century, with advancements in pharmacology and surgical techniques, led to a decline in homeopathy's popularity. However, homeopathy experienced a resurgence in the latter half of the 20th century as part of the broader interest in alternative and complementary medicine (Cukaci, 2020).

#### **Modern Practices and Controversy**

Today, homeopathy remains a widely practiced form of alternative medicine, with dedicated practitioners and clinics worldwide. Despite its popularity, homeopathy has faced criticism due to a lack of scientific evidence supporting its efficacy and the highly diluted nature of its remedies. This ongoing debate has led to varying levels of acceptance within the medical community.

Overall, the history and development of homeopathy illustrate a unique journey from its origins as an alternative to conventional medicine to its current status as a subject of both advocacy and skepticism within healthcare.

#### **Homeopathy and Conventional Medicine: A Comparison**

Homeopathy and mainstream medicine diverge in their underlying beliefs, methodology, and therapeutic approaches. Homeopathy is based on the notion of "similia similibus curentur," which involves utilizing highly diluted medicines to trigger the body's own healing mechanisms. The approach emphasizes personalized care and comprehensive

well-being, taking into account the physical, mental, and emotional dimensions of the patient. Conventional medicine, on the other hand, depends on evidence-based approaches, medications, and surgical procedures to address symptoms and diseases. The approach prioritizes the identification and treatment of medical conditions based on rigorous scientific research and clinical trials. Although both have the goal of enhancing health and well-being, they differ in their fundamental beliefs and methods of therapy (Mortada, 2024).

#### **Homeopathic Remedies for Symptom Management**

Homeopathic remedies offer a complementary approach to managing the symptoms of FMD in animals. While these remedies do not directly target the underlying viral infection, they aim to alleviate specific symptoms associated with FMD, such as fever, mouth ulcers, lameness, and overall discomfort (Windsor et al., 2020).

Common homeopathic remedies used for symptom management in FMD include:

##### **Belladonna**

Often used for high fever and inflammation, Belladonna may help reduce fever and alleviate pain associated with FMD.

##### **Rhus toxicodendron**

This remedy is indicated for conditions involving stiffness and lameness, making it potentially useful for addressing mobility issues in animals affected by FMD.

**Apis mellifica:** Derived from the honeybee, *Apis mellifica* is used for conditions involving swelling, inflammation, and stinging pain. It may be beneficial for reducing swelling and pain associated with mouth ulcers in FMD.

**Arsenicum album:** This remedy is commonly used for gastrointestinal issues, such as diarrhea and vomiting, which may occur in animals with FMD.

**Eupatorium perfoliatum:** Indicated for fever with aching bones and muscles, *Eupatorium perfoliatum* may help alleviate the discomfort associated with fever in animals with FMD.

**Mercurius solubilis:** Used for conditions involving excessive salivation and bad breath, *Mercurius solubilis* may provide relief from oral symptoms in animals with FMD (Table 2).

#### **Homeopathic Treatment for Fever**

Homeopathic fever treatment utilizes much diluted chemicals to promote the body's innate healing response and alleviate symptoms. Popular

homeopathic treatments for fever include Belladonna, Aconite, *Ferrum phosphoricum*, and Gelsemium. The selection of these medicines is based on the particular attributes of the fever, including its initiation, duration, and concomitant symptoms. Homeopathy seeks to target the root cause of the fever while bolstering the body's inherent capacity for self-healing. Seeking guidance from a proficient veterinarian is crucial in order to receive an accurate diagnosis and personalized treatment suggestions that are specifically designed for your unique symptoms and overall well-being.

#### Homeopathic Treatment for Mouth Lesions

Homeopathic treatment for mouth lesions involves using highly diluted substances to address the underlying causes and alleviate discomfort associated with oral sores. Common homeopathic remedies for mouth lesions include:

**Borax:** Used for mouth ulcers that are sensitive to touch and worsen with hot drinks.

**Mercurius solubilis:** Indicated for mouth ulcers that are painful, inflamed, and accompanied by excessive salivation and bad breath.

**Kali bichromicum:** Helpful for mouth ulcers that are large, deep, and have a yellowish or bluish appearance.

**Natrum muriaticum:** Used for mouth ulcers triggered by emotional stress or grief, with a tendency to crack and bleed.

**Arsenicum album:** Suitable for mouth ulcers accompanied by burning pain and a sensation of dryness, often worsened at night (Zewdie et al., 2023).

**Hepar sulphuris calcareum:** Indicated for painful mouth ulcers that are prone to infection and may have a foul odor (Table 2).

#### Homeopathic Treatment for Foot Lesions

Homeopathic treatment for foot lesions, such as those associated with FMD in animals, involves using highly diluted substances to address symptoms and promote healing. Common homeopathic remedies for foot lesions include:

**Rhus toxicodendron:** Indicated for foot lesions accompanied by stiffness, lameness, and pain that worsens with initial movement but improves with continued motion.

**Arnica montana:** Used for foot lesions with bruising, soreness, and tenderness, especially if the affected area is hot to the touch.

**Calendula officinalis:** Helpful for promoting wound healing and reducing inflammation in foot

lesions, particularly those with open sores or cuts.

**Hypericum perforatum:** Indicated for foot lesions with shooting or stabbing pains, particularly if nerves are involved (Lee and Yeo, 2016).

**Silicea:** Used for persistent foot lesions that are slow to heal and may be accompanied by pus formation.

**Graphites:** Suitable for foot lesions with thick, cracked skin and a tendency to ooze or bleed (Table 2).

#### CONCLUSION

Homeopathic treatment offers a gentle and holistic approach to managing symptoms associated with the mouth and foot lesions, including those caused by conditions like Foot-and-Mouth Disease. By utilizing highly diluted substances to address specific symptoms and promote healing, homeopathy provides a complementary option for supporting the well-being of affected animals. However, it's crucial to consult with a qualified homeopath or veterinarian to ensure individualized treatment and appropriate care alongside conventional veterinary practices.

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