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VBMA Educational Scholarship Essay

St. John's Wort, Lemon Balm, and Oregano: 3 Antiviral Herbs and Their Application Within Veterinary Medicine

As microorganisms and viruses continue to build resistance to a wide variety of available pharmaceuticals, it has become increasingly imperative to study and explore alternative modes of treatment. Herbal medicine has become a great subject of study in the search for alternative treatment and prevention of disease. Research has produced promising results, indicating the potential of herbs to heal in ways pharmaceuticals may fall short. St. John's Wort, Lemon Balm, and Oregano provide examples of herbs with potent antiviral properties and a multitude of applications within veterinary medicine.

St. John's Wort (*Hypericum spp*) has become increasingly popular for its antidepressant and sleep promoting properties. The hardy perennial is known as a "nervine" in traditional western herbalism: an herb with the ability to sooth the peripheral nerves and ease muscle tension. However, recent studies have shown that St. John's Wort also contains potent anti-viral properties.⁴ The compound within St. John's Wort that can be greatly attributed to the herb's antiviral activity is the anthraquinone derivative, hypericin. Hypericin is contained within the oil glands of the plant¹⁰ and has been studied in search of antiviral activity against multiple viruses. One study found that hypericin is able to combat viral infections through targeting both virus infected cells and virions. Interestingly, both modes are greatly enhanced by light as hypericin causes photosensitivity.² This property proved to be noteworthy as research found excitation of hypericin with a fluorescent source to play a role in the inactivation of bovine viral diarrhea virus.⁷ Another study found that the antiviral components of St. John's Wort inhibit cytomegalovirus, herpes simplex, human immunodeficiency virus type 1, influenza virus A, Moloney murine leukemia virus, and sindbis virus.² Hypericin's ability to inhibit viral fusion with the cell membrane may explain its particular efficacy against enveloped viruses⁴. Research suggests that the antiviral, anti-inflammatory, and antibacterial properties of St. John's Wort could potentially reduce the need for antivirals, anti-inflammatories, or antibiotics prescribed for secondary bacterial infections.

St. John's Wort is readily utilized by veterinarians for a wide variety of ailments including but not limited to: anxiety, minor bacterial or viral infections, arthritis, wound healing, and pain relief. St. John's Wort can be used to make tinctures, salves, teas, or oils and can grow in most moderate climates as the herb has now naturalized in many temperate regions. The hardy shrub ranks high on sustainability as St. John's Wort is able to adapt to both dry and moist soil, has no serious insect problems, is pH adaptable, and can even tolerate flood conditions.³ The

plant is traditionally harvested in late June to early July when in bloom, and can be utilized fresh or dried.

Lemon balm (*Melissa officinalis*) is now used regularly among veterinary herbalists for its many appealing properties. Lemon balm is frequently utilized as a mild sedative, for gastrointestinal upset, wound healing, and most importantly, for its antiviral properties. Research has shown Lemon balm to be particularly effective against herpes simplex virus. One study found significant evidence that the dried extract from the leaves of lemon balm has antiviral activity against herpes simplex virus, portraying that lemon balm can provide protection against herpes simplex infections.¹³ This is especially relevant within veterinary medicine as feline and canine herpes viruses readily affect our companion animals. Feline herpes virus is extremely common in cats as up to 97% of cats will be exposed to the virus and up to 80% of cats will develop a dormant infection.¹² The feline herpes virus is the most common cause of conjunctivitis in cats (feline herpes viral conjunctivitis) and is a major cause of upper respiratory disease. Lemon balm may be able to provide prevention and treatment for feline herpes viral infections, potentially providing an alternative to pharmaceuticals such as Famciclovir or Idoxuridine. Another study found that lemon balm essential oil could effectively inhibit the replication of influenza virus A (H9N2) through direct interaction with viral particles in the replication cycle.⁶ This is of great value as influenza viruses are quickly developing resistance to current antiviral medications.

Lemon balm can be used to make tinctures, consumed as a tea, or applied to the skin as salve. The calming perennial is native to the mountainous lands of southern Europe but has naturalized in almost all temperate regions. Lemon balm grows best in moist soil but, once established, can tolerate periods of drought. Lemon balm also contains the compound citronellal, a naturally occurring insect repellent that readily repels gnats and mosquitos.

Oregano (*Origanum vulgare*) has traditionally been used to treat skin sores, asthma, GI upset, indigestion, and colds. Research has shown oregano to have antibacterial, anti-inflammatory, antifungal, anti-parasitic, and antiviral properties, making it an herb now readily utilized by holistic practitioners. Oregano contains terpenes, phenols, and terpenoids: compounds with potent antioxidant activity. Some of these compounds include rosmarinic acid, thymol, and carvacrol.⁹ Carvacrol is a phenolic monoterpenoid abundant in the essential oil of oregano. Carvacrol has been heavily studied for its antibacterial and antiviral properties. One study found that carvacrol was “effective in inactivating murine norovirus within 1 hour of exposure by acting directly on the viral capsid and subsequently the RNA.”¹⁰ Carvacrol has also been studied for potential antiviral activity against herpes simplex virus, much like lemon balm. One study found that carvacrol inhibited the HSV-2 proliferation process and viral induced TNF- α levels, essentially decreasing the intracellular programmed cell necrosis pathway.¹¹ Another study found that thymol, a monoterpenoid phenol derivative found in oregano oil, exhibited a high selectivity index when tested for antiviral activity against HSV-1.⁸ This suggests

thymol as a promising alternative topical therapy for herpetic infections. The potent antibacterial activity of oregano is also noteworthy as oregano can readily be used to aid in the treatment of *otitis externa* or ear infections.⁹

Research has shown oregano to have a wide variety of applications within veterinary medicine: due to its antibacterial, antiviral, and anti-inflammatory properties, oregano oil may be able to aid in the treatment of diseases including but not limited to: ear infections, warts, herpes simplex virus, and kennel cough. Oregano can be utilized as a tea, a diluted or pure essential oil, made into a tincture, or salve. It is important to note that while canines can consume oregano, the herb is considered toxic to cats if ingested. Oregano is native to the Mediterranean but has naturalized in many parts of the United States. The perennial herb can grow in most mild climates (USDA zones 4 through 9) and ranks low on environmental impact due to its low water footprint.⁵ Oregano is also a natural bug deterrent, allowing the herb to have minimal pest problems.

Through reputable research, it is apparent that herbs can contain potent antiviral and immune supporting properties. As resistance to pharmaceuticals remains prevalent, it is imperative that veterinarians remain vigilant and open to alternative modalities of treatment. The potential of herbal medicine as a preventative and alternative treatment should not be disregarded: perhaps the next medical discovery lies in your own backyard.

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