

Health Bits and Pieces [HFN 32:3]

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Viral Infections

Viral hemorrhagic fevers are severe diseases caused by several families of RNA viruses. Ebola, Marburg, Bubonic plague, yellow fever, Lassa, dengue, and tick-borne encephalitis virus are all hemorrhagic viruses. The reason the Bubonic Plague was called the “Black Death” was because the coagulated blood from internal bleeding gave corpses a blackish appearance.

We associate viruses with colds and flu but there are many other viruses that are not so benign. Influenza can be quite severe, polio virus causes paralysis, and herpes viruses also affect the nervous system and can be quite painful and debilitating. Epstein-Barr virus can cause chronic fatigue and lead to Chronic Lymphocytic Leukemia. Some stomach viruses can be dangerous to small children. So far, efforts to develop effective drugs against these viruses have failed, and typical therapy usually relies on symptomatic treatment. Vaccines have a low success rate and can have negative effects on the immune system.

Scientists at the Biological Threats Identification and Countermeasure Centre and the Military Institute of Hygiene and Epidemiology in Poland have attempted to find safe antiviral substances from nontoxic natural sources such as herbs, algae, and essential oils. Some research in Europe, India, Africa, and South America has focused on using essential oils for combating serious life-threatening viral infections. Researchers in South America have found that several essential oils including lippia, oregano, and artemisia inactivate the virus that causes yellow fever. Yellow fever is a viral hemorrhagic fever endemic in South America and sub-Saharan Africa. It is caused by the yellow-fever virus that is transmitted to humans through the bite of the *Aedes* or *Haemagogus* mosquitoes.

Joniec J, Kołodziej M, Bartoszcze M, Kocik J, Knap J, “Research on prevention and treatment of hemorrhagic fevers,” Annals of Agricultural and Environmental Medicine 2012;19(2):165-71; Meneses R, Ocazonez R, Martinez J, Stashenko E, “Inhibitory effect of essential oils obtained from plants grown in Colombia on yellow fever virus replication in vitro,” Annals of Clinical Microbiology and Antimicrobials 2009; 8: 8. Published online Mar 6, 2009. doi: 10.1186/1476-0711-8-8.

Antiviral Essential Oils

Viruses are generally considered not to be alive, so they can't really die. However, they can be destroyed such that they are no longer infectious. A low pH or high temperature will denature the protein coat surrounding the virus's genetic material to destroy it. It is speculated that direct virus inactivation by essential oils can be attributed to disruption of the viral membrane by lipophilic compounds, but the precise mechanism of the antiviral action is still not fully understood.

The major components in essential oils are terpenes and terpenoids. Several kinds of these compounds have been shown to inhibit Human Immunodeficiency Virus (HIV); and it was demonstrated that their anti-HIV activity involves inhibition of virus adsorption to target cell,

and by causing inactivation of HIV reverse transcriptase. The major components of the essential oils tested in this study were carvone, carvacrol, limonene, and thymol (found in numerous essential oils including thyme, lemon, oregano, etc.), and the presence of these compounds could in part explain the virucidal effect on yellow-fever virus.

Propolis, which is a powerful disinfectant with a similar chemical composition to the most powerful disinfectant essential oils, inactivates viruses including herpes virus and HIV. Several essential oils, including basil, savory, star anise, sage, oregano, rosemary, lavender, spearmint, peppermint and fennel, also control herpes-simplex virus and type-3 parainfluenza virus.

Garcia C, Talarico L, Almeida N, Colombres S, Duschatzky C, Damonte E, "Virucidal activity of essential oils from aromatic plants of San Luis, Argentina," Phytother Res. 2003;17:1073–1075. [PubMed]; Hasegawa H, Matsumiya S, Uchiyama M, Kurokawa T, Inouye Y, Kasai R, Ishibashi S, Yamasaki K, "Inhibitory effect of some triterpenoid saponins on glucose transport in tumor cells and its application to in vitro cytotoxic and antiviral activities," Planta Medica, 1994;60:240–243. [PubMed]; Pengsuparp T, Cai H, Fong S, Kinghorn A, Pezzuto J, Wani M, Wall M, "Pentacyclic triterpenes derived from Maprounea africana are potent inhibitors of HIV-1 reverse transcriptase," J Nat Prod. 1994;57:415–418. [PubMed]; Schnitzler P, Neuner A, Nolkemper S, et al., "Antiviral activity and mode of action of propolis extracts and selected compounds," Phytotherapy Research 2010 Jan;24 Suppl 1:S20-8. doi: 10.1002/ptr.2868; Harish Z, Rubinstein A, Golodner M, Elmaliyah M, Mizrahi Y, "Suppression of HIV-1 replication by propolis and its immunoregulatory effect," Drugs and Experimental Research 23, 89-96 (1997); Koch C, Reichling J, Schnee J, et al., "Inhibitory effect of essential oils against herpes simplex virus type 2," Phytomedicine, 2008, vol. 15, n°1-2, pp. 71-78; Erdogan I, et al., "Antimicrobial and antiviral effects of essential oils from selected Umbelliferae and Labiatae plants and individual essential oil components," Turkish Journal of Biology, 36, (2012), 239-246.

As Legend has It

The use of essential oils for infection goes back at least to the Middle Ages. Treatment of the Black Plague conjures up images of physicians wearing dark robes, wide-brimmed hats, and masks with long beaks. These beaks contained dried herbs, spices, and essential oils that the physician breathed during his time of exposure to infected patients. Traveling healers known as "mountebanks" (once a respectable term) carried pouches of aromatic herbs to inhale from when they were visiting sick patients. Aromatic spices and essential oils were used for healing, cuisine, and preserving meats for long-term storage (sausages).

An interesting essential oils legend relates to a concoction known as "Marseilles Vinegar" or "Four Thieves Vinegar." A variety of recipes have been suggested. One recalled by *Scientific American* in 1910 included dried rosemary tops, dried sage flowers, fresh rue, camphor, "spirit," garlic cloves, and vinegar, which was to steep for 7 or 8 days "with occasional agitation." It was said that this "medicated vinegar was invented by four thieves of Marseilles who successfully employed it as a prophylactic during a visitation of pestilence." "Pestilence" was the medieval term for bubonic plague, a hemorrhagic viral disease.

The legend of the four thieves, who robbed the corpses of plague victims, has persisted for centuries. Dr. Jean Valnet, a physician who was impressed with the effect of essential oils in

treating infections from battle wounds and even gangrene when he was Chief Physician at the Gulf of Tonkin Hospital in Vietnam, quoted the archives of the Parliament of Toulouse. He claimed the original recipe was revealed by corpse robbers who were caught red-handed in the area around Toulouse in 1628-1631. Given the virulence and deadliness of the plague, the judges were astonished by the indifference of the thieves to contagion.

The legend continued with legendary herbalist John Christopher, who promoted his own version of Marseilles Vinegar. Another modern version of “Thieves’ Oil” contains 45 drops clove essential oil, 35 drops lemon oil, 25 drops eucalyptus oil, 20 drops cinnamon oil, 15 drops lavender oil, and 10 drops rosemary oil. The formula can be inhaled, massaged, and swallowed.

The Scientific American Cyclopedia of Formulas, 1910, p.878; Valnet J, The Practice of Aromatherapy, 1980, English edition from Vermilion, a Random House Company; Concern, Dr. John R, Christopher, April 1977. p7 http://www.herballegacy.com/Garlic_page1.html.

Who gets sick?

Even the worst pandemic doesn’t kill everyone who is exposed. What are some of the factors of immunity? Oxidative stress is a susceptibility factor. Professor Jean-Luc Montagnier, who won the Nobel Prize for his discovery of HIV, has arrived at the concept of an “oxidizing field.” Montagnier, a Frenchman, uses a French term for “field” familiar to natural healing practitioners, the “terrain,” which describes the totality of a person’s internal health condition. An oxidized terrain would be treated with antioxidants to lower oxidative stress and lower the blood pH. Blood pH becomes more alkaline as we age and we can use a diet high in vegetables and vitamins like Vitamins C and E to strengthen our resistance. Oxidative stress is implicated as a pathogenic factor in a number of viral infections. Mice fed on a diet deficient in antioxidants developed myocarditis when infected with a normally benign strain of Coxsackie virus (CVB3). This change in virulence was found to be due to changes in the viral genome. Changes in the “terrain” not only affect host susceptibility, but also the transcription programs of the virus itself. Thus, oxidative stress can have profound effects, not only on the host, but on the pathogen as well.

Beck M, Handy J, Levander O, “The role of oxidative stress in viral infections,” Annals of the New York Academy of Sciences, 2000;917:906-12; Beck M, Levander O, “Dietary oxidative stress and the potentiation of viral infection,” Annual Review of Nutrition, 1998;18:93-116.

Getting Down to ‘Base-ics’

Increased alkalization of the blood occurs as the cellular environment in the connective tissue layers acidifies with age and with poor lifestyle practices. An acidic pH at the cellular level promotes viral infection. A low pH around 6.0 causes a fusion of viral and cellular membranes. The newly created particles then destabilize the vascular system and result in the massive hemorrhage characteristic of Ebola patients. The goal is to alkalize the tissue environment and simultaneously lower blood alkalinity. Some people have proposed the use of bicarbonates for treatment. There is no question that plasma bicarbonate concentrations are shown to increase after oral ingestion. The most important effect of bicarbonate ingestion is the change in acid-base balance in biological fluids. However, the use of alkaline water or alkalizing supplements is a stopgap for temporary improvement until lifestyle corrections are made and the normal production and flow of bile are restored. Bile is the body’s normal source of alkalinity.

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