Aromatherapy and viral illness
By Dr Robert Stephen

Dr Robert Stephen, Director of Penny Price Academy, looks at the potential role of essential oils in the prevention and treatment of viral conditions. In order to explore the efficacy of aromatherapy as a natural method of defence against viruses, the article focuses on the nature and development of viruses; the conventional treatment of viral illnesses; and how essential oils may be used to effectively contain the spread of viruses.

Many people have taken the threat of the swine flu virus very seriously. In July 2009, for the first time since the Reformation in England, the bishops gave instructions that the chalice is not to be administered to people as a precaution against spreading the virus. You are also invited to use an alcohol solution on your hands in many more places than hospitals today. GP surgeries have notices up stating that people who suspect they have swine flu should not attend the surgery. Employees are at pains to point out to their colleagues when they have been in touch with anyone who has contracted the virus, particularly if there is a risk that those who are pregnant may come into contact with it.

Much of the advice that has been taken on board by people is to do with increasing awareness and hygiene. This is not bad thing, but it does mean that the viral threat is being treated more as if it were a bacteriological threat. To heed
the advice given will certainly lessen the threat of general infection, but there is little evidence that it will do anything to prevent the transmission of a virus. The skin is our greatest natural defence against viral illness as viruses, by their nature, cannot infect dead cells.

As a therapist, with a particular interest in the intensive use of essential oils, I did, of course, look at which essential oils had claims made of them that they were anti-viral. Certainly, there are some that are stated to be anti-viral. However, I wanted to dig a little deeper. In order to test the efficacy of the claim, I wanted to know how essential oils worked anti-virally; only that way could I have confidence in the advice that I was giving to people in the face of one of the most serious threats in recent years.

In order to answer that question, we must first explore the nature and development of viruses, and then to explore how essential oils can be used to contain the spread of viruses.

The contingent questions are therefore: What is a virus? What is a viral illness? How is a viral illness treated? How are essential oils used in the treatment of viral conditions?

These four questions set the agenda for this brief paper. To the layperson, it can appear as if anything that cannot be treated by surgery or that does not have an obvious physiological cause is easily dismissed as ‘viral’. However, it is essential that we have an accurate and specific definition of what is meant by a virus.

Viruses alone can be responsible for the threat of global pandemics, in large part due to the ease of transmission and their ability to ‘breed’ and to mutate (and thereby evade any ‘defences’ against such). We need to honestly face the questions from within the therapies based on the use of essential oils and address what we can offer – alongside other approaches – to protect and treat those who are the victims of viruses.

What is a virus?

The Dutch microbiologist Martinus Beijerinck (1851-1931) was the first person to use the term ‘virus’ for the invisible disease-causing material that he showed to be self-replicating. A virus is a microorganism smaller than a bacterium and cannot grow or reproduce apart from in a living cell. It consists of a minute piece of genetic material wrapped in a protein coat. A virus invades living cells and uses their chemical machinery to keep itself alive and to replicate itself. It may reproduce identically or with mutations – this ability to mutate is responsible for the ability of some viruses to change slightly in each infected person, making treatment more difficult. While it is possible to filter out bacterium, it is not normally possible to do so with a virus.

Crawford says: ‘Viruses enter our bodies silently and invisibly and then parasitize our cells in a way that is almost totally beyond our control. Until relatively
recently, viruses pitted themselves against us, the most sophisticated of beings, and came out on the winning side. A single virus, smallpox, killed at least 300 million people in the 20th century before it was eradicated in 1980, and at that time measles still killed two and a half million children a year.

One of the differences between a bacterial infection and a viral infection is in the way they function. It is a fascinating fact that there are more ‘bugs’ feeding on a single human body than there are people in the world, but these are independent from the human body, although dependent upon it: the relationship between bug and body can be mutually beneficial. Viruses, however, need to penetrate a cell and effectively destroy it so that they can survive. They are not cells in their own right, but simply particles and have no means of powering themselves apart from the ability to take over a cell and to draw on its resources. While humans have about 30,000 genes, viruses only have between 3 and 400 genes: principal amongst the promptings is the command to reproduce.

**What is a viral illness?**

The influenza or flu virus is an RNA virus that comes in three genera - A, B and C. Influenza A is the most common type, which can infect mammals and birds, with aquatic birds being its natural endemic host. Each year, there is a seasonal epidemic of Influenza A, infecting millions of people and killing 100-200,000 - mostly the very old, the very young and the sick.

Influenza B is less common than A and infects only humans, seals and ferrets. Influenza B mutates slower than A, and so has less genetic diversity and is less virulent as a result. Influenza C infects humans, dogs, and pigs and is the least common type, but can be virulent when outbreaks occur.

All of the pandemics over the last century have been of Influenza A. Its primary weapon is its ability to rapidly mutate, avoiding the immune systems of its hosts. This is why each year new strains of Influenza A are causing that season’s epidemic.

The flu starts out like a common cold, but lasts longer and becomes more severe. It is characterized by high fevers, muscle aches, fatigue, headache and severe cough. The virus has about three or four days to establish an infection before its host either dies (a very rare event) or controls the infection and eliminates the virus. In that time, the virus has to infect as many cells as it can and reproduce as quickly as possible; its offspring must exit before they are destroyed by the host’s immune system.

Influenza A strains are designated by the two main proteins that determine their infectivity and virulence - hemagglutinin and neuraminidase, H and N. There are 16 Hs but only Hs 1-3 infect humans, and there are 9Ns but only 1 and 2 infect humans. Hemagglutinin is a protein that allows the virus to latch onto and infect host cells, while neuraminidase allows expelled viruses to reinfect other cells.
The most recent mutation, the swine flu virus, is Influenza A H1N1. This strain came about probably by four different strains of Influenza A infecting the same host (probably a pig, hence the name swine flu). Viruses can exchange genetic material, so one strain can combine bits from other strains, creating an entirely new strain. It is likely that the current swine flu combines bits from a human virus, a bird virus and two swine viruses, although this is hypothetical: viruses do not supply references.

**How is a viral illness treated?**

Prevention is always better than attempting a cure. There are three simple steps (the advice currently in place from the Chief Medical Officer) recommended as a means of prevention:

1. **Wash your hands frequently.** It may sound obvious, but hand-washing with soap (especially if it contains essential oils) and water for around 20 seconds is the single best thing you can do (if you are going out into the world and interacting with other human beings). It is estimated that 80 per cent of all infections are spread by hands. If you cannot wash your hands regularly, try hand-sanitizers with 60 per cent alcohol content.

2. **Avoid.** Reduce unnecessary social contact, stay away from crowds and avoid people if you are sick or if you are concerned that they may be infected. It may not be especially practical when you have to go to work for example, but experts believe it is worth repeating: isolation and avoidance reduce your chances of getting infected or infecting others.

Researchers in the UK have found that 99 per cent of commuters suffer at least one cold per winter. By contrast, 58 per cent of people who work from home and 88 per cent of those who walk to work caught a cold last winter.

3. **Recognize the symptoms and get help.** Fever, body aches, sore throat, cough, runny nose, vomiting, diarrhea, and lethargy. If you do not feel well, seek medical attention.

Medical advice is clear: antibiotics have no effect on viruses.

The body fights back against viruses by producing and deploying T lymphocytes. A healthy person produces approximately 50,000,000,000 each day. The immune system has a very good memory and, once it has defeated a particular infection, it will maintain immunity against that threat. The only reason people repeatedly get colds and flu’s is because of the way in which a virus mutates and with each mutation, there is a need for a new response from the immune system. While T lymphocytes kill infected cells, B-lymphocytes produce antibodies against infection. Both B and T cells clone themselves to attack any threat. It takes the body up to 10 days to produce this counter-offensive, which is why symptoms emerge.
Antiviral drugs called Zanamivir and Oseltamivir are sometimes used for flu. They do not kill the virus but interfere with the way the virus multiplies. Therefore, they do not cure flu, but may reduce the severity and duration of symptoms, and may prevent complications. If you develop flu, an antiviral drug may be prescribed if you are at increased risk of developing complications. Antiviral drugs need to be given soon after symptoms begin to be of any benefit.

Antiviral drugs act by interfering with a virus’ ability to enter a host cell and replicate itself with the host cell's DNA. Some drugs block the virus' attachment or entry into the cell; others inhibit replication or prevent the virus from shedding the protein coat that surrounds the viral DNA. Antiviral drug development has been concurrent with advances in molecular biology and genetic engineering that allow study and definition of the genetic codes of viral DNA. Study at this level was not possible until electron microscopes became available and it is only since the 1980s that antiviral drugs have been on the market.

How are essential oils used in the treatment of viral conditions?

Within holistic medicine, we should be clear that there are times when disease can work with the body to achieve a better homeostasis. For instance, those diseases that have a viral cause (measles, mumps, rubella and chickenpox) stimulate the development of the immune system. While it is appropriate to treat the symptoms (rashes or irritation), to introduce something as negative as antibiotics could in fact delay, not assist, recovery.

During the recent threat of bird flu, it was a delight to read an article in The Independent (Jeremy Laurance, Health Editor, Saturday, 15 October 2005), where it was identified that 90 per cent of the harvest of star anise is devoted to the extraction of shikimic acid – which is present in the plant and in the essential oil – on which Tamiflu is based. This is a clear example of a specific use of essential oils in treating viruses.

More generally, the literature indicates that there are some essential oils and related products that are helpful in the treatment of viral conditions.

1. It is stated in the general aromatherapy literature that there are essential oils that are powerfully anti-viral. Davis, for instance, suggests that bergamot, eucalyptus and tea tree may be used. These may indeed be effective, but we have no clarity about how they work.

2. There is much more precision in the work of the two French doctors, Franchome and Penoel. Franchome suggests that enveloped viruses respond to essential oils with a predominance of terpene-alcohols and phenols, while naked viruses respond to oils rich in terpenoid ketones. Penoel agrees, but is more specific, suggesting that terpineol and the oxide 1.8 cineole should be administered. The oils he suggests and in which these are found are laurus nobilis, eucalyptus radiata and melaleuca viridiflora.
3. Even more exacting is Schnaubelt, who states that terpenes increase the immune system and metabolic activity by changing the receptors present on a cell surface and that new work is being undertaken on the reaction between sesquiterpenes and cell penetration. Indeed, Price and Price suggest that the effectiveness of essential oils may not be dependent upon any specific molecule, but rather on a common property to essential oils, perhaps lipid solubility.

4. The hypericin in *hypericum perforatum* has been indicated as inhibiting the development of a virus within an infected cell. Hypericin is active against several viruses, including cytomegalovirus, human papillomavirus, hepatitis B and herpes. This antiviral activity has been shown in the laboratory and animal studies, but not in human studies. The herb seems to work against viruses by oxidation. The herb’s antiviral effect is stronger when exposed to light. St. John’s Wort was studied in 1991 in people with HIV disease. The doses were much higher than for treating depression. Patients were given intravenous doses of purified hypericin. The study was stopped when every white-skinned patient in the trial became very sensitive to light. They developed skin rashes and some could not go outside until after they stopped taking hypericin. The one black-skinned patient did not have this reaction.

It is clear that essential oils are useful in the prevention of viral infection and in its treatment. Reflecting on the research, it appears as if essential oils are able to inhibit the absorption of a virus into a cell and also to inhibit the reproduction of a virus once it has taken over a cell. On balance, the essential oils most useful (although, as we have seen, opinion varies and some viruses respond better to some oils than others) are essential oils with a predominance of 1.8 cineole and a significant presence of \( \alpha \)-terpineol.

i)  *Eucalyptus radiata* (E. radiata)
ii) *Melaleuca viridiflora* (niaouli)
iii) *Ravensara aromatica* (ravensara)

One further essential would make it onto my list, which is largely effective because of the powerful phenol, Eugenol.

iv) *Syzygium aromaticum* (clove)

It would, of course, be both possible and appropriate to use the essential oil *illicium verum* (star anise) as a preventative; the chemistry of the oil reveals that both 1.8 cineole and \( \alpha \)-terpineol are present.

Given that viruses are very inventive in finding hosts, it is important that every care is taken in preventing airborne infection and infection from contact. Diffusing an oil blend using a vaporiser would be the best form of prevention. Also, a blend
of these oils added to a hand-wash would add a further layer of prevention. If a viral infection has become established, there are many proven and efficacious responses using essential oils, particularly to herpes simplex and to the influenza viruses. Any properly trained therapist could advise and all these oils could be part of an aromatherapy treatment, with or without massage.

I am certainly happier in my own mind that I understand a little of how the claims made for essential oils in the battle against viruses can be sustained. There is no foolproof defence against viruses in any branch of medicine – traditional or complementary. All we can do is to give our bodies the support they need to fight back: essential oils are a natural option.

Dr Robert Stephen
FRSH FRSA FIAM
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Picture: iStockphoto
REFERENCES


