Why Antibiotics and Antivirals Fail

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Another bacteria develops resistance

The latest issue of the CDC's *Morbidity and Mortality Weekly Report* features a story about a deadly bacterial illness commonly seen in people on antibiotics but that now appears to be growing more common in patients not taking such drugs. The bacterium is Clostridium difficile, also known as C-diff. Its symptoms include diarrhea, fever, abdominal pain, loss of appetite and nausea, and last year it was blamed for 100 deaths over 18 months in just one hospital in Quebec, Canada. And in a second article in the *New England Journal of Medicine*, health officials said samples of the same bacteria taken from eight US hospitals show it's mutating to become even more resistant to antibiotics. Especially disturbing, according to the Centers for Disease Control and Prevention, recent cases in four states indicate it's now appearing more often in healthy people who have not been admitted to health-care facilities or even taken antibiotics. The bottom line is that C-diff has grown resistant to antibiotics that work against other colon bacteria. How did this happen? Quite simply, when patients took those antibiotics, particularly clindamycin, competing bacteria died off and C-diff exploded.

But this article isn't about C-diff. C-diff is merely the headline trigger. What we want to talk about is why and how bacteria like C-diff and viruses like bird flu develop resistance to antibiotics and antiviral drugs. And more importantly…what you can do about it.

Antibiotic Resistant Infections

Penicillin was discovered (actually rediscovered) by Dr. Alexander Fleming in 1928. But just four years after drug companies began mass-producing it in 1943, microbes began appearing that could resist it. Since then, we've seen penicillin-resistant strains of pneumonia, gonorrhea, and hospital-acquired intestinal infections join the list. And it's not just penicillin. Bacteria resistant to most of the other antibiotics of choice have also appeared and proliferated on a regular basis.

Antibiotic resistance to manmade drugs is almost impossible to stop since it is the result of some simple rules of evolution. Any population of organisms, bacteria included, naturally includes variants with unusual traits -- in this case, the ability to withstand a particular antibiotic's attack. When said antibiotic is used and kills the defenseless bacteria, it leaves behind those bacteria that can resist it. These renegade variants then multiply, increasing their numbers a million fold in a single day, instantly becoming the dominant variant. In other words, the very act of using an antibiotic creates the opportunity for strains resistant to it to flourish.

How do antibiotics work?

It’s important to understand that antibiotics vary in the way they kill microbes. Penicillin, for example, kills bacteria by attaching to their cell walls and then breeching those walls, thus killing the bacteria. Erythromycin, tetracycline, and streptomycin, on the other hand, kill bacteria by attacking the structures inside the bacteria (ribosomes) that allow them to make proteins, thus also destroying the bacteria.

Unfortunately, because each antibiotic is a single compound and one dimensional in its approach, it’s not that hard for microbes to "evolve" around such attacks. For example, microbes resistant to penicillin have developed cell walls different from the norm and that prevent the penicillin from binding. Similarly, other variants prevent antibiotics from binding to ribosomes, thus neutralize the effect of those antibiotics.

Again, because antibiotics are one dimensional in their approach, it’s not that hard for microbes to "evolve" around them.

Where it gets really frightening, though, is that bacteria swap genes like politicians swap favors -- which brings us to vancomycin, the antibiotic of last resort. When all other antibiotics failed, doctors knew they could count on vancomycin. But then vancomycin resistance was discovered in a common hospital microbe, enterococcus. By 1991, 38 hospitals in the United States reported the variant. Just one year later, vancomycin resistant Staph bacteria were observed with the same gene. What this means is that not only are bacteria programmed to "evolve" defenses against antibiotics, but once they produce such a defense, they are also programmed to rapidly share that defense with other bacteria -- thus rapidly spreading the resistance.

Viruses

Whereas bacteria are single-celled organisms, viruses are far simpler -- more primitive even. Essentially, viruses consist of one type of biochemical (a nucleic acid, such as DNA or RNA) wrapped in another (protein). Viruses are so primitive, in fact, that most biologists do not consider them to be living things, but instead, they are considered infectious particles. Since antibiotics specifically attack bacteria, they are useless against viruses. For viruses, doctors rely on a much less effective group of drugs called antivirals. Tamiflu, which governments are currently stockpiling as bird flu insurance, is one such antiviral.

Because of their primitive structure, viruses mutate even more easily than bacteria. Whereas antibiotics can remain effective for 2-5 years before resistant strains render them ineffective, antiviral resistant strains can appear in a matter of months, or even weeks. And in fact, we have seen that with Tamiflu. Although governments are stockpiling it as a safety net for bird flu, bird flu arrived on the scene pretty much resistant to Tamiflu and the other antivirals right out of the gate. And even those flus that Tamiflu was once helpful with are developing resistant strains by the month.

What can science do?

It was briefly thought that alternating the most commonly used antibiotics might stop the spread of antibiotic resistance. But a new model shows that the practice of cycling, alternating between two or more classes of antibiotics as often as every few months, probably will not work.

The latest theory is that mixing cocktails of antibiotics may help. And, in fact, this is closer to the way natural substances avoid the resistance problem.

How natural substances avoid the problem

When you think about how quickly pathogens "evolve around" antibiotic and antiviral drugs, it's more than amazing that they have been unable to do so against most natural antipathogens such as garlic, olive leaf, and oil of oregano even given tens of thousands of years to do so. How does this happen? What is their secret?

Actually, it's quite simple – or more accurately, quite complex. Earlier, we talked about how drugs are essentially one dimensional, which allows microbes an easy avenue to evolve around them. Natural antipathogens, on the other hand, are anything but one dimensional. They often contain dozens of biochemicals. Not all of them are "active," of course, but many of the so called non-active biochemicals work to potentiate the active ones and offer combinations with each other numbering in the thousands – presenting a complexity that makes it virtually impossible for microbes to work around.

Take garlic for example

For a long time, many people thought there was only one active component in garlic, allicin (in fact, many companies still promote that concept). It was believed that raw garlic had very little biological activity, but when you "damage" garlic cloves - by slicing, cooking, or chewing them - the enzyme alliinase immediately converts non-active alliin into the active ingredient, allicin.

As I mentioned, it was once thought that allicin was garlic's principal active ingredient. However, researchers now know that allicin is rapidly oxidized. In the process of oxidation, allicin breaks down into more than 100 biologically active sulfur-containing compounds. While allicin may still serve as a general marker of garlic's potency, research increasingly points to S-allylcysteine and other compounds as the most therapeutically active ingredients in garlic.

So how many possible pathogenic defense combinations can you get from garlic's 100 biologically active compounds? A whole bunch!! Thousands and thousands and thousands, in fact!

The formula for finding the number of combinations of k objects you can choose from a set of n objects is:

$$n!$$

$$n\_C\_k = \frac{}{k!(n - k)!}$$

With 100 objects/compounds to work with and possible combinations ranging from any 2 of them to any 99 of them, the complexity is just far, far, far too much for simple pathogens to evolve around.

And that's the secret. But it gets even better.

When you combine several natural substances in one formula, the combinations of compounds are beyond counting. Quite simply, microbes cannot evolve around them.

Super ViraGon

Several weeks ago, I upgraded my antipathogen formula and renamed it ***Super ViraGon***. It contains 10 of the most powerful antipathogens found in nature.

1. Ginger
2. Onion
3. Garlic (equivalent to 30 cloves in every bottle)
4. Olive leaf
5. Horseradish
6. Habanero
7. Zinc
8. Grapefruit seed extract
9. Wild mountain oil of oregano
10. Apple cider vinegar

Individually, their effectiveness is astonishing.

Garlic

Garlic is one of the best infection fighters available for both bacterial and viral infections. It is a natural antibiotic that does not appear to create resistant bacteria strains. In addition, fresh garlic extract has been shown to be virucidal to many viruses.

Garlic possesses the ability to stimulate the immune system. It can stimulate the activity of the macrophages (white blood cells), which engulf foreign organisms, such as: viruses, bacteria, and yeast. Furthermore, garlic increases the activity of the T-helper cells (immune cells which are central to the activity of the entire immune system). Garlic may be particularly effective in treating upper respiratory viral infections due to its immune-enhancing properties and its ability to clear mucous from the lungs.

It destroys and/or inhibits various bacteria and fungi, with an antibacterial action equivalent to 1% penicillin. Garlic is effective against strep, staph, and even anthrax bacteria.

Onion

Everything that's been said about Garlic can be said about onion. Onions and garlic share many of the same powerful sulfur bearing compounds that work so effectively as anti-viral and anti-bacterial agents.

Ginger

Ginger has been traditionally used to treat colds and flu. Chinese studies have shown that ginger helps kill influenza viruses (even avian flu), and an Indian report shows that it increases the immune system's ability to fight infection.

Olive Leaf Extract

Olive leaf extract has a long history of being used against illnesses in which microorganisms play a major role. In more recent years, a drug company discovered that in vitro (in a test tube), an extract from olive leaf (calcium elenolate) was effective in eliminating a very broad range of organisms, including bacteria, viruses, parasites, and yeast/mold/fungus.

Habañero and Horseradish

These are stimulants that quicken and excite the body. They energize the body (helping it to marshal its defenses against invading viruses). In addition, they help to carry blood to all parts of the body.

They are also diaphoretics and thus help raise the temperature of the body, which increases the activity of the body's immune system.

Horseradish, in particular, contains volatile oils that are similar to those found in mustard. These include glucosinolates (mustard oil glycosides), gluconasturtiin, and sinigrin, which yield allyl isothiocynate when broken down in the stomach. In test tubes, the volatile oils in horseradish have shown antibiotic properties, which may account for its effectiveness in treating throat and upper respiratory tract infections. At levels attainable in human urine after taking the volatile oil of horseradish, the oil has been shown to kill bacteria that can cause urinary tract infections, and one early trial found that horseradish extract may be a useful treatment for people with urinary tract infections.

Liquid Ionic Zinc

Like colloidal silver, liquid zinc is both anti-bacterial and anti-viral, but without the potential toxicity issues found with silver. Zinc is found in all body fluids, including the

moisture in the eyes, lungs, nose, urine, and saliva. Proper zinc levels offer a defense against the entrance of pathogens. In the 1800's, surgeons used zinc as an antiseptic/antibiotic after surgery; they noted its amazing healing properties. Wounds would heal, at times, as quickly as 24 hours after an operation, without swelling, and scarring was barely noticeable after a short period of time.

Oil of Wild Mountain Oregano

Numerous studies have shown wild mountain oregano oil (not to be confused with the oregano found in your kitchen) to be a potent antimicrobial. It has been proven useful as an antiviral, antibacterial, and antifungal agent rivaling even pharmaceutical antibiotics such as streptomycin, penicillin, vacnomycin, nystatin, and amphotericin in its ability to eliminate microbes. Remarkably it accomplishes this without promoting the development of drug resistant strains and other problems often attributed to the use of standard antibiotics. In addition to this already impressive list of abilities Oregano Oil is also a powerful parasitic expellant.

Grapefruit Seed Extract

Grapefruit seed extract was originally developed as an antiparasitic, but studies quickly showed that it had the ability to inhibit the growth of not only parasites, but fungi, viruses, and bacteria as well. The active ingredients of grapefruit seed extract are non-toxic and are synthesized from the seed and pulp of certified organically grown grapefruit. The process converts the grapefruit bioflavonoids (polyphenolics) into an extremely potent compound that is being used to kill strep, staph, salmonella, E. Coli, candida, herpes, influenza, parasites, fungi, and more.

Apple-Cider Vinegar

ACV (Apple-Cider Vinegar) serves several functions in the ***Super ViraGon*** formula:

- It's the tincture medium for the formula, as opposed to alcohol (which is the tincture medium in an immune tonic).
- ACV is anathema to all kinds of germs that attack the throat. In effect, it acts like a sponge and draws out throat germs and toxins from the surrounding tissue.
- And finally, ACV stimulates a condition called acetolysis in which toxic wastes that are harmful to the body are broken down and rendered harmless.

Conclusion

As I said above, individually, the effectiveness of these ingredients is astonishing. But taken as a whole, and when you consider the number of possible active biochemical combinations these 10 ingredients and their hundreds of biochemical compounds afford, it would take bacteria and viruses more time than the earth has left in existence to evolve their way around them.

Bottom line: ***Super ViraGon*** represents the best natural antipathogen option in the world today.