New Pfizer drug and ivermectin.mp4

A warm welcome to today's talk; it's Tuesday, the 9th of November. Now, yesterday we looked at Pfizer's new antiviral drug that shows very high levels of efficacy in preventing serious disease, hospitalization and people dying, which was interesting. And that drug works in a particular way, has a particular – what we call a pharmacodynamic action – it works in a particular way. But there's another generic drug, called ivermectin, that you might have heard of, that works in exactly a same way as that. Now, no one's saying information has been deliberately suppressed for years, while millions of people have died. But what we are going to show on this video is conclusive proof from the literature, that this modality of action is the same. So, if you're up for that, stick around. It's not an easy watch, but I've broken it down as much as I can. Now, just before we crack into that, we need to look at what's happening. So, when a virus, when a virus – in this case SARS-CoV-2 – gets into a cell, what happens is it makes lots of proteins. It starts off making proteins, and these proteins are long proteins. So that's one long protein, there. There's another long protein, there. Made out of hundreds of amino acids, sometimes a few thousand amino acids, all strung together. Now the problem is with these long proteins, is they're too long for the job that's required. So, it's a bit like a building site. A big log of wood arrives. It needs to be trimmed down into bits that fit in your door frames and your window frames. So, this needs to be trimmed down. So, these proteins need to be trimmed down. Now, how do we trim down a protein, of course, is the question. Well, it has to be done in a biochemical way. And the way it's done, particularly in SARS-CoV-2, is there's an enzyme called 3CL protease. Now, protease is an enzyme which breaks down protein. So, this is 3CL protease and that will break down proteins, is what we call proteolytic, and it will take these long proteins and it will chop them into shorter proteins, what we call an endopeptidase. So now, instead of having two…one long protein, we've got two short ones. And these fit together just nicely to the…to the new virus that we're…we're trying to make, whereas before it was far too long, it had to be chopped. So that is…that is the protease. Now, these new drugs are what we call protease inhibitors. They stop the protease from working. So, here's my…here's my protease here. That's my…that's my 3CL protease, that chops up my proteins into the right length. And protease inhibitor is a bit like this tape, and it's going to stop the protease from working. So there we go. We have a…we have now inhibited the action

of the protease. It's now inhibited. So what I'm going to do now is I have a long protein here, so…so, that one's okay, we've done that one. So that fits in nicely into the vise. But now there's another long protein here that needs processed. So, the protease, the 3CL protease comes along, ready to chop this up into shape and oh, I can't open it now. So, what we've done is we're bind…bounded up the active site of the protease. And that's what these drugs do: they bind the active site of the protease and they stop the protease from working. That means they stop the protease from chopping up the big proteins into smaller proteins, into the strings of amino acids, so they can't build the virus, so it inhibits viral replication. These protease inhibitors. So that's kind of what is happening here.

[00:03:45] Now, this is the new Pfizer medication here, that's just come out: new Pfizer antiviral. We're going to compare it with ivermectin, in this video. Pharmacodynamic analysis by me. Pharmacodynamics is how the pharmacy works, how the drug works, and affecting the body. Now, this is the new Pfizer molecule here. This is a new drug. And this is the shape of it, here. So, it's got three floor rides there, so it's interesting. That's the shape of the molecule. Fair enough. Now this is a new molecule. Well, certainly on me, but I'm no molecular expert. But so here we have, for example, ritonavir, which was an old anti-viral drug they've been using since 1996, and which in fact will be given with the new one, to work together. So, we can see that they're…I think we can see that there are different shaped molecules going, where there's no f's on this one, for example. So..so..so that's the different molecule. So, this molecule was patented and this is a new molecule. This molecule will be out of patent, even though it has similar actions. Then, if we look at ivermectin, which is also out of patent, of course, can't make any money out of ivermectin, then…where is it? There we go. So that's the ivermectin molecule, there, and we see that's a completely different shape to this new Pfizer molecule, here. So, they're completely different looking molecules. So as a completely different looking molecule, I would imagine that that's absolutely fine to patent that, because it's a new molecule. And when you patent a drug, you can make money out of it for the next 20 years, after..after the patent date, in most…in most jurisdictions. Of course, by the time the drug gets to market, it's often a bit less than that, but that's the sort of time where you can make some serious money out of these things. Now, first of all, this is the new Pfizer drug, here. The PF-

0732 is designed to block the activity of the SARS-CoV-2-3CL protease…3CL protease. That…so that 3CL protease now won't work, it won't open, so I can't chop my proteins into the correct length to build a nice new virus. Now, evidence for that, because we always have to give the evidence, the evidence for that is in this paper, that we looked at yesterday. So, check it out and there's evidence for that there. That is them saying how exactly… how this this new drug is going to work. That's the site, there. So we now know what a protease is: it breaks down proteins into the right length. A protease inhibitor stops the protease from doing that, therefore, the proteins remain too long. And the 3CL protease is a protease that makes SARS-CoV-2. And of course, a 3CL protease inhibitor will stop it from making SARS-CoV-2, therefore is anti-viral. Now, I'm pretty sure that all made sense. So if you haven't quite got that bit, do…you just go back and watch it again because…ehm, that's how it works.

[00:06:45] Now, the CL stands for…this stands for chymotrypsin-like protease (3CL 3 chymotrypsin-like protease). Now everyone, of course, in human biology has heard of chymotrypsin. It's a pancreas release. It's an enzyme release by the pancreas to digest protein, it chops proteins up. So it's a protein chopping-up enzyme. So this…this protein, this chymotrypsin-like protease inside the virus is working in a very similar way to the chymotrypsin that your pancreas produces to digest your proteins. Now, going onto the first evidence I want to give now, the first evidence comes from this paper, here. So, we're going to be looking at this paper here, available…you can check it out for yourself. I always…I always paste the links, of course, because you don't want to believe what I say, we have to go by the evidence. Identification of SARS-CoV-2 3 chymotripsin-like protease inhibitors, which we now know. Remember, the inhibitor is the piece of cello tape that stops the enzyme from working, or the scotch tape, or whatever you call it. That's…that's the sticky tape that stops it from working, that's what's clogged this up and…I can't…I can't work these scissors, now. Completely useless to chop up my proteins. So this is a Quantitative High-Throughput Screening. So, this was looking for compounds that could do this. This was done back on the 3rd of September 2020. So here…they screened all these compounds, they did a high confirmation screen, they did a finer screen for these compounds, and the activity of anti-SARS-CoV-2 viral infection was confirmed in 7 of the 23 compounds. So, they found 7 compounds that were worth looking at, that would have this protease

inhibiting effect. And this paper also helpfully gives another explanation of it, hopefully the same as mine, there it is, here. So, here's the…here's the chain of amino acids forming the protein. That one is far too long, so it's got to be chopped by that little pair of scissors, which is the…which is the protease. That's the scissors of the protease, of course, and it chops it up into two bits, which are nice virus-size protein chunks that can be used in the door frames and window frames, or whatever anatomical molecular architecture is required for the virus. So, that was screening compounds.

[00:09:09] Now, next, there was a lot of papers and analysing these. So, this is "Microscopic interactions between ivermectin and key human and viral proteins involved in SARS-CoV-2 infection". Now, obviously, you want the evidence for this, you're not going to take my word for it. Here it is. It's on this paper here, from no less than the Royal Society of Chemistry. And again, thankfully, all these are available. And if you're a biochemist, you'll understand that. If not, you would just get the gist, the same as me. But I think we have got the gist. Now, that's the reference for that one, there. The strength and persistence of the interaction between ivermectin and the binding site of the 3CL protease indicate that a partial inhibition of the catalytic activity, in other words: the way that the enzyme works, could have a place as the drug interacts with the main subdomains that define the enzyme… define the enzyme-binding pocket. Now, the enzyme-binding pocket…of course, the protease is an enzyme. So, what it's saying here is…so, the enzyme is obviously not like a pair of scissors, but if we imagine it's like a pair of scissors, so imagine it's kind of a blade there and it's got… it's got a bit goes round there, and kind of another blade there. Well, the enzyme binding pocket is…the substrate will bind into that bit, there, and hold the substrate while it gets chopped up. But if you block that up with something, so for example, if you block that up with ivermectin, that no longer works. That's what it means. So, it's telling us how this is working to block the activity of the 3CL protease. That's what that paper is about, and it makes perfect sense, if you do take a bit of time to read it.

Now, the next paper is this one, again giving you all the evidence. "Identification of 3 chymotrypsin like protease inhibitors as potential anti-SARS-CoV-2 agents". Don't worry, if you're not getting all the terminology, I don't always get it myself, but that's this paper, here. Out of 13 OTDs…now OTDs, this is called off-target drugs. So

ivermectin wasn't originally one of the antivirals they were looking at; they were looking at other existing antivirals. So that's why they're calling it an off-target drug, there. But out of 13 off-target drugs, only ivermectin completely blocked, actually…actually blocked by 80%, the 3CL protease activity at this particular concentration of ivermectin. Now, if we look at this, compared to the other… the other drugs, this is particularly useful. So, here's all the other drugs they were testing along the bottom, here. So, they were testing all of these medicines along the bottom, here. That's what they were testing. And this is the percentage of 3CL enzymatic activity present. So, the shorter this…the shorter these bits, the more the enzyme was inhibited. So, we see that this here, GC 327, that inhibited the enzyme a lot, so the enzyme couldn't chop up the proteins. I don't know what that is. It's not mentioned, because it might be toxic. Anyway, all these other ones didn't inhibit it very much, but ivermectin inhibited it, a lot. So, the ivermectin, from this study, is greatly inhibiting the ability of the pair of scissors, the 3CL protein, to open. Therefore, it can't chop up the proteins, therefore you can't make new virus. So that is what that paper is…is saying.

[00:12:41] Development, validation and approval of COVID-19 specific drugs takes years, this paper also says. Therefore, the idea of drug repurposing – drugs that are used for other purposes, also known as repurposing – is an important strategy to control the sudden outbreak of life-threatening infectious agents that spread rapidly. We agree completely. Drugs can be repurposed. Much more quickly than we can develop new drugs, because we already have a pretty good view of the safety profile of the pharmacokinetics and the pharmacodynamics of the drug. The kinetics being the way that the body interacts with the drug, and the dynamics being the way that the drug affects the body.

Right, next paper. Next line of evidence here, is from this paper, here. Again, Royal Society of Chemistry, no less. And all the details are there on that paper, as well. So again, feel free to check that out, if you would like to. It's all there. Let me give you the gist of what it's saying. From the docking analysis, that's the way that the drug docks into the…into the enzymes, the way that the drug binds the…scissors, in this case. From the docking analysis, ivermectin showed the highest docking score, with an average energy of minus 8.5 kilocalories per mol. Don't know, I don't know the units, I don't pretend to know it. But it means it bound on quite tightly, among all compounds.

So it showed the highest docking score. In other words, it cluttered up the enzyme, it cluttered up the 3CL enzymes and stopped it working, better than all of the other compounds that they looked at. Remdesivir showed the lowest binding energy and highest docking score, so remdesivir doesn't work very well. On this particular analysis, anyway. Now, here we have some information about remdesivir, which of course has been used for critically ill patients, quite a lot. I put this up here, because we notice it's £340 a vial, £340 a vial, that's the indicative price that the UK is paying. So that's the link for that, from the National Institute for Health and Care Excellence, so a pretty expensive drug. I believe, in the United States of course, [it] costs about $3000 for a four…is it four…five day course? Can't remember. Anyway, really expensive. And of course, we know ivermectin is available through the World Health Organization at six cents. Six cents! Six cents, about five English pennies a tablet. So, it's a bit cheaper. It's a bit cheaper. And from this data, higher docking score, higher cluttering-up ability of the of the enzyme.

[00:15:31] Moving on to the next piece of evidence, we've only got a couple more, so stick with it; it is worth it. This is from *Future Virology*. This evidence comes from "Exploring the binding efficacy of ivermectin against key proteins of SARS-CoV-2 pathogenesis *in silico* approach". Now this is very interesting. *In silico* means this is computer modeled. Now, this is incredibly clever and way beyond…way beyond my ability. It's computerized molecular modeling, but this is a very well recognized science, these days. So, let's see what this is saying, from the *Future of Virology*. We have documented an intense binding of both ivermectin B1a, that's the type of ivermectin in the drug. And that's the type of ivermectin that's similar, but not in the…not in the…not in the tablets. But these are the two natural forms that were first identified by William Campbell and Satoshi Omura, for which they won the Nobel Prize. So, we've documented an intense binding effect of both ivermectin and this to the main protease with…with a high binding energy, is all that means. In other words, the ivermectin well and truly clogs up the 3CL protease. Stops it from cutting up the long protein, straight long protein chains, into smaller protein chains, therefore, it stops the viruses being made.
So, just as a reminder, given with this evidence – this was from the original Pfizer paper – it is working this way, because the original Pfizer…Pfizer paper says that the

new Pfizer medication is designed to block the activity of the SARS-CoV-2 3 chymotrypsin-like protease. In other words, it acts the same way as the cello tape around the pair of scissors, as indeed we have given evidence for ivermectin doing. Now, we could…we could give many other examples. I might just give…yes, I'll give one other brief example here, I think, because I don't want to get too clutt… So, just briefly, this is from this evidence, here, is from this paper, here. Always give the evidence. *Frontiers in Microbiology*, published in January 2021. Again, all the information there, and you can download the PDF, download the article. It's great that these are all freely available, which is just brilliant. “Molecular Docking Reveals Ivermectin and Remdesivir as Potential Repurposed Drugs Against SARS-CoV-2”, this paper said. Don't take my word for it, check it out. That’s what it says.

[00:18:12] With SARS-CoV-2. Now, first of all, the ivermectin inhibits the spike protein, this is saying. So, as we know, the spike protein in the virus, here, the spike protein has to fit into the ACE-2 receptor site on the cell surface, in order to in order to get into the cell. So, this is saying that the ivermectin clogs up the spike protein. It no longer fits, because that's got to be a perfect fit. So, with SARS-CoV-2 spike protein, ivermectin showed a high binding affinity. In other words, that hung on good and tight, it bound it, and that would stop the spike protein from infecting the cell. Ivermectin showed high binding affinity to the…to the spike protein, as well as the human cell surface’s receptor of the ACE-2. So that's the other one that it combined into, there. So, in other words, not only does it clog up that, it clogs up this as well. Therefore, it's a double reason not to fit. So, in other words, this is the key, here, isn't it? That's the key. And this is the lock. So not only does ivermectin bend the key, it also stops plasticine into the lock, would be another way to do it. So you're not going to get the binding there. So that's interesting molecular intimation of possible pharmacodynamic modalities of efficacy. In agreement with our findings, ivermectin was found to be docked between the viral spike and the ACE-2 receptor. Well, there you go. In other words, it clogs that space up there, so you don't get the binding. Therefore, the virus can't stick its RNA into the cell. The RNA cannot penetrate. The viral RNA cannot penetrate the cell, because he has to dock first, in this process called adsorption. In agreement to our findings, ivermectin…I’ve said that, so it clogs up both. Now it also…”Binding Interactions of Selected Drugs With Human ACE2 protein, other ACE2

proteins, as well. So it’s binding up other..other ACE2-binding proteins. I’m not going into the detail, they’re in the paper, if you want it. Ivermectin also binds with interaction with selected human ACE2 proteins, as we've said. But that's another sort of set of proteins. With SARS-CoV-2 S Glycoproteins, Ivermectin has the highest binding efficiency to the protected active site of the protein. In other words, good. So, it's clogging up this protein as well, which is great. And again, this or…this, or the protein here, Nsp-14, don't know what it is, but ivermectin clogs it up, shows the highest binding affinity. And binding interactions with selected drugs with SARS-CoV-2 PL protein…don’t know what that is, either. But again, it clogs it. It clogs it up, it clogs it up. So, where is the Pfizer drug? Is only working, as far as we've been told in the Pfizer press release, against one biochemical modality of viral replication. The ivermectin is working at many different levels.

Now, the fact that the Pfizer medicine is only working against one particular biochemical pathway, means to me that the virus could learn to avoid that. It could evolve to be drug resistant, as indeed the early antiretrovirals did with HIV. So, that's possible. With ivermectin, because it's working on so many different levels, that the..the idea that a virus would mutate in a dozen different ways to avoid all those different mechanisms, or whatever it is…six…six mechanisms we've talked about, today, I think. All of… the idea that we get six mutations that could dodge all of those all at the same time, is improbable, to put it…to put it mildly. So, I got a message here, for world leaders. “A brief message to world leaders”, people that are making the decisions about this: Come on, you all! You are not a horse. You're not a cow. In other words, world leaders, you're not a horse, you're not a cow, come on, you all. You've got a human intellect. Let's use it to follow the scientific evidence, to save human pain, suffering and death. Thank you for watching.