

Zinc - the ignored, abandoned and unwelcome panacea for smallpox, cowpox, common colds, croup, herpes and etc.

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What is wrong with panaceas? Why are they universally rejected? Specifically, why would medical research ignore an agent, zinc, that may have beneficial effects against many different viral infections, including smallpox, cowpox, common colds, croup, herpes etc.? Consider antiviral vaccines and medications; there is a separate one for each indication, and they are usually expensive – if available. Is it because zinc is readily available and extremely inexpensive, and pharmaceutical companies cannot profit from it? Or is there something more sinister involved?

Zinc has been used in medicine for well over a century. Here is an 1877 excerpt about its role in treating human smallpox: "I herewith append a recipe that has been used to my own knowledge in a hundred cases. It will prevent or cure the smallpox, even though the pittings are filling. When Jenner discovered cowpox in England, the world of science hurled an avalanche of fame upon his head, and when the most scientific school of medicine in the world (that of Paris), published this (zinc) panacea for the smallpox it passed unheeded. It is unfailing as fate, and conquers it in every instance. It is harmless when taken by a well person. It will also cure scarlet fever. Take sulfate of zinc, one grain; fox glove (*digitalis*) one grain; half a teaspoon of water. When thoroughly mixed, add four ounces of water. Take a spoonful every hour, and either disease will disappear in twelve hours. For a child, use smaller doses, according to age" [1].

Is this citation a demented rambling or is it a brilliant gem in the rough? Why should we give any credence to the quaint notion that zinc, an element, could be beneficial in the treatment of smallpox or any viral infection?

Let's examine some of zinc's known anti-viral activities. In modern research, ionic zinc, but not bound zinc, has been shown effective in a dose response manner in the treatment of rhinoviral common colds. [2] Croup, commonly found in infants and small children caused by parainfluenza, respiratory syncytial, herpes and rhinoviruses, is described as being easily controlled by topical ionic zinc [3]. Antiviral and therapeutic properties of zinc have been documented for a number of important viruses unrelated to common colds, including avian myeloblastosis, bacteriophages, calicivirus, equine herpes, herpes simplex I and II, polio, encephalomyocarditis, enterovirus, foot-and-mouth disease, mengovirus, rous sarcoma, semliki forest, sindbis, SV40, tobacco mosaic viruses, vaccinia, viroids and prions. Each of these viruses has been reported to have features controlled by ionic zinc usually at concentrations between 0.1 and 2.0 mMol without harm to cells. [4] Topical zinc for herpes was reviewed in 1985 and shown to be effective in its treatment in numerous reports [5]. Ionic zinc was shown to have antiviral properties to vaccinia, the cowpox virus [6, 7]. Regardless, zinc is not used to treat these infections to any significant extent. Since there is clear evidence of broad spectrum antiviral activity for zinc, the

nineteenth century notion that zinc may be effective in the treatment of smallpox deserves examination. This correspondence is not a comprehensive review, and many other viruses may be controlled by zinc.

Zinc is also required by the T-cell immune system to control viral infections [8, 9]. Based upon the extensive survey work of Wuehler et al. [10], I hypothesize that nations with diets that have sufficient zinc to resist smallpox immunologically include United States, Western Europe, Australia, Argentina, Canada, China, Japan, Iran, Mongolia, Russia, Saudi Arabia, Tibet and nations of northern Africa. Zinc stabilizes cell membranes helping to explain the high dietary requirement for zinc for people to remain healthy [11]. Ionic zinc to 100s of times physiologic concentration stabilizes and protects cell membranes and provides dose-response protection from viruses and toxins [11], which may result in protection against a broad number of viruses when used topically. A steel and zinc galvanization analogy comes readily to mind. An overview of these benefits and some suggested smallpox treatment protocols have been published [12].

If zinc was actually found in the nineteenth century to be beneficial in the treatment of smallpox, there should be other similar lost reports. I hypothesize that ionic zinc (zinc chloride, acetate, sulfate and gluconate) used both topically and orally will be demonstrated to be an effective smallpox preventative/treatment and anti-variola agent. I suggest that having multiple anti-variola preparations available to the public would provide better protection against smallpox bioterrorism than relying only on the vaccine.

Zinc was ignored while vaccines were favored as early as 1877, so the disdain for zinc as a panacea is not a modern phenomenon. I am unable to offer any rational reason for this bias, but it is consistent, and when considering its potential role in smallpox, it looks like a lethal tomato effect to me [13].

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