

Mathematical Interpretation of the Pharmacodynamics of Homoeopathic Medicines

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Introduction

In the field of therapeutics, Homoeopathy, now-a-days, is considered to be the most competitive one. Despite its innumerable examples of success, it has failed to make a place in the mainstream medical sectors because it still lacks a scientifically proved theoretical basis and laboratory-evidences. As a result, it is regrettably considered as 'alternative treatment method'. But if Samuel Hahnemann's therapeutic philosophy were properly understood, it would have occupy the highest seats of the medical schools. Or, at least it would have been taught in the mainstream medical universities. However, researchers, around the world, are endeavoring heart and soul to discover laboratory evidences in support of homoeopathic therapeutic concepts. In this paper, I have attempted to contribute a little bit to their effort by explaining the mechanism-of-action of Silicea, one of the very useful medicines of homoeopathy from an immunological perspective. Moreover, I have tried to interpret mathematically the actions of Silicea on human body and how those actions cure our ailments. Obviously, all these interpretations are purely theoretical and further researches are necessary to discover the specific effects of this medicine. Such mathematical interpretation of the effects of Silicea on organisms like human body necessarily can answer many questions which have remained unanswered so far. For example, we now know why oral and olfactory administration of homoeopathic medicines is more effective than the intravenous injection. We further can argue if some medicines need to reach the stomach in order to be effective. Also, the mathematical interpretation of the homoeopathic medicines, presented in this paper, can help us to explain why several molecules of some toxic crude medicines can set the patients free off some functional diseases so rapidly and, at the same time, to explain homoeopathic treatment takes so much time to cure. Let us proceed.

Hahnemann's Postulation and Warner's *Momentum*

The counter immune response which any poisonous substance induces in human body has been manipulated by a number of different therapeutic methods such as isopathy, immunotherapy, vaccination, etc differently. The techniques and strategies of manipulating the counter immune responses make all those differences among those therapeutic methods. So, if the law of “*similia similibus curantur*” is taken into consideration in its literal sense, isopathy and vaccination can be broadly aligned with the mainstream homoeopathic philosophy. Whereas for vaccination, dead or attenuated germs of the same disease are used to induce adaptive immunity as prophylaxis of the same disease before the infection, dead or attenuated germs of a disease are used to induce immune response against any disease after the infection. In homoeopathy, there are no rigorous criteria that the immune-response inducer must be of the same disease; rather traditionally it is believed that the medicines are selected according to the similarity of symptoms, though the ‘selection of medicine according to the similarity of symptoms’ is not always true. For example, check the rubrics from any homoeopathy repertory and the suggested medicines for them. You will find that almost of thirty percent of the symptoms are missing in the suggested medicines in the *Materia Medica*. I am doubtful whether some of those symptoms were produced during the proving of the related medicine. For example, open the “stomach” chapter of the *Synthesis* by Dr. Frederick Shroyens and search for the rubrics, “nausea>coition, during: Sil, Sabad”, “nausea > bread after: Ant C, Zinc”, “Nausea> amorous caresses, from: Ant C, Sabad”, etc. I checked for the related medicines in several *Materia Medicas*. Unfortunately I found those symptoms missing in those material medicas. So, I am almost sure that selection of homoeopathic medicines is not determined by the ‘law of similarity’ alone. Rather evidences of successful clinical experiences have helped those medicines to make a place in the repertory.



So selections of homoeopathic medicines are determined by a broad array of techniques and strategies of inducing the desired immune reactions against diseases and illness. Isopathy and vaccination fall in this broad arena of homoeopathy. Yet though Isopathy is practiced to a reasonable extent in homoeopathy, the homoeopaths are divided on acknowledging vaccinations as safe prophylaxis of diseases. Not here; I will discuss somewhere else about the business of selling the fear of the Bogus in the name of vaccination. However, I must say that the mechanism-of-action of vaccination is quite effective to prevent any target disease. Scholars have always stumbled on the question if it is possible to develop successful immune defense (with medicines which produce similar symptoms) against a disease which a patient already is suffering from. Let depict the situation in an example:

Suppose, a patient X is suffering from whooping cough which is caused by a type of bacteria called *Bordetella pertussis*.¹ According to the mechanism of vaccination, if some attenuated or dead germs of *Bordetella* are pushed into human body, the immune system will develop adaptive resistance against future attack of these bacteria. But if some attenuated or dead germs of pertussis

¹ Mayo Clinic. "Whooping Cough". <https://www.mayoclinic.org/diseases-conditions/whooping-cough/symptoms-causes/syc-20378973>

are pushed into a patient of whooping cough, is it possible that those germs will induce the immune system to develop immune response which will annihilate the existing germs of *Bordetella pertussis*? If so, how is it possible that the immune system will develop a response (against those attenuated germs) which will be strong enough to annihilate the existing ones (we must keep it in our mind that the immune system has already failed to develop immunity)? Here, isopathy cannot provide any satisfactory answer. However, homoeopathic philosophy can explain if the attenuated or dead germs can cure the disease or not.

While considering the homoeopathic explanation, we must not be biased with the allopathic culture of finding out a scapegoat. Earlier I have discussed that disease according to homoeopathic philosophy is the untuned state of the *vital force* (immune system). Read what Hahnemann says in the beginning of Aphorism 29: “Any disease that is not exclusively a surgical case consists of a particular pathological, dynamic untunement of feelings and functions in our *vital force* (vital principle)”² So, the prime focus of homoeopathic medication is to agitate the *vital force* to get back to its earlier tuned state, not to kill *Bordetella pertussis* because killing the germs is, indeed, the task of the tuned *vital force*. How do Homoeopathic medicines perform this task of restoring the untuned *vital force* to the state of tuneness? In the *Organon of Medicine*, Hahnemann argued that an essential biological property (*vital principle*) of *vital force* (immune system) is that the *vital force* can harmlessly be provoked to fight off the *untuneness* in order for rolling back to the state of *tuneness*. Hahnemann did not use any specific term to denote this *biological property* or *vital function*. Let us name this proposition of Hahnemann as Hahnemann’s Postulation. Hahnemann describes it in Aphorism 29 as following:

So in homoeopathic cure this *vital principle*, which has been dynamically untuned by natural disease, is taken over by a similar and somewhat stronger artificial disease, through the

² Samuel Hahneman, *Organon of Medicine*, Para-29

administration of a potentized medicine that has been accurately chosen for the similarity of its symptoms. Consequently, the (weaker) natural dynamic disease is extinguished and disappears; from then on it no longer exists for the vital principle, which is controlled and occupied only by the stronger artificial disease; this in turn presently wanes, so that the patient is left free and cured.³

Let's decode what Hahnemann wanted to say about the mechanism-of-action of his medicines. In this aphorism, Hahnemann mentions two disease forces a. natural disease (the weaker one) which is caused by the natural *disease-agent* or outer malefic disease force, b. artificial disease which is similar and somewhat stronger artificial and caused by potentized medicines. In aphorism 18, he describes which properties a substance should have in order to be the medicine, as he says, "medicines can cure disease only if they possess the power to alter the way a person feels and functions".⁴ Hence, he claims that the *vital principle* is "taken over by a similar and somewhat stronger artificial disease" and subsequently, "the (weaker) natural dynamic disease is extinguished and disappears; from then on it no longer exists for the *vital principle*, which is controlled and occupied only by the stronger artificial disease". This explanation of Hahnemann about the mechanism-of-action is very much metaphoric, as Hahnemann does not have any concrete scientific proof. He reached this conclusion which he deduced rationally from his observations. So, he failed to explain why the weaker natural dynamic disease disappears and no longer exists for the *vital principle*. But obviously, a modern immunological interpretation of Hahnemann's explanation provides a very clear scenario of why the weaker natural dynamic disease disappears and no longer exists for the *vital principle*. Earlier in this book, I have shown that Hahnemann's concepts such as *vital force*, *vital principles*, *miasm*, *disease-agent*, etc are, indeed, the philosophical predecessors of the

³ Samuel Hahneman, *Organon of Medicine*, Para-29

⁴ Samuel Hahneman, *Organon of Medicine*, Para-18

modern immunological terminologies such as immune system, immune functions, states of immune deficiencies, pathogens, etc. However, let us propose a modern interpretation of Hahnemann's postulation:

If the immune system (*vital force*) detects two (almost) similar threats simultaneously, the immune responses (actions of vital principles) which are metered by the severer one consider both threats as one unitary target and treat them with the same defense and recuperative strategies. During the immune responses in action, the less severe infection will be cured faster than the severer one. (Let's consider it as Hahnemann's Postulation)

Indeed, the abovementioned postulation is one of the greatest discoveries of modern biological science. Hahnemann provides many examples of such biological phenomena, as he says, "A disease of many years' duration being cured by an outbreak of smallpox or measles – both of these running that course in a few weeks – is a similar occurrence".⁵ Hahnemann spent the entirety of Aphorism 46 to a number of such phenomena:

a. Smallpox, prominent among them and so notorious for its many violent symptoms, has removed and cured a host of ills that have similar symptoms. b. A person who was blind for two years after the suppression of a scalp eruption completely recovered his sight after smallpox, according to Klein. c. A person who was blind for two years after the suppression of a scalp eruption completely recovered his sight after smallpox, according to Klein. d. A chronic herpetic eruption was cured (homeopathically) promptly, completely, and permanently by and eruption of measles.⁶

Hahnemann's painstaking research on the discovery of such biological phenomenon helped

⁵ Samuel Hahneman, *Organon of Medicine*, Para-29

⁶ Samuel Hahneman, *Organon of Medicine*, Para-46

him to manipulate it therapeutically. In order to manipulate this phenomenon therapeutically, he provided some criteria for the medicine to be considered as therapeutic. First of all, the medicine must “possess the power to alter the way a person feels and functions”.⁷ Again, he describes the essential characteristics of homoeopathic medicines as following: “Every real medicine can at all times and in all circumstances affect every living person and bring about its particular symptoms in him (even clearly perceptible ones if the dose is large enough).”⁸ This ability of the medicine to alter must be stronger than the *disease-agents*. The immunological interpretation of such claim is as following: the medicine must be able to induce a stronger symptomatic immune response than the disease symptoms. Here one may ask: Why are the stronger medicine-induced symptomatic immune responses so necessary? Read again between the lines of Hahnemann’s postulation and take a special note to the defense and the recuperative strategies which are adopted by the immune system (*vital force*). These strategies of the immune system (*vital force*) are the most important parts of the mechanism of actions of the homoeopathic medicines. While annihilating the threats of the medicines, the immune system also aims at curing the threats of natural disease.

Secondly, the artificial disease must be short-active and short-lived, as he says in the following statement from Aphorism 29: “The *vital force* frees itself much more easily from artificial diseases than from natural ones, although the former are stronger, because the *disease-agents* called medicines producing the artificial diseases have a short action.”⁹ Can you believe that Hahnemann amazingly speculate the immunologic characteristics of his medicines almost correctly despite having no knowledge of the immune science? Indeed, the stronger but short-lived actions of the medicines are ensured by controlling the doses and choosing the most effective site of administration. By the first criterion, the medicinal substance is a severe poison the smallest amount of which can induce

⁷ Samuel Hahneman, *Organon of Medicine*, Para-18

⁸ Samuel Hahneman, *Organon of Medicine*, Para-32

⁹ Samuel Hahneman, *Organon of Medicine*, Para-29

the strongest immune responses. All of these medicines are administered at the lowest doses at the most effective site of administration (please read the Chapter: the Most Effective Site of Administration). Upon administering the medicines, they induce a sharply uplifted and strong response, though it is short-lived.

Thirdly, not only the medicines must induce strong immune responses (disease symptoms), but also the symptoms they induce must be almost similar to the disease symptoms, as Hahnemann says: “the artificial disease brought on by a medicine does not have only to be stronger in order to cure the natural disease. Above all it must have the greatest possible similarity to the natural disease being treated.”¹⁰ In all the aphorisms from Aphorism34 to Aphorism38, Hahnemann argued why the medicinal symptoms should be similar to the natural disease symptoms. However, he argued in his own way with the knowledge and empirical evidences which he had at hands during his era. Providing examples of affections with diseases which do not have similarities of symptoms, he concluded that “since nature itself cannot cure even a somewhat old disease by adding a new dissimilar one”¹¹, similarity between medicinal symptoms and disease symptoms is an essential criterion for any substance to be considered as medicine.

Here, one may ask what the scientific logics behind such claims of Hahnemann are. Why should a medicinal substance have the properties of inducing strong immune responses, short-active effects and similarity of symptoms? If you read Hahnemann’s postulation again, you will clearly understand that the first property of inducing stronger immune response is aimed to pose the severer threat to the immune system (*vital force*). The essence of this property lies in evoking the immune system (*vital force*) to spring to action against the medicinal threat. Now if the medicinal dose is large, the medicinal sufferings are also higher and the attention of the threatened immune system

¹⁰ Samuel Hahneman, Organon of Medicine, Para-34

¹¹ Samuel Hahneman, Organon of Medicine, Para-34

or *vital force* is more focused on the medicinal threat itself. Because of the diverted immune focus, the cure of the target disease is delayed. So, Hahnemann developed a strategy to increase the *momentum* of the threat while reducing the dose in order to minimize medicinal harms. Let us call it “Warner’s *Momentum*”. Developing Warner’s *Momentum* is a very much essential part of the mechanism of homoeopathic medicines. The first and foremost target of the homoeopathic medicine is to induce the desired immune responses and to manipulate the immune responses to cure the disease. The success of achieving this target depends on developing enough *momentum of threat* which compels the immune system to address all the similar threats existing in the body. When the dose is larger, the *momentum of threat* to the immune system is higher. So, the immune system is easily induced to develop immune responses by the *threat momentum* which is created by the large dose. But when the dose is small in order to avoid medicinal harms, the *threat momentum* of the dose also diminishes. But a number of techniques such as repeating the dose over a period of time, administering the medicines at the site which will induce the severest immune responses, etc can increase the *threat momentum* of a medicine despite its smallest amount or dose.

Mechanism-of-Action of Homoeopathic Medicines and Warner’s *Momentum*

The simplest mechanism-of-action of homoeopathic medicines can be exemplified with the use of Silicea for the intrusion of foreign body. In order to understand the mechanism-of-action of Silicea, we will apply the intersectional binary operation of the Set Theory. Suppose a medicine T creates a set of threats to an organism. So the set T will be as following:

$$T = \{ Ta, Tb, Tc, Td, Te, Tf, Tg, Th \dots\dots\dots \}$$

[Ta, Tb, Tc etc are threats to organism]

Against this set of threats, the set of immune responses is TR:

$$TR = \{ Ra, Rb, Rc, Rd, Re, Rf, Rg, Rh \dots\dots\dots \}$$

[Ra, Rb, Rc etc are organism's immune response against specific threats]

Suppose again, a splinter or a fishbone has got stuck in the throat/leg of a patient and there is poking pain in the injured area. For some unknown reasons, the patient's immune system is not producing enough phagocytes which are supposed to consume the splinter and to produce pus (or some phagocytes around the foreign body) in order to throw it out. The set of splinter/fishbone's threats to the body is P:

$$P = \{ T_c, T_e, T_f, T_h \}$$

Now, the immune responses against the threats $\{ T_c, T_e, T_f, T_h \}$ of P should be as following:

$$PR = \{ R_c, R_e, R_f, R_h \}$$

But we have supposed that the PR response set is absent either partially or completely. In such cases, if several doses of diluted T are administered at the oral route, the nociceptors of the neuroimmune system will immediately detect the threats posed by the molecules of T. Infuriated by the possible threats, the immune system will start the response set TR $\{ R_a, R_b, R_c, R_d, R_e, R_f, R_g, R_h \dots\dots\dots \}$ against the threat set T $\{ T_a, T_b, T_c, T_d, T_e, T_f, T_g, T_h \dots\dots\dots \}$. Now, the threat sets T and P have some elements in common, the intersection of T and P will be:

$$T \cap P$$

$$\text{Or, } \{ T_a, T_b, T_c, T_d, T_e, T_f, T_g, T_h \dots\dots\dots \} \cap \{ T_c, T_e, T_f, T_h \}$$

$$\text{Or, } \{ T_c, T_e, T_f, T_h \}$$

According to Hahnemann's postulation, if the '*vital force*' (or immune system) encounter multiple similar threats at a time, the immune responses are determined by the severe ones and all the immune threats are addressed by the same immune responses. So, when the immune system is threatened by the molecules of T, it addresses the threats with PR response-set $\{ R_a, R_b, R_c, R_d, R_e,$

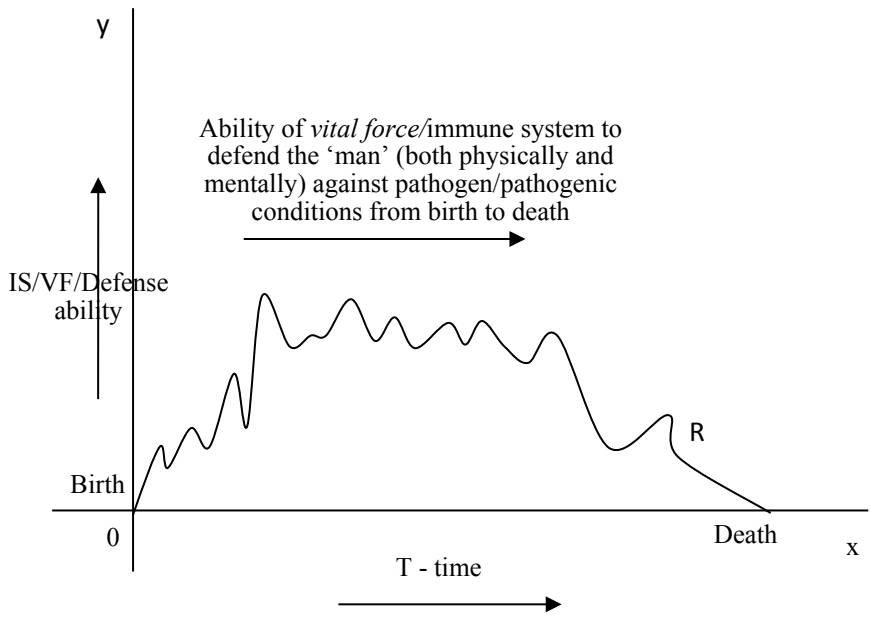
Rf, Rg, Rh}. Since threats {Tc, Te, Tf, Th} are common in both of the threat sets, the PR response set {Ra, Rb, Rc, Rd, Re, Rf, Rg, Rh} will cure the threats of the medicinal molecules along with the threats posed by the foreign body splinter.

The immune response to the lower potency of Silicea is very much similar to the immune response which a foreign body (inert) normally induces in human body. The array of immune responses which are induced by a foreign body along the duration from the intrusion to the expulsion is also induced by the different doses of Silicea. However, is it possible to theorize the dose-response relationship? Let's try. In this regard, we take the homoeopathic concept of disease into consideration again. According to the Organon of Medicine, disease is indeed the troubled state of the *vital force*. Suppose, a thin sharp and pointed metal of 1 millimeter length has intruded the muscle of your palm and caused damage a number of the cells. Here, though Orthodox school will tell you that the disease is the pain and inflammation, for the homoeopaths the disease is the disorder of the immune system (*vital force*) and the prospect of further casualties by the foreign body, whereas the pain and inflammation is the immune system's language of telling its disordered and threatened state. So, treating the pain and inflammation in an immune-suppressive (or immune-inhibitory) manner, instead of treating the man or the *vital force*, is to shut the immune system up forcefully. Even there is a significant difference between the ways how Allopathy and Homoeopathy see the foreign body as the apparent cause of the sufferings. According to Allopathic view, the foreign body is considered as a crucial cause of the sufferings. So, its removal is a crucial part of the treatment. This removal involves a long range of techniques such as surgery, use of medicines to kill and destroy the foreign bodies, etc. But this treatment method has a missing but very important part, that is the role of the immune system in the removal of the foreign body and repairing the damage. But from a homoeopathic viewpoint, the foreign body is nothing but a mere item in the to-do list which will be accomplished by the immune system. If the removal of the foreign body cannot be

accomplished by the immune system, surgery is needed. So, when homoeopathy considers surgery and destruction of foreign body as an unnecessary option if the immune system is capable of expelling it, the Allopaths will unabashedly throw a patient to their Operation Theatre. However, let's see if it is possible to theorize when surgery or chemotherapy is needed in homoeopathy:

$$\begin{aligned} &\text{Vital Power} \approx \text{Disease power} \\ &\text{Or, Ability of the immune system} \approx \text{Power of the } \textit{disease-agent} \\ &\text{Or, AIS} \approx \text{PDA} \dots\dots\dots(1) \end{aligned}$$

If we try to a graphical picture of the abovementioned equation, we will see that the ups and downs of the Engagement curve of *vital force*/immune system with pathogen/pathogenic conditions are determined by several factors such as psychological and physical wellbeing, lifestyle, occupation, eating habit, etc. The graphical presentation is as following:



According to Hahnemann, the understanding of the balance between *vital force* and disease force is very much crucial to perceive when to resort to surgery. The abovementioned equation is too general to depict the complex relationship between the immune system (*vital force*) and the *disease-agent*; yet it can render an overall picture of the sickness of a man. In disease, the immune system is supposed to be in a losing state as following:

$$\text{AIS} < \text{PDA}$$

$$\text{Or, PDA} > \text{AIS}$$

Where,

AIS = Ability of the immune system

PDA = Power of *disease-agent*

The reversal of this balance depends on both the ability of the immune system and the power of the *disease-agent*. Whereas homoeopathy takes both sides of this equation into consideration, the allopaths are partially obsessed with the *disease-agents*, paying no attention to the ability of the immune system. As a result, there are innumerable instances of cures of cases simply by homoeopathic medicines, where, for the allopaths, surgery was the only option. We will try to know if the abovementioned equation can help you to understand where surgery is necessary and where not. According to Hahnemann, a homoeopath's sole target is to reverse the balance between *vital force* and *disease-agent*. This sacred effort can be impeded by factors of the *vital force* and the disease. For example, the *vital force* in diseased state is directly and indirectly controlled by the following factors:

$$\text{AIS} = \text{MS} + \text{HF} + \text{PF} + \text{CS} + \text{SM}$$

Where,

AIS = Ability of the immune system

MS = *miasm* State

Hf = Hereditary Factors

PF = Psychological Factors

CS = Constitutional State

SM = Suppressive medication

C = Causation

In the similar fashion, we can sum up the factors that constitute the power of the *disease-agent* as following:

$$PDA = AEI + ASH + RFB + TFB$$

Where,

PDA = Power of *disease-agent*

AEI = Ability to evade the immune system

ASH = Ability to stay in the host

RFB = Reproducibility of the foreign bodies

TFB = Toxicity of the foreign bodies

So, if in any condition where one or more than one of the variables is such that the equation can never be reversed into $AIS < PDA$ because the immune system is not able to get the upper hand over the disease force in the battle unless an interference in favor, surgery may be necessary. Now, we will see how the homoeopathic medicine Silicea induces immune responses to different doses along different durations. In this regard, we will know more specifically the steps which the immune system takes to clear out any foreign body from the host. Normally, for the immune system, the Silicea or Silicon Dioxide (SiO_2) is an antigen which will be ingested by macrophages which will “set off an inflammatory response by releasing tumor necrosis factors, interleukin-1,

leukotriene B4 and other cytokines”.¹² Wikipedia further says,

In turn, these stimulate fibroblasts to proliferate and produce collagen around the silica particle, thus resulting in fibrosis and the formation of the nodular lesions. The inflammatory effects of crystalline silica are apparently mediated by the NALP3 inflammasome.¹³

So, each of the immune responses elicited by Silicea is very much important for a homoeopath, because his sole target is to manipulate any of them to achieve the desired result in treatment. Obviously, we must lead more researches to discover the dose-response relationship of Silicea as well as other Homoeopathic medicines. But in this book, I will simply describe the theoretical aspects of the dose-response relationship of Silicea. If we consider the abovementioned equation for Silicea as a disease force, we will get the following:

$$\text{AIS} < \text{PDA}$$

$$\text{Or, AIS} < \text{AEI} + \text{ASH} + \text{RFB} + \text{TFB}$$

$$(\text{because PDA} = \text{AEI} + \text{ASH} + \text{RFB} + \text{TFB})$$

Where,

AIS = Ability of the immune system

PDA = Power of *disease-agent*

AEI = Ability to evade the immune system

ASH = Ability to stay in the host

RFB = Reproducibility of the foreign bodies

TFB = Toxicity of the foreign bodies

¹² Wikipedia. “Silicosis”. <https://en.wikipedia.org/wiki/Silicosis>

¹³ Wikipedia. “Silicosis”.

For Silicon Dioxide particles, the virulence factors AEI, ASH and RFB are almost equal to zero. So, the immune system can easily get dominance over the particles, and therefore, over TFB. However, when the balance is $AIS < AEI$, the immune system is in offensive mode. But when the balance is reversed into $AIS > AEI$, it returns to the nursing mode. In both modes, the immune system reacts differently. For a single dose of Silicea, the VF graph will be as following:

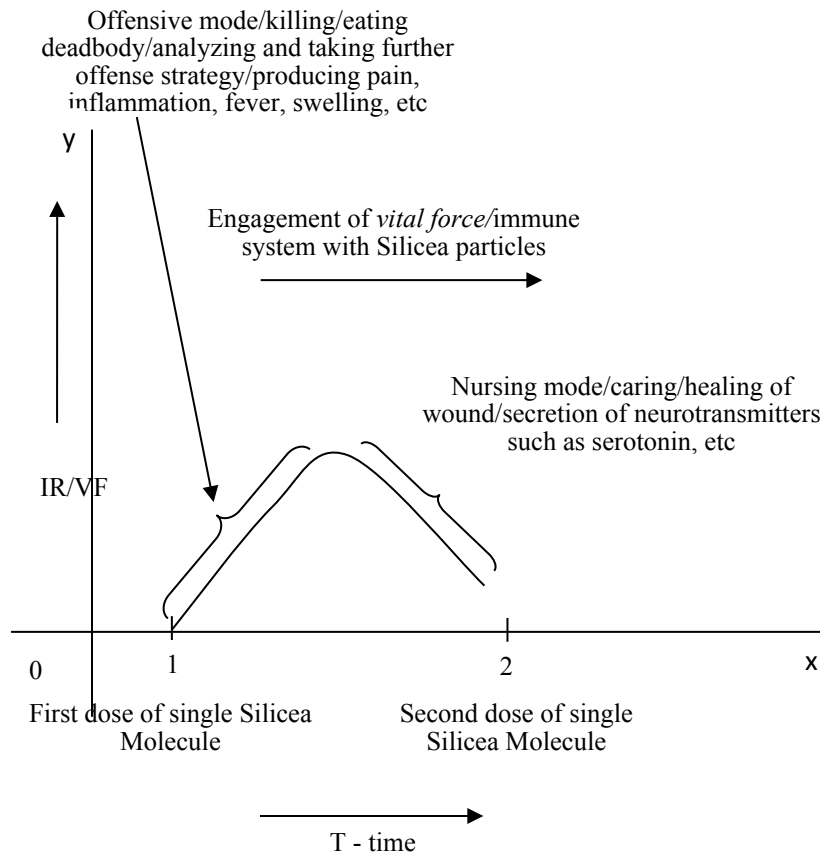
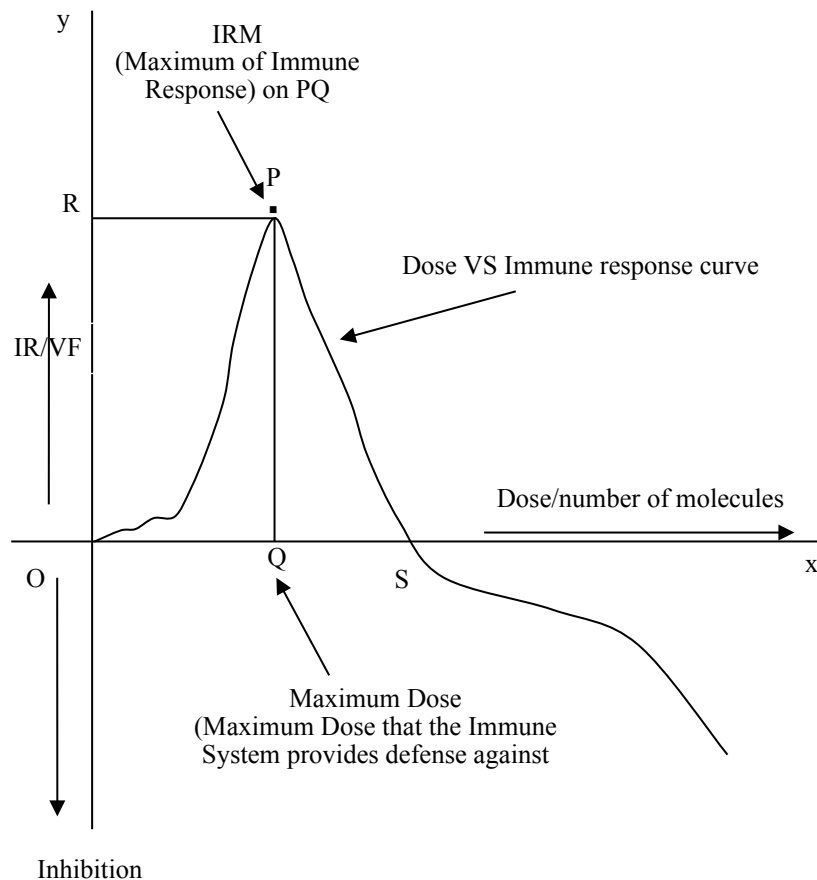


Figure: Immune Response curve for Silicea Dose

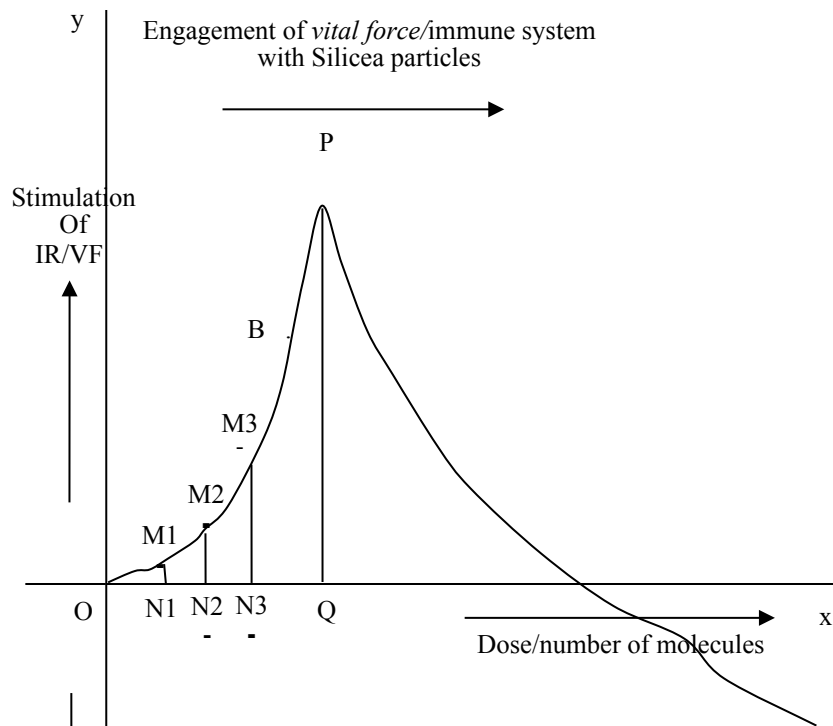
Obviously, this immune response is unitary which is made theoretically speaking against a single Silicea molecule. So, if the unitary or molecular immune response is μ , then IR or VF is:

$$\text{IR (or VF)} = n \mu$$

Where, n is the number of threatening molecules of Silicea. So, if you increase the number of Silicea particles in the dose, the response curve will expand along both X and Y axis. In the following graph, the P point on the curve indicates a stage where the immune system starts to be threatened and incapacitated by the disease force or medicinal pathogens because the immune system cannot overcome a dose which is larger than PR and because the immune system needs to have an immune response (to neutralize such a large dose), which is beyond its capacity.



At any point on the OP slope, the immune system behaves differently against different doses. The more the dose increases (up to RP), the more violently the immune system reacts. So, when the dose increases along the OP slope, the symptoms (medicinal aggravations) of the medicinal pathogens are more and more visible towards the P end and along the PS slope, the inhibitory effect of the medicines increases along the increase of the dose. Hahnemann tells about this inhibitory effect of large dose in the following: “A medicine given in too large a dose, though completely homoeopathic to the case and in itself of a beneficial nature, will still harm the patient by its quantity and unnecessarily strong action on the *vital force*”.¹⁴ The required time which the immune system takes to overcome the dose also increases towards the end. At the same time, you must note that the stimulation of the immune system increases along the OP slope towards the P end. Hence, we need a position B which indicates the minimum dose of the medicinal antigen and the correlated highest possible stimulation of the immune system in order to avoid the medicinal aggravation.



¹⁴ Samuel Hahneman, Organon of Medicine, Para-275

Another dilemma which a homoeopath has to deal with is to decide the dose which will stimulate the immune system to produce so much immune response which will be adequate enough to take initiative against the existing invasion of the external disease force. It means that the dose should be large enough to start the desired immune response and not be large so much that it starts to put extra pressure on the immune system. This claim about the quality of the dose has also been affirmed by Hahnemann in the following lines: “the dose of...homoeopathic remedy...can, as a rule, not be made so small that it is not stronger than the natural disease, that it is cannot at least partially overcome it, that it cannot at least partially extinguish it in the feelings of the vital principle, that it cannot start the process of cure”.¹⁵ If we understand how homoeopathic medicines cure we will be able to determine the effective dose for different pathogenic conditions. In this regard, we will consider the intrusion of the aforementioned tiny, thin and sharp metal into the tissue of the sole as the pathogenic condition. Even after several days of its intrusion, the immune system has not been able to clear it out. Simply it is causing a bit of stitching pain. A homoeopath will most probably prescribe Silicea to produce pus in order to clear out the foreign body. But it is apparently ironical that a homoeopath will use a different dose of Silicea to absorb pus. We will explain it in the following part. We have seen the immune response against Silicea. We will also see the nature of the immune response against the foreign body and explain how the interaction between the two types of immune responses helps the physician to achieve the goal. For the aforementioned pathogen, the immune system is taking unusually long time to produce necessary immune responses. But normally the response curve like the green one should be steeper within a narrower timeframe along the x axis. But the response curve for the pathogen is staggering over an unusually longer period. Whereas a healthy immune system will start an innate immune response within 4 hours after the intrusion, this immune system did not start innate immune response even though several days passed.

¹⁵ Samuel Hahneman, *Organon of Medicine*, Para-279

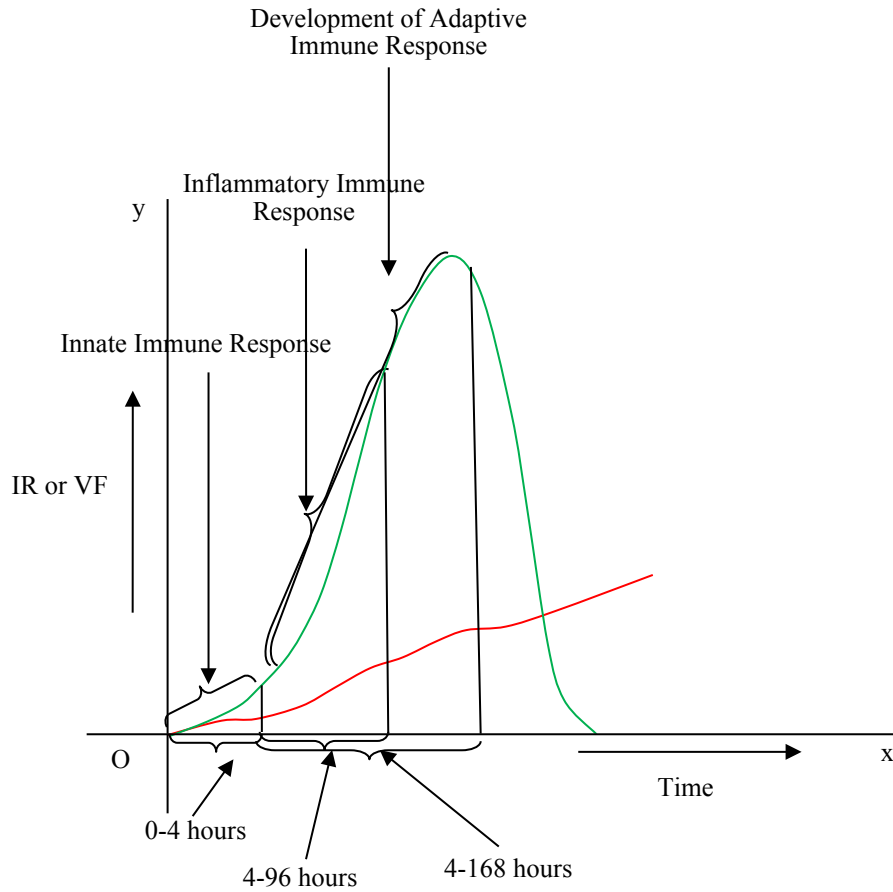
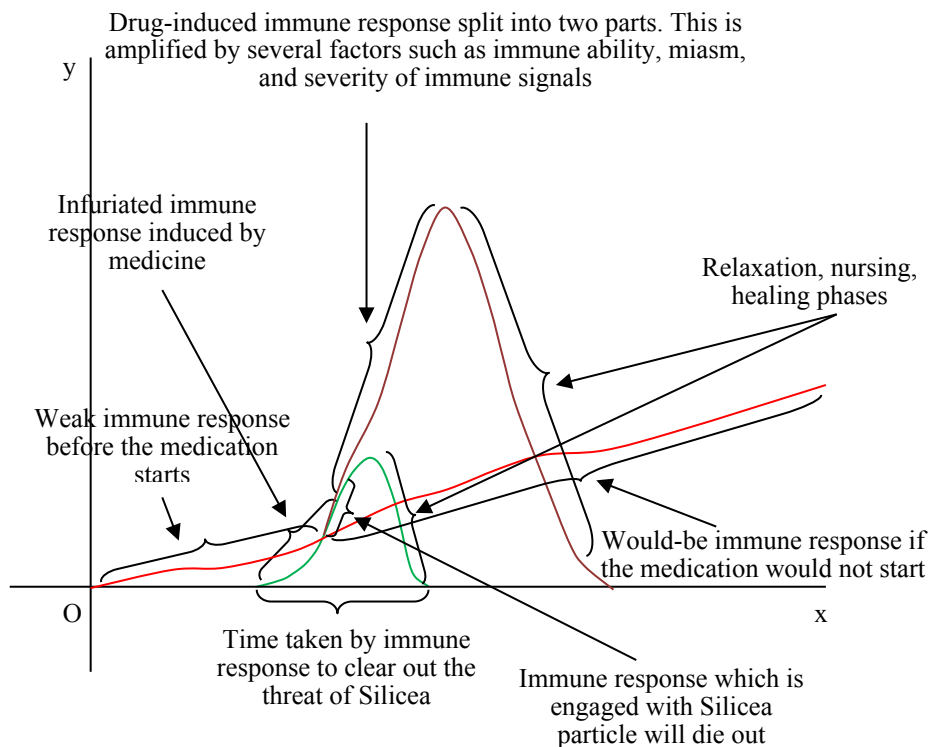


Figure 8: Response-Time Curve of Silicea

Now we will see how different doses of Silicea affect this troubled response curve (the red one). Earlier we have learnt that Silicea particles have their own response curve (the green one). As a pathogen, Silicea particles are endowed with a particular type of toxicity. So, a dose of Silicea within the medicinal limit can create a pathogenic environment which is strong enough to elicit an immune response which will be able to cover the threat caused by the foreign body. This immune response further will be divided into arrays: the first array of responses will gradually clear out the threat caused by the Silicea particles and gradually will die out. But the second array of immune responses is so much stirred and infuriated by the Silicea particles that it will be further amplified by the signal of threat caused by the foreign body. This ability to be amplified by the signal sent by the damage

cells is further dependent on the threat posed by the medicinal dose, the site of administration of the drug, the immune ability, *miasms*, psychological wellbeing and strength of the immune signal. Now we will see how different doses of Silicea affect this troubled response curve. Earlier we have learnt that Silicea particles have their own response curve. As a pathogen, Silicea particles are endowed with a particular type of toxicity. So, a dose of Silicea within the medicinal limit can create a pathogenic environment which is strong enough to elicit an immune response which will be able to cover the threat caused by the foreign body. This immune response further will be divided into arrays: the first array of responses will gradually clear out the threat caused by the Silicea particles and gradually will die out. But the second array of immune responses is so much stirred and infuriated by the Silicea particles that it will be further amplified by the signal of threat caused by the foreign body. This ability to be amplified by the signal sent by the damage cells is further dependent on the threat posed by the medicinal dose, the site of administration of the drug, the immune ability, *miasms*, psychological wellbeing and strength of the immune signal.



Generally, an infuriated immune system will spring to actions and address any impending threat. It will take the steps which are necessary in any particular context. For example, if the stirred immune system finds the site of injury in its initial state (the unaddressed foreign body, damaged cells, presence of cell signaling chemicals, etc), it is supposed to initiate responses which will capture the foreign body, neutralize and eat it. It will call for more help. It further will search for more threats; if there is any, it will send more specialized forces (adaptive immune responses) which will analyze the foreign body and estimate the potential threat from it. Then it will develop strategy to defend the body from future attack. Either during this whole process or at the end of the process, the immune system will adopt nursing mode. Ideally if the stirred immune system starts (provided that it is not suffering from any major drawbacks) addressing the threat, it will complete the whole cycle of its functions. So look at the “Figure: Immune Response Curve for Silicea Dose”. For different Silicea doses, the curve behaves differently. Look at the following two graphs for two different doses of Silicea: Generally, an infuriated immune system will spring to actions and address any impending threat. It will take the steps which are necessary in any particular context. For example, if the stirred immune system finds the site of injury in its initial state (the unaddressed foreign body, damaged cells, presence of cell signaling chemicals, etc), it is supposed to initiate responses which will capture the foreign body, neutralize and eat it. It will call for more help. It further will search for more threats; if there is any, it will send more specialized forces (adaptive immune responses) which will analyze the foreign body and estimate the potential threat from it. Then it will develop strategy to defend the body from future attack. Either during this whole process or at the end of the process, the immune system will adopt nursing mode. Ideally if the stirred immune system starts (provided that it is not suffering from any major drawbacks) addressing the threat, it will complete the whole cycle of its functions. So look at the “Figure: Immune Response Curve for Silicea Dose”. For different Silicea doses, the curve behaves differently. Look at the

following two graphs for two different doses (smaller doses and larger doses) of Silicea:

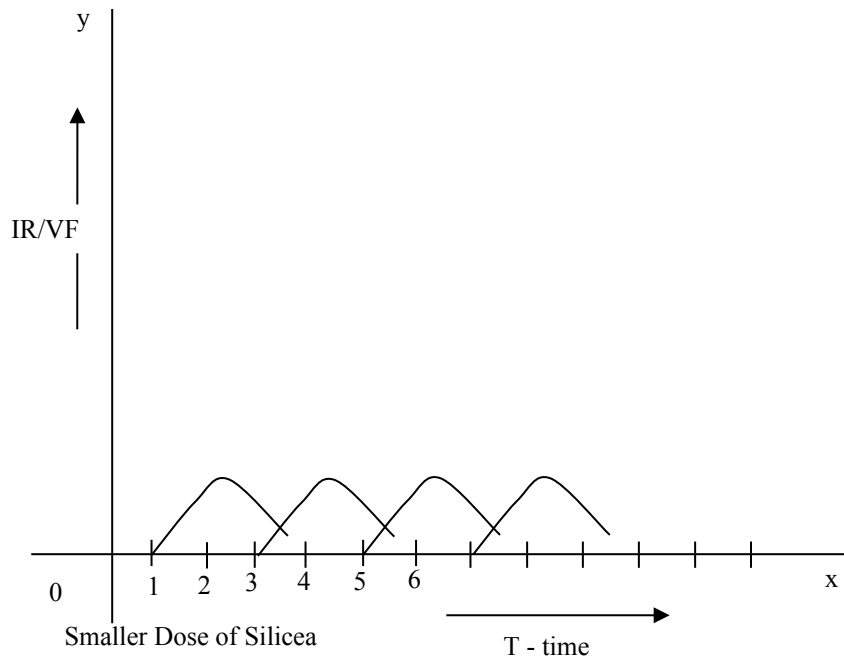


Figure: Immune response curve for repeated smaller dose

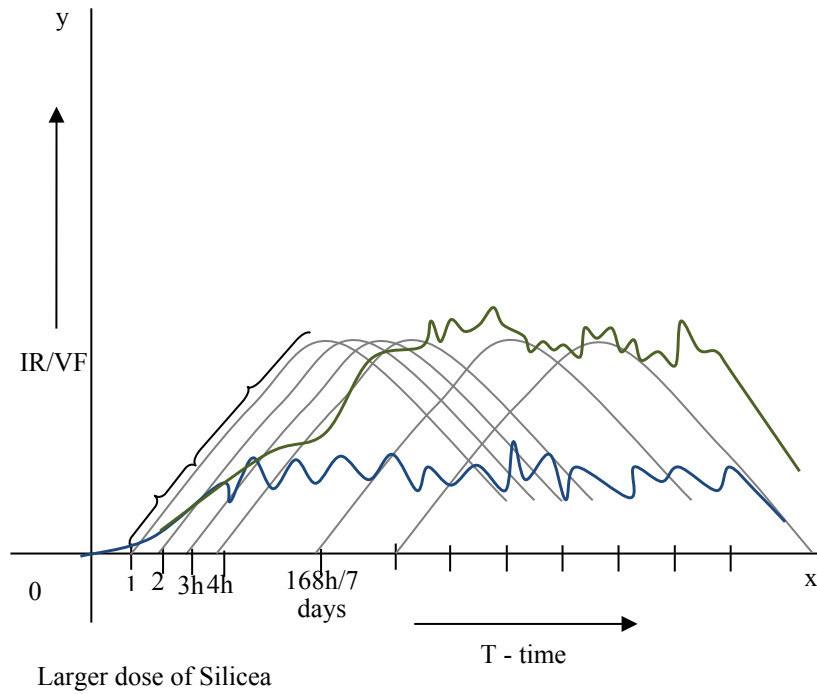


Figure: Immune Response curve for Repeated large Silicea Dose

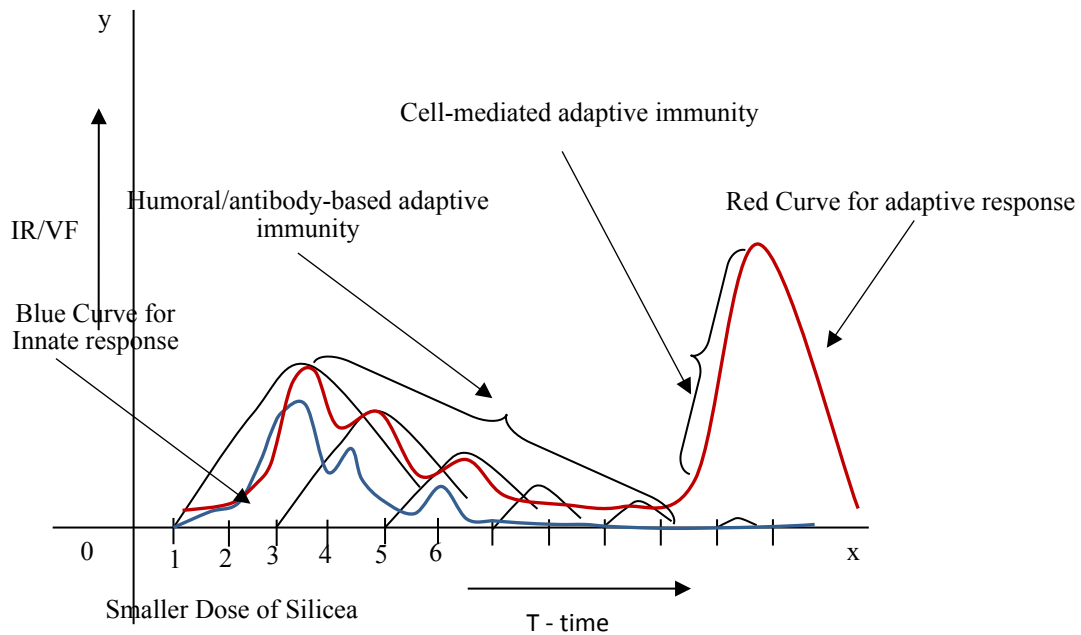
Please note that the time covered by the response curve for the larger dose along the x axis is larger than the time taken by the response curve of the smaller dose. So, repeating the dose for a number of times will necessarily change the nature of the response curve. For example, if the successive doses occur within the innate-response period of the preceding one and if the doses are large enough not to be cleared out by innate or adaptive immune system alone, both innate and adaptive responses will remain active. In the above mentioned figure, the Green curve indicates the adaptive immune response, while the blue one refers to the innate response. So though larger doses can easily develop offensive immune responses, nursing/caring responses are continuously postponed by them because they remain busy with the offenses. On the contrary, smaller doses complete the whole phase of infection and cure within a shorter timeframe. During the infection phase, the immune responses are instigated, while during this nursing mode, the nervous system releases some neurotransmitters such Dopamine, serotonin, oxytocin, endorphins, and many others which create the feelings of happiness and wellbeing. So, smaller doses or higher potencies can bring the mental wellbeing prior to the physical cure than the larger doses or lower potencies can do. This finding is quite compatible with Hahnemann's observation:

The signs of improvement in the emotions and mind can be expected immediately after the medicine has been taken only if the dose was small enough (i.e., as small as possible) an unnecessarily larger dose even of the most homeopathically appropriate remedy, apart from its other ill effects, acts too violently and initially disturbs the mind and emotions too strongly and too long for the patient's improvement to be noticed immediately.¹⁶

In order to elicit adaptive immune response the dose must be large enough to fail the innate immune response. It is because the failure of the innate immune response to clear out the threat

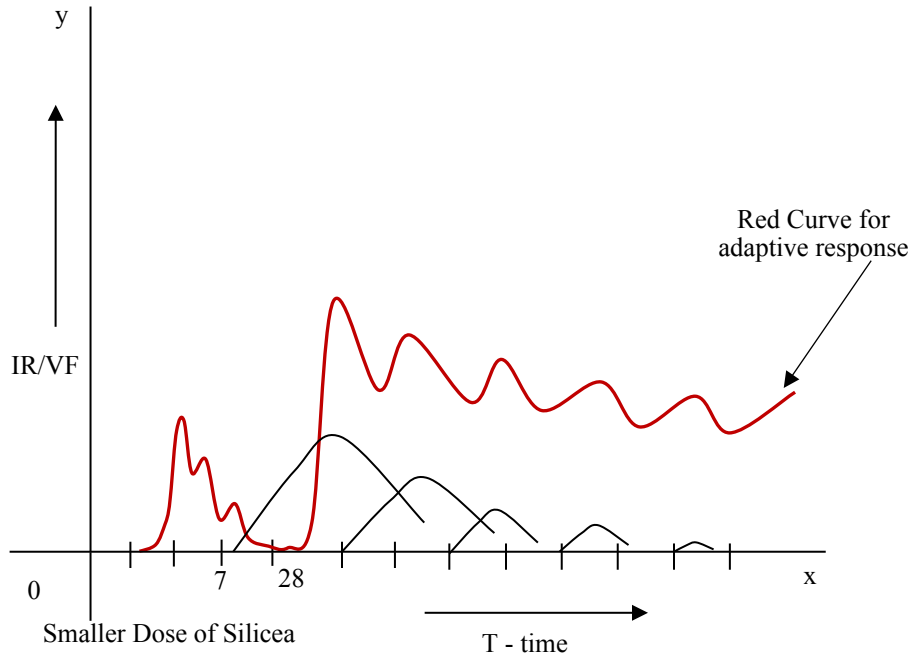
¹⁶ Samuel Hahneman, *Organon of Medicine*, Para-253

evokes the adaptive immune response to develop. So if a man comes to a homoeopath to clear out a foreign body, the homoeopath should prescribe the larger doses. But suppose the same patient revisits the doctor with an infection where there is enough suppuration, white clammy discharge, etc. These symptoms are indicative of that the immune system has already reached the adaptive immune phase which is, for some reasons, failing to finish the task of healing the infection. In order for achieving this object of stimulating the adaptive immune response, we need a dose which can complete the whole response phase within a very short time. So, the dose must be repeated during the span from the start of adaptive immune response to the end of nursing mode. Here, the homoeopaths must keep it in their mind that since smaller doses cannot elicit adaptive immune response, it is necessary to initiate the adaptive immunity with larger doses. This strategy should be taken if the patient never took the medicine earlier. May be, gradually reducing the dose may help in this regard:



Since secondary cell-mediated immune response is specific and, therefore strong, the doses up to a certain amount seem to manifest no visible effects on the symptoms of a disease. Ask any experienced homoeopath; he/she will say that larger doses (lower potency) often do not seem to work after the administration of lower doses (higher potency). Also the homoeopaths very often face a situation that a medicine worked very well for several days, now it is not working at all. Explanation of such events is quite obvious. After a certain period of the administration of any homoeopathic medicine, the immune system develops the adaptive immune response against the medicinal particles. The adaptive immune system is quicker, more specific and more effective. It can handle larger doses up to a certain limit. So, the same dose which once worked very well to induce innate response is not working anymore now. In this situation, any large dose which is beyond the capacity of the adaptive immunity and larger than the dose which would once easily induce innate response, is supposed to induce the innate response again. The locked dose (which is quickly addressed by the adaptive immunity) fails to induce any stimulatory environment, because the repetition of the same dose at equal interval cannot create a chaotic and alarming environment which the repetition of the different dose at different intervals can create. Since increasing the dose puts an extra pressure on the immune system, this target of creating chaotic and alarming environment (which is supposed to induce immune responses and which the locked dose is now failing to create the chaotic and alarming environment) can also be achieved by decreasing the doses at a regular basis. In general an adaptive immune response on any exposure after the second one is equal to what it is for the preceding one. So, frequent recurrence of descending doses poses a fake severity of the invasion or the infection against which the immune system takes the alertest stance. Moreover, the descending doses gradually decrease the immune system's engagement with the medicinal particles and increase the amount of lymphocytes and other necessary defensive-nursing functionalities in the host. This environment is strong enough to address the infection which our

patient is suffering from.



Let's develop a mathematical model for the repetitive descending doses of Silicea. Suppose, at equal intervals, the doses of Silicea, S decreases geometrically as following:

$$\frac{S}{3^0}, \frac{S}{3^1}, \frac{S}{3^2}, \frac{S}{3^3}, \frac{S}{3^4}, \frac{S}{3^5}, \dots, \frac{S}{3^n} \dots \dots \dots (1)$$

Against each of these doses, the immune response will remain almost the same, though it will decrease very slightly. So, the consecutive immune response will be as following:

$$R, R-x, R-2x, R-3x, R-4x, R-5x, \dots, R-(n-1)x \dots \dots \dots (2)$$

However, over a certain period of time, the summations of the doses (for 3 doses in this case) and immune responses should be as followings:

$$S x \left(\frac{1}{3^0} + \frac{1}{3^1} + \frac{1}{3^2} \right)$$

$$\text{or, } S x \left(\frac{9 + 3 + 1}{9} \right)$$

$$\text{Or, } \frac{13s}{9}$$

$$\text{Or, } s + \frac{4s}{9} \dots \dots \dots (3)$$

The summation of immune responses is:

$$R + R-x + R-2x$$

$$\text{Or, } 3R-3x \dots \dots \dots (4)$$

If the doses of Silicea do not decrease at regular intervals, the doses (3 doses) and immune responses will be as following:

$$S + S + S$$

$$\text{Or, } 3S \dots \dots \dots (5)$$

And,

$$R + R + R$$

$$\text{Or, } 3R \dots \dots \dots (6)$$

Please take a look at statement (3) where the 3 doses of Silicea decrease consecutively and geometrically. Though the doses decrease, the respective immune response R will not decrease so fast as the doses do. So, if the x is negligible in statement (4), the summation of immune responses is almost 3R. Comparing statement (5) and statement (6), we can conclude that if the same doses, which are administered over a period of time, keep the respective immune responses engaged fully with the doses. But if the doses decrease, a part of the 3R-3x (the summation of the immune responses is 3R since 3x is almost negligible) will engage with the $\frac{13s}{9}$ dose. The engaged part of the

immune response is assumedly $\frac{13R}{9}$. So, the rest of the total immune response (that is, $3R - \frac{13R}{9} = \frac{14R}{9}$) will stay free to be engaged with the existing ailments. It shows that the decreasing doses are more effective to address the disease. Indeed, prescribing decreasing doses of a selected medicine, though popular, often seems to be funny and often homeopaths fail to explain why the decreasing doses work so effectively. However, this mathematical model of decreasing doses show that homoeopathy believes in increasing the *vital force's* initiatives against a disease gradually by decreasing the drug-dependency.

Effective Sites of Administration of Homoeopathic Medicines

The earlier explanation of the mechanism-of-action of Silicea is one of the simplest examples of how homoeopathy medicines work. Most of the homoeopathic medicines work according to the explained way. Yet the medicines differ from one another in terms of ability to induce immune responses, types of responses they induce, the agility of responses, the duration of response, the miasms they are influenced with, types of cells they cause damages to, types of damages they cause, the sites of administration they work at the most, etc. An effective site should be the one where the lowest dose of medicinal particles stimulates the immune system the most. Obviously, a dose of medicinal particles will receive quicker and stronger immune reactions in a highly immune area than what it receives in a low immune area. In this regard, a sound knowledge of Neuroimmune system can be helpful to perceive what the most effective site of drug-administration is. The nervous system plays a very important role in the development of immune responses. The initiation of the immune response is intensively determined and controlled by the Central Nervous System (CNS). Almost all the immune organs are intimately connected with the CNS through Peripheral Nervous System (PNS). Look at what Dantzer and Wollman tell about the relationship in their article:

The concept that the brain can modulate activity the immune system stems from the theory of stress. Recent advances in the study of the inter-relationships between the central nervous system and the immune system have demonstrated a vast network of communication pathways between the two systems.¹⁷

They further explained how the lymphoid organs are connected with the autonomic nervous system and how the immune functions are regulated by the membrane receptors which bind to the neurotransmitters and neuropeptides. Immune functions such as cell proliferation, chemotactism, specific immune responses and many other vital ones are activated and regulated by the integrated neuroendocrine-immune network. In an article, “Relationships between the brain and the immune system”, Dantzer and Wollman further narrate:

The communication pathways that link the brain to the immune system are normally activated by signals from the immune system, and they serve to regulate immune responses. These signals originate from accessory immune cells such as monocytes and macrophages and they are represented mainly by proinflammatory cytokines. Proinflammatory cytokines produced at the periphery act on the brain via two major pathways: (1) a humoral pathway allowing pathogen specific molecular patterns to act on Toll-like receptors in those brain areas that are devoid of a functional blood-brain barrier, the so-called circumventricular areas; (2) a neural pathway, represented by the afferent nerves that innervate the bodily site of infection and injury. In both cases, peripherally produced cytokines induce the expression of brain cytokines that are produced by resident macrophages and microglial cells. These locally produced cytokines diffuse throughout the brain parenchyma to act on target brain areas so as to organise the central components of the host response to infection (fever,

¹⁷ Dantzer R, Wollman EE. “Relationships between the brain and the immune system”. *J Soc Biol.* 2003;197(2):81-8 in NCBI <https://www.ncbi.nlm.nih.gov/pubmed/12910622>

neuroendocrine activation, and sickness behavior).¹⁸

It is very much clear from the progress of modern researches on the role of brain in the initiation of the immune response against any foreign body that the distance between the CNS and the site of infection plays a crucial role in the quality of the immune response. The nearer the site of infection is to the CNS, the stronger the response is. Furthermore, the nearer the site of infection is to the CNS, the shorter the time which the immune system takes to develop is. Almost all the organs which are involved in the remote regulation of necessary biological and immunological functions of distant target organs through the neuroendocrine signaling system are located in or nearer to the CNS. Scientists believe that the hypothalamus plays as the neural control center for all endocrine systems, whereas the thalamus has “several functions such as relaying of sensory signals, including motor signals to the cerebral cortex, and the regulation of consciousness, sleep, and alertness”.¹⁹ Obviously the time and the intensity of the response to any infection are related to the distance of the CNS from the site of infection. So, the theorization is quite obvious as following:

$$\text{IIR} \propto \text{DSOI}$$

Or, $\text{IIR} = m/\text{DSOI}$

Where,

IIR = Intensity of immune response

DSOI = Distance of the site of infection from the CNS

Intensity of immune response is inversely related to the distance of the site of infection from the CNS. In the similar fashion, the time which is taken by the immune system to develop against any infection is also inversely related to this distance as following:

¹⁸ Dantzer R, Wollman EE. “Relationships between the brain and the immune system”. J Soc Biol. 2003

¹⁹ Wikipedia. “Thalamus”. <https://en.wikipedia.org/wiki/Thalamus>

$$\text{TIR} \propto \text{DSOI}$$

$$\text{Or, TIR} = m/\text{DSOI}$$

Where,

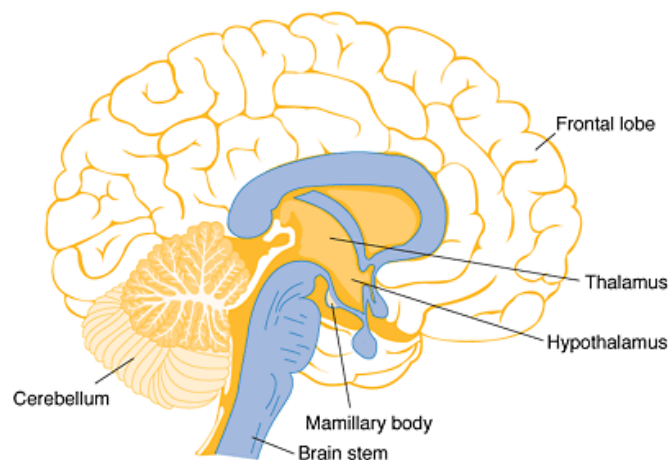
TIR = Time of immune response

DSOI = Distance of the site of infection from the CNS

The Central Nervous System plays an significant role in the immune system. So the distance between the CNS and the site of infection or site of administration is important for a number of reasons. Firstly, the hypothalamus being instigated by a number of cytokines, such as IL-1, IL-6, IL-10 and TNF-alpha takes steps to modulate the immune response through the hypothalamic–pituitary–adrenal axis (HPA axis or HTPA axis). It “regulates the immune system through neuroendocrine pathways, such as the HPA axis [which] is responsible for modulating inflammatory responses that occur throughout the body”.²⁰ Look at the process of the pain-modulating function of the HPA axis. Proinflammatory cytokines which released into the peripheral circulation system travel through the blood brain barrier and interacts with CNS. As a result, the adrenal gland releases neurotransmitters and glucocorticoids such as cortisol, into the blood, which in turn “suppresses immune response by inhibiting the expression of proinflammatory cytokines (e.g. IL-1, TNF alpha, and IFN gamma) and increasing the levels of anti-inflammatory cytokines (e.g. IL-4, IL-10, and IL-13) in immune cells, such as monocytes and neutrophils”.²¹ So, the distance which the proinflammatory and anti-inflammatory cytokines travel through to reach the Hypothalamus and the pituitary gland plays a crucial role in determining the quality and intensity of the immune response.

²⁰ Wikipedia. “Hypothalamic–pituitary–adrenal axis”. https://en.wikipedia.org/wiki/Hypothalamic–pituitary–adrenal_axis

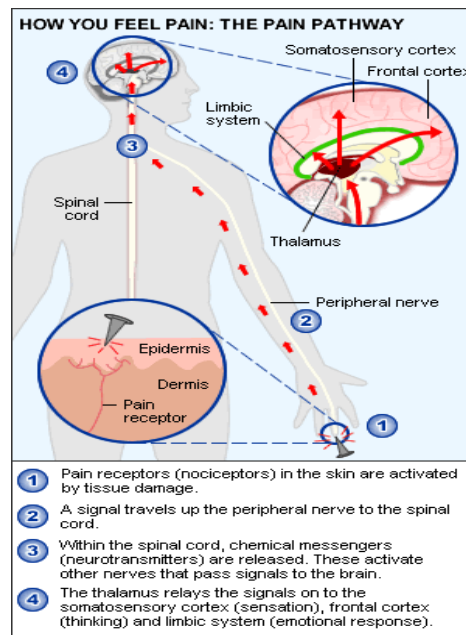
²¹ Wikipedia. “Hypothalamic–pituitary–adrenal axis”



Secondly, the distance between the site of medicine-administration and the CNS is important because the sensory nervous receptor, namely nociceptor, which is responsible for “responding to potentially damaging stimuli” by sending signals to the CNS through the spinal cord to the brain needs to be close to the thalamus as well as the CNS in order to get quicker and more effective immune responses. Nociception, the process of perceiving the damaging stimuli or actual damage is one of the crucial steps in the development of immune response against any potential damage. Here, I cannot but mention a part of Aphorism 16 which clearly shows that despite having no knowledge of modern nervous system and neuroimmune science, Hahnemann could imagine the role of the neuro-receptors in perceiving the threats (for Hahnemann, it is “spirit-like, dynamic effects”) of medicinal molecules, as he says, “The physician can remove these pathological untunements (diseases) only by acting on our spirit-like *vital force* with medicines having equally spirit-like, dynamic effects that are perceived by the nervous sensitivity everywhere present in the organism.”²² Read between the lines of any article on the Sensory Nervous System. You feel how much correct Hahnemann’s assumption about the nociceptive receptors’ ability to detect equally spirit-like, dynamic of medicine was. The effective development of the immune defense against any infection

²² Samuel Hahneman, *Organon of Medicine*, Para-16

or damaging stimuli crucially depends on the successful transmission of the chemical messages to the brain. If the transmission of the casualty is successful, the brain receives it as some unpleasant feelings such as pain, inflammation, etc. Being provoked by the pain-message, the brain (the CNS) takes further defensive initiatives against the injury through an Integrated Network of Organs Regulatory System (INORS).







Obviously, a sound knowledge of the nerve conduction science can help us perceive about the most effective site of administration of homoeopathic medicines. In homoeopathy, the most precious property of a medicine is the immune response which it provokes the immune system to initiate. A medicine is considered as the most effective, if it is capable of inducing the most intensive immune with the least possible amount of its substance within the shortest possible timeframe, as Hahnemann says in Aphorism 18: “medicines can cure disease only if they possess the power to alter the way a person feels and functions”.²³ But the distance between the CNS and the site administration also plays a crucial role in inducing the desire immune response. The signal of

²³ Samuel Hahneman, Organon of Medicine, Para-18

damaging stimuli travels all the way to the brain through different nerve at certain speeds as following. So, it is very much reasonable to assume that the site which will supposedly induce the most effective immune response is the nearest to the CNS.

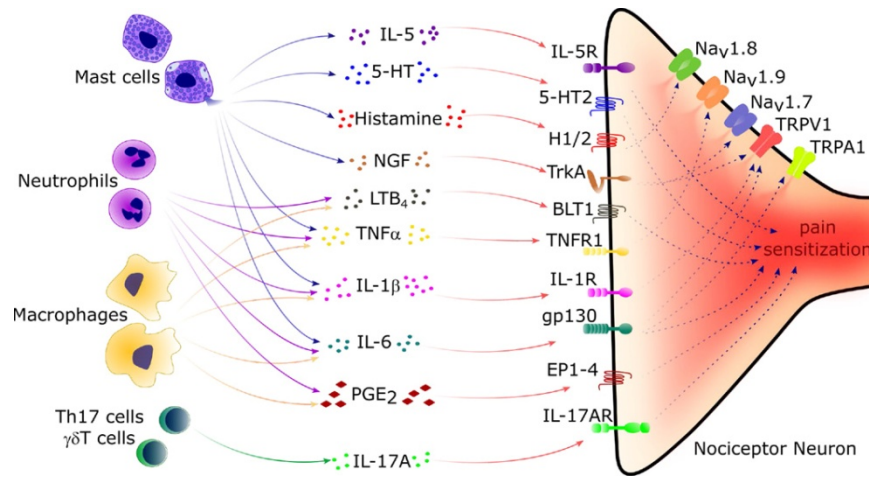
Features of different types of nerve fibre

Nerve fibre	A-alpha	A-beta	A-delta	C
Appearance				
Information carried	<ul style="list-style-type: none"> • Position • Spatial awareness 	<ul style="list-style-type: none"> • Touch 	<ul style="list-style-type: none"> • Sharp pain ('fast pain') • Temperature 	<ul style="list-style-type: none"> • Dull pain ('slow pain') • Temperature • Itch
Diameter (micrometers)	13-20	6-12	1-5	0.2-1.5
Speed of signal conduction (meters/second)	80-120	35-75	5-35	0.5-2.0

According to this distance relativity of the effectiveness of the immune response, the oral and the nasal cavities are the most effective sites of administration. Moreover, being the only two gateways which are used to get supply from external world, the oral and nasal cavities are believed to be highly fortified with innumerable nociceptors that are always alert against any trespasses of harmful chemicals and microorganisms. Nociceptors are supposed to “detect signals from damaged tissue or the threat of damage and indirectly also respond to chemicals released from the damaged tissue”.²⁴ The TRP channels of the chemical nociceptors within the oral and the nasal cavities can detect a wide range of chemical stimulants such as capsaicin, acrolein, external toxins, ligands,

²⁴ Nachum Dafny. “Chapter 6: Pain Principles”, Neuroscience Online. <https://nba.uth.tmc.edu/neuroscience/m/s2/chapter06.html>

certain fatty acid ligands, etc. Even if the damaging stimuli do not exceed the pain threshold, the immune system continues the detection and defending the noxious chemical molecules.



(Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5205568/>)

Since homoeopathic medicines produce different symptoms during the proving, it will not be irrational to think that the damaging effects of the molecules of homeopathic medicines are quickly detected by the nociceptive system of the sensory nervous system. So the scholars who wonder how it is possible for the negligible number of molecules of medicine to bring so great changes are indeed driven by some bestial impulse of filling their patients' belly with medicinal syrups. But homeopathy is free of such idiocy. Hahnemann might not have any knowledge of the nociceptive process of the sensory nervous system. But he was quite aware that the smallest doses of the poisonous molecules will be detected by the immune system (*vital force*). So he wanted to keep the subtle counter immune response (vital response) which is evoked by the subtle dose of the medicine uncorrupted and uncontaminated; as usually he advocated that: "Considering the smallness

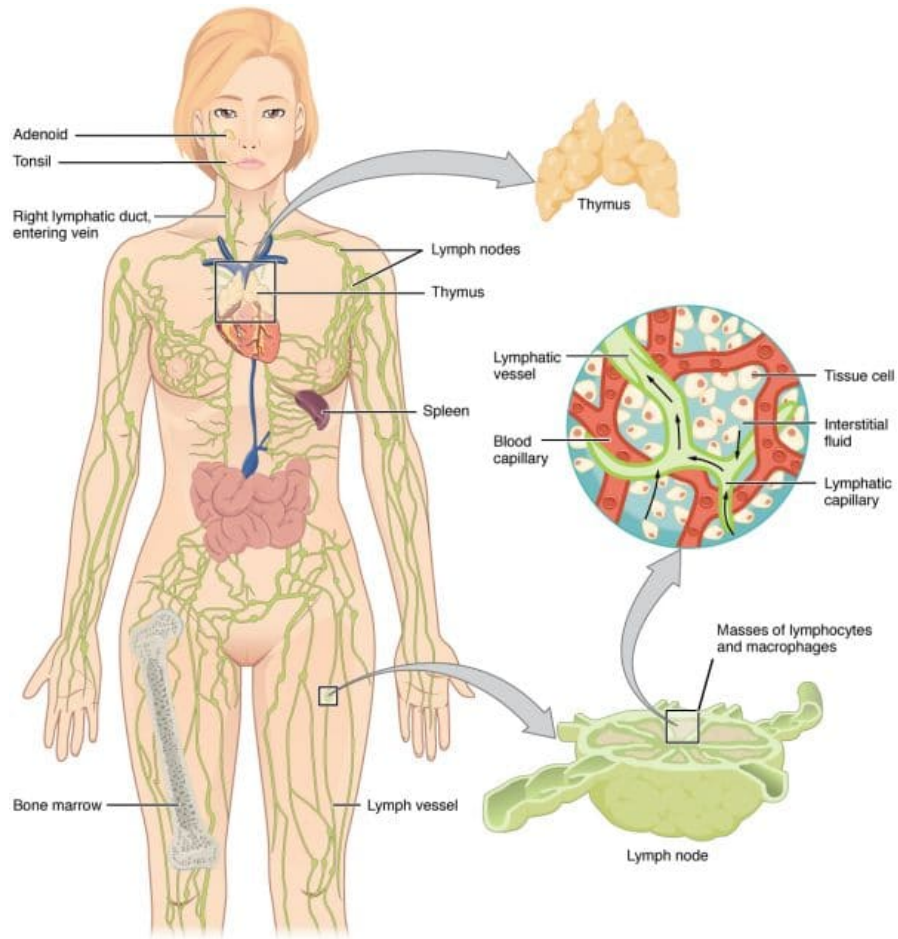
of the dose....everything that could have any medicinal action must be removed from the diet and the daily regimen, so that the subtle dose is not overwhelmed and extinguished, not even disturbed, by any foreign medicinal influence”²⁵ However, from the abovementioned discussion, it can further be claimed that infection or administration of homoeopathic medicine on any innervated organ initiate immune responses are stronger than those which are produced by infection or administration of medicine on any paralyzed organs.

Thirdly and finally, the site of administration in a highly immune or defense area will necessarily evoke the most effective and intensive immune response. The whole immune system maintains a complex and highly sophisticated defense mechanism. It defends the organs with priority basis according to their importance and vulnerability. Traditionally it is supposed that organs within the thoracic cage and the upper organs of the body are the most important ones. So, these organs are supposed to be highly immune. Take a look at the positions of the immune organs in the following picture. Almost all of the immune organs such as tonsil, adenoid, lymphatic duct and lymph nodes, are positioned above the thoracic duct. Another reason behind such defense structure of the immune organs is that they are to defend the oral and the nasal cavities in order for sterilizing the only permitted routes of intakes of external substances. So, the defense system needs to stay alert and to focus its defense effort on preventing any harmful intrusion. The immune system intimately interacts with the nervous system to keep these areas safe. Being the nearest to the Central Nervous System and the brain, the immune system can efficiently grow an interactive and communicative defense against any external harmful stimuli or substances.

Furthermore, almost all of the organs or glands which directly or indirectly regulate remote target organs in order for maintaining a healthy state are located in the brain. Functions such as

²⁵ Samuel Hahneman, Organon of Medicine, Para-259

maintaining core temperature through thermoregulation, blood glucose regulation, human iron metabolism, blood-gas regulation, blood-oxygen levels, Baroreflex and Renin–angiotensin system, maintaining sodium, potassium and calcium levels, maintenance of the neuroendocrine functions through H-P-A axis and many other are directly regulated by the CNS. Any slightest intrusion (or infection) of any harmful external stimuli at the oral and the nasal cavities can easily induce immune responses and affect these functions within the shortest possible time. For example, if administered intravenously at the hand or leg, any amount of toxic substance which is far less than the pain threshold may not be capable of exerting any effects on the nerve. But the same amount will induce a noticeable effect on the nervous system as well as the homeostatic functions of the body. Indeed, the effective site of administration should be the one which helps the lowest dose of MA most effectively to affect the immune system and to produce the expected purgatory antibody. According to this assessment, oral and nasal cavities are supposed to be the perfect sites of administration of homoeopathic medicines.



Conclusion

I hope this immunological and mathematical interpretation of the mechanism-of-action of homoeopathic medicines like *Silicea* will help therapeutic researchers to embrace Hahnemann's therapeutic philosophy and reexamine the efficacy of homoeopathic medicines in curing ailments. It will further help researchers to use the discoveries of modern immunology to explain the medicinal properties of smaller dose of toxic substances. Indeed, this mathematical model of the mechanism-of-action will help the doctors to understand why painkillers should not be prescribed, when the antibiotics will fail and how homoeopathic medicines invalidate the use of antibiotics. Physicians can utilize the mathematical model of Hahnemann's *vital force* to assess the stage of the patient's immune

deficiency and to select the relevant medicines. Last but not the least, this model will help the physicians to guess why their prescribed medicines are supposed to fail the desired results.