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Review Article

PHARMACOLOGICAL BASIS OF SIMILIA SIMILIBUS CURANTUR AND THE NATURE OF HOMEOPATHIC MATERIA MEDICA

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ABSTRACT

Similia Similibus Curantur is also called the law of similars. That is, when a drug produces pathological/pathogenic symptoms in healthy individual means, the same drug can relieve similar kinds of symptoms in individuals with the disease. The biological, pharmacological and toxicological action of capsaicin alkaloids is a perfect example to explain the Similia Similibus Curantur principle. Most of the drugs in homoeopathic materia medica contain toxicological, pharmacological, drug-proving, and traditional use-related symptoms and indications. Abnormal sensations and symptoms of the disease are caused by the involvement of a specific receptor or molecular pathway and gene functions. These receptors or molecules may be stimulated or suppressed by environmental, natural or artificial agents. In such conditions, the administration of specific homoeopathic medicine having a similar kind of affinity towards the particular receptors or molecules involved in the disease process leads to modulation of such receptor or molecular pathways (e.g., desensitization, sensitization, inhibition). These kinds of actions cause the betterment of symptoms or curative effects. So "Similia similibus curantur" can be understood as a similar receptor or molecular pathway involved in both drug molecules biological/ pharmacological and toxicological action and disease pathogenesis". The selection of medicine is by comparing the similarity between the receptor or molecular pathway in disease pathogenesis and drug pathogenesis. To avoid unwanted aggravations or side effects while using mother tinctures or solutions, administer them less than their physiological dose. The theory of the pharmacological basis of Similia Similia Curantur creates a rational method to apply this Similia Principle. Based on this theory, there is a possibility of discovering Novel drugs in the future that acts and gives a cure in similia similibus curantur way.

INTRODUCTION

The homeopathic system of medicine follows the principle of "Similia Similibus Curantur". This system uses two kinds of dilutions or potencies of therapeutic agents used to treat patients. They are dilutions that contain original drug molecules such as Mother Tincture (MT) or Mother Solutions (MS), 1c to 12c and extremely serially diluted medicines, where original drug molecules are not present e.g., dilutions above 30c [1,2,3,4].

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Drug proving is a technique formulated by Hahnemann to know the pathogenic quality of a drug on healthy human beings [3]. Drugs in mother tincture or solution forms have biologically active ingredients used in this technique. Then documentation of the effects of such drugs on healthy humans follows. These records become a basement for the construction of homeopathic materia medica. This materia medica also contains the toxicological symptom of that particular drug substance. Such pieces of information are from reliable sources of toxicological records [3,5,6].

Patient clinical case data compared with this materia medica. Medicines with identical symptoms to the patient's symptoms are selected to treat the patient. It is important to note that homeopathic materia medica contains symptoms of drug proving, toxicological records, indications related to clinical experiences of different physicians and from traditional uses[3,5,6,7].

There is much controversy around the mechanism of action of homeopathic medicine. One of the prime reasons for this controversy is the potency preparation technique. Potencies of homeopathic medicines are prepared by serially diluting the mother solutions with alcohol or water and giving a particular number of agitations. Especially in higher dilutions such as above 12c potencies (e.g., $30c=10^{-60}$), there will be a very low possibility of getting a single molecule of the original drug [3,4,5,6,].

AIM

In this article, we discussed a pharmacological basis for the action of homeopathic medicine and its applicability (Figure 1) based on the Similia Similibus Curantur, along with considering the nature of homeopathic materia medica.

The Theory to explain Similia Similibus Curantur

Similia Similibus Curantur is also called the law of similars. That is, when a drug produces pathological /pathogenic symptoms in healthy individual means, the same drug can relieve similar kinds of symptoms in individuals with the disease. Stimulation or involvement of a specific receptor or molecular pathway and gene functions in disease pathogenesis is the reason for the abnormal sensations and symptoms of the disease conditions. These receptors or molecules may be stimulated or suppressed by environmental, natural or artificial agents. In such conditions administration of specific homeopathic medicine having a similar kind of affinity towards the particular receptors or molecules involved in the disease process leads to modulation of such receptor or molecular pathways (e.g., desensitization, sensitization, inhibition). These kinds of actions cause the betterment of symptoms or curative effects (Figure 2). This kind of receptor or molecular-based activity of homeopathic medicines is caused by the presence of biologically or pharmacologically active substances in those medicines and by their concentrations [2].

The dynamic theory of Modus Operandi (mode of action) of homeopathic medicine proposed by Hahnemann is similar to that of receptor pathway or molecular pathway mediated mechanism. For example, the activity of capsaicin on the transient receptor potential channels of the vanilloid subtype one receptor (TRPV1) is identical to the theory of primary action of the medicine (Phase I) upon the vital force [8]. The reactions that happen after the activation of the TRPV1 receptor are similar to the secondary curative action (Phase II) in homeopathy [8] (Figure 2). This is the action of a vital force against the medicinal action. The biological/pharmacological and toxicological action of capsaicin alkaloids is the perfect example to explain this phenomenon [3,7].

Transient receptor potential channels of the vanilloid subtype one

In mammals, the Transient receptor potential channels of the vanilloid subtype one (TRPV1) receptor are distributed throughout the body, especially in the unmyelinated C-type sensory nerve fibers, less myelinated Aδ type of sensory nerve fiber, peripheral nervous systems, dorsal root ganglion, trigeminal ganglion, vagal ganglion, thalamus, striatum amygdale, other regions of the central nervous system, pancreas, liver, lung, heart, GI organs, oral cavity and smooth muscles of the human body [9].

TRPV1 receptors get activated or sensitized directly or indirectly by different physical, chemical factors, inflammatory mediators, e.g., mechanical stimulation, ethanol, inflammatory mediators, tissue damage, noxious heat stimulation that is > 43°C, acid pH less than 5.3, intracellular redox state, changes in extracellular osmotic pressure, substance P (SP), Prostaglandins and nerve growth factor (NGF) [10].

Stimulation of TRPV1 lead to an influx of extracellular Ca_2^+, and increased intracellular calcium level causes depolarization of nerve cells to produce an action potential. There is a transmission of an action potential along the sensory nerve fibres of the nerve centre or activation of a series of signalling pathways in the cells, which triggers a wide range of cellular responses. Activation of TRPV1 in sensory nerve fibers causes the release of neuropeptides from the local vesicles, and there is the formation of independent action potential that causes increased terminal calcium in the nerve cells. Through these mechanisms, TRPV1 receptors regulate the corresponding physiological and pathological functions [9].

Interaction of Capsaicin TRPV1 receptor

Capsaicin can stimulate the TRPV1 receptor. It leads to the excitation of TRPV1, followed by the release of neuropeptides. It depends on the capsaicin concentration. Generally, the capsaicin molecule action on the TRPV1 receptor produces pain sensations like burning and heat[9]. Purified capsaicin also has analgesic properties[11,12]. TRPV1 regulate gastric acid secretions. A small dose of capsaicin activates the primary nociceptive neurons leading to the release of a large amount of calcitonin-generated peptides (CGRPs). This CGRP inhibits irritations caused by gastric acid and pepsin secretion. In a study where oral administration of capsaicin to rats shows acute erosive gastritis[13], this inflammatory effect is due to the

action of a large amount of capsaicin[9]. In homeopathy, gastritis and its associated symptoms produced by capsicum annum in drug proving, recorded under the respective drug in homeopathic materia medica[7].

Stimulation of TRPV1 inhibits gastric acid secretion by increasing gastric blood flow and stimulates gastric mucosa to secrete prostaglandins and epidermal growth factors. This mechanism helps in the healing of gastric ulcers[14]. A study related to functional dyspepsia shows increased dyspeptic symptom scores after taking the capsicum through the capsule. This study indicates the involvement of the capsaicin receptor channel in functional dyspepsia. The dyspeptic score increased because of the increased visceral sensitivity caused by increased stimulation of TRPV1[15].

Capsaicin molecule has a higher affinity towards the compounds containing Substance P (SP) present on the membrane of sensory nerve terminals. Calcitonin gene-related peptide (CGRP) is an inflammatory, pain-inducing afferent neurotransmitter found in capsaicin-sensitive afferent nerve fibers [9]. Drug-proving data in homeopathy contains records of dyspeptic symptoms caused by ingestion of capsicum mother tincture in significant quantities for several days in healthy drug provers. [7,16].

In a randomized controlled clinical trial, the ingestion of capsaicin by patients with IBS causes desensitization. Chili equals 2mg of capsaicin ingested for six weeks per day reduces the bloating caused by spicy meals and abdominal pain when compared to a placebo control group [17]. In the respiratory system, TRPV1-activated airway inflammation is a neurogenic inflammation which leads to the release of pro-inflammatory cytokines, tumour necrosis factor-alpha (TNF-α), prostaglandin E2, interleukins and nerve growth factors (NGF) from the bronchial epithelial cells. Hyper-regulation of TRPV1 also involves cough and airway hyper-responsiveness, broncho-constriction, tracheal mucosal oedema, inflammatory cell chemotaxis, and mucous secretions [18].

Stimulation of the TRPV1 receptor in the nasal cavity leads to TRPV channel hyper-responsiveness, and stimulation of afferent nerve fibers cause increased glandular secretion, vasodilatation, and vascular permeability, like in symptoms of chronic rhinitis. Continued capsaicin stimulation leads to a decrease in mucosal permeability, hypo sensitiveness of sensory neurons of the nasal cavity. So these cells become less hyper-reactive, and through this mechanism, neurogenic pains get reduced. Here SP store depletion leads to desensitization caused by the depletion of phosphatidylinositol 4, 5 -bisphosphate (PIP2) [13].

Capsicum annum as a medicine in homoeopathy

In homeopathic materia medica, we can find the effects of capsaicin through a drug proving of capsicum annum on healthy human beings. Symptoms produced here are identical to the pharmacological effect of capsaicin. Symptoms of a drug produced during drug proving are similar to its pharmacological records (Table 1). Because of the pharmacologically active ingredient or biologically active ingredients present in that drug, its affinity towards the particular receptor or molecular pathway. e.g., the interaction of Strychnine with glycine receptor (Table 1). Capsicum annum in homeopathic materia medica has indications related to gastric ulcer, IBS, and airway hyper responsiveness based on its drug proving [7,16]. Patients with IBS, cough, airway hyper responsiveness, and functional dyspepsia, were treated homeopathically with oral administration of capsicum annum in low potency where there is the involvement of TRPV1. Followed by the betterment of symptoms due to down regulation and desensitization of TRPV1 or reduction in TRPV1 receptor expression [19]. They may happen when low potency of capsicum annum is repeatedly administered [20].

Some Other Examples

In homoeopathy, Aconitum nephalus is given as a medicine for cardiac arrhythmias and myotonia. Aconitum nephalus contains aconitin as an active principle[21]. It is a cardio toxin and neurotoxin. It binds with high affinity to the open state of the voltage-sensitive sodium channels at site two, thereby causing persistent activation of the sodium channels, which become refractory to excitation. Through which it produces arrhythmogenic effects and contractions or spasms of muscles. The arrhythmogenic properties of aconitine are in part due to its cholinergic or anticholinergic effects mediated by the vagus nerve [22-24]. This molecular toxicological mechanism is very similar to the pathogenesis of cardiac arrhythmias and myotonia because the same voltage-sensitive sodium channels are involved here. By giving the Aconitum nephalus a very minute quantity to regulate or modulates the voltage-sensitive sodium channels, homoeopathy treats those pathological condition curatively [20].

Similarly, Strychnine and Brucine are major poisonous alkaloids of the Nux vomica plant [25]. This Nux vomica plant is successfully used as a medicine in homoeopathy to treat muscular spasms and myoclonic disorders by applying the similia similibus curantur principle[20]. Strychnine alkaloid is a competitive antagonist and an inhibitory neurotransmitter to glycine receptors in the spinal cord, brain stem, and higher centres, causing increased neuronal excitability and muscular activity. Brucine is an allosteric

modulator at cloned M(1) muscarinic receptors. Strychnine poisoning can lead to enhanced reflexes, twitching, stiff neck, and backache. The involvement of glycine and muscarine receptors in the pathogenesis of muscular spasms and myoclonic disorder is similar to the molecular mechanism of the toxicological action of Strychnine and Brucine [25-29]. A minute amount of strychnine in the homoeopathic medicine Nux vomica[20] may regulate those receptors based on the phase I and phase II mechanism of this theory to produce curative effects in those disease conditions.

Hahnemann used the word dynamic because there were no scientific instruments[6] to understand the biological concepts microscopically. But he traced some patterns of action and reaction by observing the symptoms of drug provers and patients. So he named it a dynamic action or action of vital force. So Similia similibus curanter can be understood as a "Similar receptor or molecular pathway involved in both drug molecules biological/pharmacological and toxicological action and disease pathogenesis"[2] (Table1).

Minimum dose principle of homeopathy

Hahnemann advises smallest possible dose itself is sufficient to cure the disease. It can produce the slightest homeopathic aggravation. It is similar to the disease symptoms (Aphorisms 281-290, 241-250) [8]. But nowhere Hahnemann defines this smallest possible dose or minimum dose. And this created confusion among homoeopaths. In his early days of medical practice, he used mother tinctures or solutions. Especially mother tinctures from common vegetables are used in large quantities to treat patients. But he found severe aggravation while using mother tinctures/solutions of poisonous plants and chemicals, which compelled him to dilute the medicines to avoid aggravation. Then he follows the Decimal scales and rarely Centesimal and LM Scale Potencies[30,31]. There is a very low possibility of getting a single molecule of the original drug in higher dilution, such as above 12C potencies (e.g., 30C = 10-60) [3,4,5,6].

In the homeopathic medical system, 1:9, 1:99, and 1: 50,000 ratios are used in the process of potentisation. This potentisation process includes giving a succussion/agitation (downward stroke) to the serial dilution [4,6,32]. In earlier periods of the homeopathic system, low potencies have high levels to traceable levels of the original drug substance. And alcoholic extracts of the drugs or solutions made with distilled water called mother solutions are used for drug proving [33,34].

In those days, without any scientific instruments or methods, Hahnemann developed dynamic theories of homeopathy on the action of homeopathic medicine, which says homeopathic medicine got dynamic curative power when it diluted [30,31,33]. In the earlier phase of homeopathic history, physicians frequently used low potencies, they carry drug molecules. The` use of ultra-high dilutions such as above 30c is scarce, and its use is experimental [30,33]. Later homeopaths like JT Kent recommended the application of 30c, and 200c, 1M patterns of ultra-high dilutions for therapeutic purposes. He arrived at such an idea by comparing the dilutions with Octavia's musical notes. His theory related to those potency uses does not have a scientific base. Some believers stick to this concept [30,35,36]. But actual homeopathy followed all kinds of potencies/dilutions from the mother tincture to ultra high-dilution so far [20,30,31,33].

According to the above-explained receptor-mediated or molecular-mediated action principle, the minimum dose is nothing but the least quantity of therapeutic agent/medicine that stimulates or interacts with the receptor or molecular pathway. Single doses of medicinal substances in reasonable amounts or repeated administration of low potency at frequent intervals can interact with the receptors or molecular pathway. This kind of homeopathic action happens only if that potency or dilution contains an original drug molecule, at least in a traceable quantity [37].

Use of Traditional medical knowledge in Homeopathic materia medica

Experiments on healthy individuals to note the effects of the drug (i.e., drug proving), effects observed after poisonous doses (accidentally or maliciously administered), and symptoms (cautiously admitted) observed in the sick after the administration of the medicine are the sources of homeopathic materia medica [7]. So most of the drugs in homeopathic materia medica contain toxicological/pharmacological, drug-proving, traditional use-related symptoms and indications (Table 2).

Therapeutic use of digitalis for cardiac dropsy and skin conditions are all examples of pharmacological prescription[38,39,40], whereas selecting digitalis based on symptoms like tachycardia, atrial fibrillation, ventricular tachycardia, ventricular fibrillation are examples of its homeopathic application[41,42]. Similarly, the use of arnica in bruises, sprains, and contusions is all based on its pharmacological and traditional practice[36,43]. Therapeutic applications in conditions like skin eruptions, dermatitis, and gastritis are examples of homeopathic applications [41,42].

Homeopathic materia medica borrows the information of the drugs used traditionally in other systems of medicine, such as Indian, Greek, Egyptian, North American native medicine, Mexican and

Brazilian native medicines [42]. For example, to treat different stomach ailments in traditional medicine, Cundurango plant extracts were used [43]. This information is taken under homeopathic materia medica and used for the same purpose. Pharmacologically Cundurango has a gastroprotective effect [44,45].

Syzygium jambolana is traditionally used in Ayurveda to treat diabetes mellitus, and the same medicinal plant is used in homeopathy for the same purpose [20,46]. This kind of medicine in homeopathic materia medica does not have complete drug-proving symptoms or have complete drug proving symptoms along with indications from traditional use. Pharmacological actions of the active principles present in the drug substances are responsible for its curative of palliative actions.

Flaws of Homeopathic materia medica

Even though materia medica was constructed based on the drug proving data, It contains numerous adulterations within the symptomatology of drugs, Such as provers ideography, beliefs and thoughts [47]. This kind of adulteration happens due to the lack of scientific methodologies used in those times of drug proving, possibly around the 19th and early 20th centuries. They are predominantly present in medicine from imponderabilia sources, milk sources, sarcodes (e.g., horns), common vegetables (e.g., cucumber, tomato) and nosodes (because ultra-high dilutions are used for drug proving).

Hahnemann contradicts empirical knowledge/ traditional knowledge or mere experience related to medicine used for therapeutic purposes [8]. But homeopathic materia medica contains abundant clinical experiences. Some of them have no justifiable scientific scrutiny. Removing adulterant symptoms and unusefulness medicine from the materia medica and addition of pharmacologically/biologically active drugs from the plant, animal, microbial, mineral and synthetic sources into the homeopathic materia medica can increase the scope of homeopathy [48].

Method of Application of this theory on mechanism of action of homeopathic drugs and its Limitation

The selection of medicine is by comparing the similarity between the receptor or molecular mechanism in disease and drug pathogenesis. To avoid unwanted aggravations or side effects while using mother tinctures or solutions, administer them less than their physiological dose based on the patient's age, weight, allergic history, nature of the medicine, and disease. The amount of active principle present in the dilution and its ratios are used to calculate the dosage. At pediatric levels, administration of potencies 3x to 30x and 2c to 12c may be suitable because these dilutions contain a very tiny fraction of the active principle of the drug. To standardize the dosage to an unharmful level, toxic dose calculations for each drug substance from toxicological data are helpful.

This theory on the pharmacological basis of homoeopathy does not apply to potencies prepared from microbial products or tissue products, imponderabilia (sunlight, x-ray), and ultra-high dilutions because they don't have any active principles [5,6,82]. Drugs prepared from common dietary vegetables are not useful because they lack pharmacologically active substances. This theory for the action of homoeopathic medicine is workable in adherence to modern pharmacological principles. It is not applicable to formulate antibiotics, anti-parasitic or anti-viral, but this theory is most suitable for other kinds of diseases. According to Dake's criteria, the Similis Similibus Curantur principle does not apply to microbial diseases and diseases where mechanical aid is needed [81].

Nanoparticle theories in homoeopathy try to explain the action of ultra-high diluted homoeopathic medicine. But this nano theory fails to explain the curative action of ultra-high dilutions of organic compounds, the replicability of the curative results of this kind of ultra-high dilution is questionable[82]. Nanoparticle theories related to inorganic homoeopathic drugs also follow molecular-mediated mechanisms example, epigenetic modification.

CONCLUSION

Hahnemann developed the theory of Similia Similibus Curantur. He used philosophy rather than firm scientific methods to explain this theory because of lacunae in fundamental scientific knowledge of medicine during the seventeen and early part of eighteen hundred. There are immense scientific advancements in modern days. This scientific knowledge can help to explain the similia principle in a better way. Future research on the Receptor and molecular pathway-mediated mechanism theory can create a rational method to apply this Similia Principle for the betterment of humanity. This theory also creates an opportunity to develop homeopathic medicines that are suitable to administer other than oral routes, such as Intravenous, Intramuscular routes. And this theory makes homeopathy a sound scientific system rather than a belief system. Based on this theory, there is a possibility of discovering novel drugs[2] in the future that acts and gives a cure in similia similibus curantur way.

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Table 1: Comparing biological activity of the active ingredients of Homeopathic medicines, their respective receptor interaction or molecular pathwayand involvement of such receptor interaction or similar kind of molecular pathway in disease condition, symptoms of Homeopathic medicines derived from drug proving and potencies commonly used in homeopathic practice especially in the earliest period of homeopathic history

Sl.No	Medicine Name	Active principle	Mechanism of action of Active principles on the Biological system	List of disease conditions - their pathogenesis Similar to the mechanism of the Active principle is involved.	Drug Indication Form Homeopathic Materia Medica	Recommended potencies (from Homeopathic literature)
1.	*Aconitum nephalus*	Aconitin [21,22]	It is a cardio toxin and neurotoxin [21], which acts on the voltage-sensitive sodium channels of the cell membranes, thereby causing persistent activation of the sodium channels, which become refractory to excitation of excitable tissues such as the myocardium, nerves, and muscles. The arrhythmogenic properties of aconitine are also by its cholinergic or anticholinergic effects mediated by the vagus nerve [22].	• Myotonia and neuromuscular disorders. • Epilepsy, • Long QT. syndrome cardiac arrhythmias [23]. • Impaired cognitive performance • In Cancer- The pathological upregulation of Sodium sensitive voltage channels can make cancer cells highly invasive [24].	• In the upper arm, there is Drawing and Paralytic stiffness. • Cramp-like pain. Oppression in the region of the heart, • Pain in the chest, with contracted pulse or strong and quick pulse. Palpitations with great anxiety, the difficulty of breathing. • Weariness in all the limbs. Legs and feet feel numb. • Delirium, dullness and confusion of mind. • Rheumatic pain in the nape. • Convulsions. • Cramps in calves and feet [41].	Mother tinctures, 1x to 6x, 1c to 12c [20,49].
2.	*Agaricus muscarius*	Ibotenic acid and Muscimol[50,51]	Muscarine is a selective cholinergic agonist. Activation of this cholinergic receptor leads to bradycardia, lowering	• Stroke • Epilepsy [55], • Attention Deficit Hyperactivity Disorder	• Dullness, idiocy, indisposed to perform any labour, especially mental work. • Anxiety, epilepsy, chorea.	3x,3c,4c, In skin affections and brain exhaustions lower attenuations indicated [20,49].

			blood pressure, bronchorrhea, bronchospasm (asthmatic-like breathing), salivation, pupil contraction and blurred vision, vomiting, and diarrhoea [52]. Muscimol alkaloid is a non-selective Gamma-Amino Butyric Acid-A (GABAA) receptor, an agonist. And Ibotenic acid is an agonist of glutamate receptors [50,51], specifically at both the N-methyl- D-aspartate (NMDA) and trans- ACPD receptors. This Muscimol and Ibotenic acid act as neurotransmitters in the CNS, stimulating glutamate receptors, causing Confusion, dizziness, tiredness and visual and auditory perceptual changes [53,54].	(ADHD)[56], • Parkinson's disease, • Schizophrenia, autism spectrum disorder, and • Major depressive disorder[57]. • Acute CNS injury syndromes such as hypoxia/ischemia, trauma, and status epilepticus [58]. • Anxiety disorders due to Hyperactivity of glutamatergic transmission [57]. • Neuronal injury caused by Excessive activation of NMDA receptors. • Activation of NMDARs has been proposed to contribute to the progress of diabetes. • Endogenous glutamate aggravates β- cell dysfunction. • Excessive Glutamate excitotoxicity causes neuronal dysfunction and degeneration [59].	• In the skin, there is a sensation as if pricking from needles in different places. • Sensations as if electric stitches, biting, burning, and stinging are also present in the skin. • Constant desire to urinate. The quantity of urine very much increased, even with diarrhoea [41].	
3.	*Alumina*	Aluminium Oxide[41]	Aluminium is a neurotoxin that inhibits more than two hundred principal	• Alzheimer's disease • Perkinson's disease	• Confused, great weakness or loss of memory. Confusion and obscuration of intellect.	3x to 6x, 3c to 6c [20,49].

			biological functions of plants, animals, and humans. Aluminium also induces the expression of pro-inflammatory genes and proapoptotic genes. Aluminium oxide also causes mitochondrial dysfunction and depletion of ATP, and It causes neurofibrillary degeneration and inhibits the activity of glucose-6-phosphate-dehydrogenase [60].	• Type 2 diabetes mellitus *[60].*	• Paralysis, Locomotor ataxia. • Tremor. Spasms. Slow tottering gait. • Frequent urination is aggravated at night [41].	
4.	*Atropha belladonna*	Atropine, scopolamine. Anticholinergic alkaloids [61,62] .	Atropine is a mAChR antagonist [63,64]. Atropine blocks the inhibitory effect of AC, leading to tachyarrhythmias [64]. Atropine also causes constriction of smooth muscle [65,66].	• Bronchoconstriction or bronchospasm. • Diverticular disease. • Chronic Obstructive Pulmonary Disease (COPD) [67]. • Atrial tachycardia and atrial fibrillation [68].	• Catarrh, with cough, coryza, and expectoration of viscid and whitish mucus. • Respiration is short, hurried, and sometimes much oppressed. • Pulse full and quick. Pressing pain in the chest with shortness of breath [41].	Mother tincture, 1x to 12x & 1c to 12c [20,49].
5.	*Nux vomica*	Strychnine and Brucine [62]	Strychnine alkaloid is a competitive antagonist at inhibitory neurotransmitter glycine receptors in the spinal cord, brain stem, and	• Myoclonic disorders, • Muscular spasm, • Conditions were increased muscular activity of the small intestine [29].	• Great reflex excitability. • The slightest touch leads to spasms. • Severe clonic spasms, Violent, contractive, painful sensation through the whole body.	1x to 6x & 1c to 12c [20,49]

			higher centres. Strychnine increases neuronal excitability, leading to increased muscular activity [25]. Brucine is an allosteric modulator at cloned M(1) muscarinic receptors. Strychnine poisoning can lead to anxiety, enhanced reflexes, twitching, convulsions, equilibrium disorders, heightened sensory perception, pain, stiff neck, backache, and dyspnea [25,26,27,28].		• Cervico-brachial neuralgia, neck stiffness, backache. Rheumatism of muscles of the neck. • Tremor, Spasms, Slow tottering gait [20,41].	

Table 2. Comparing Traditional, Pharmacological effects and Homeopathic materia medica

Sl. No	Name of the drug	Active ingredient	Traditional use	Pharmacological use	Indications in Homeopathic materia medica Similar to Pharmacological use.	Recommended potencies (from homeopathic literature)
1	*Calendula officialis*	Flavonoids, Carotenes, Saponin, Resin, and volatile oils [69].	It is used as a topical application for infection and skin irritation. Early American surgeons highly regarded its ability to treat and prevent post-surgical infections [69].	Initial treatment of lacerations, abrasions, and scalds; cleaning of a wound; and for generalized inflammation of mucous membranes. Fluid extract of the flower is applied for wounds [69]. Gingivitis, radiation mucositis, vaginal candidiasis, episiotomy healing, diaper dermatitis, venous and neuropathic ulcers, radiation dermatitis, reducing inflammation in	Lacerated wounds, chronic unhealed wounds. Varicose swellings and ulcers. To prevent caries or necrosis. Keratitis and iritis, Traumatic conjunctivitis. Sclerotic wounds; choroidea and corpus vitreum protruded. Dry tongue, red and cracked. Profuse, offensive watery	MT, 1x to 12x 3c [20,49].

				the throat and stomach [70,71]. The resin content of the calendula is responsible for the antimicrobial and anti-inflammatory action of the topical application [69].	discharge from the vagina, with great exhaustion. Ulcerations of os uteri. Induration of the uterus. Promotes granulations and prevents disfiguring scars [41].	
2	*Symphytum officinale*	Pyrrolizidine alkaloids, such as lasiocarpine and symphytine [28,72], Protein Allanto in [73].	To treat bone fractures, gout, inflammatory diseases, thrombophlebitis and hematomas. It has been widely used in the United Kingdom to treat problems associated with muscles, tendons, and ligaments. Symphytum herbal teas are used to treat chronic conditions of gastric ulcers and congestion of the lungs [74]	It acts as an anti-inflammatory agent and promotes the healing of sprains, bruises and open wounds when applied topically. The roots and leaves of this plant contain the protein allantoin, which promotes wound and bone healing by stimulating cell proliferation. Herbal tea of this plan is used to treat gastric ulcers, rheumatic pain, arthritis, bronchitis, and colitis [72,73].	Diseased spinous processes, inflammed bones. Psoas abscess. Facilitates the union of fractured bones reduce pain and favours the production of callous. backache, sprains [41,49].	MT, 1x to 3x [20,49].
3	*Digitalis purpurea*	Digitoxin [75]	Dropsy, boils and other skin diseases Used to stop lactation at weaning Treatment of coughs, colds and fever, and heart disease [76]	The Digitalis glycosides get bind to an enzyme called potassium ATPase and by blocking potassium from binding to this enzyme. So the heart muscle is exposed to calcium for a longer period. It leads to forceful contraction of the heart. These effects of Digitalis glycosides on the heart are induced by the ion-pumping function and signal-transducing function of Na+/K+ -ATPase. Digitalis glycosides are used as a therapeutic agent for congestive heart failure	Dropsy, Angina pectoris, Cardiac dropsy and great anasarca, venous, passive congestion, with the pale or livid colour of the face; coldness of skin; swelling and painfulness of feet; all in consequence of cardiac anomalies, cyanosis [20,41,49].	MT, 1x to 12x & 1c to 12c [20,49]

				[39,40].		
4	*Sulfur*	S	Used to treat many skin conditions, such as fungal infections, scabies, psoriasis, eczema and acne, and seborrhoeic eczema. It is also used in cosmetic preparations [77].	Sulfur has antifungal, antibacterial and keratolytic properties. Direct interaction between sulfur particles and keratinocytes leads to the formation of hydrogen sulfide, which produces keratolytic action. The degree of such interaction and therapeutic efficacy is inversely proportionate to the particle size of Sulfur. And it has a wide range of anti-inflammatory activities [78.79,80].	Itching in the skin, urticaria, cracks and cuts in the skin of hands, especially on joints, painfully sore, Itching vesicular eruption on the back of the hand. Boils, acne punctata. Eczema, Scabious eruptions [41,49].	1x to 12x & 1C to 12c [20,49].

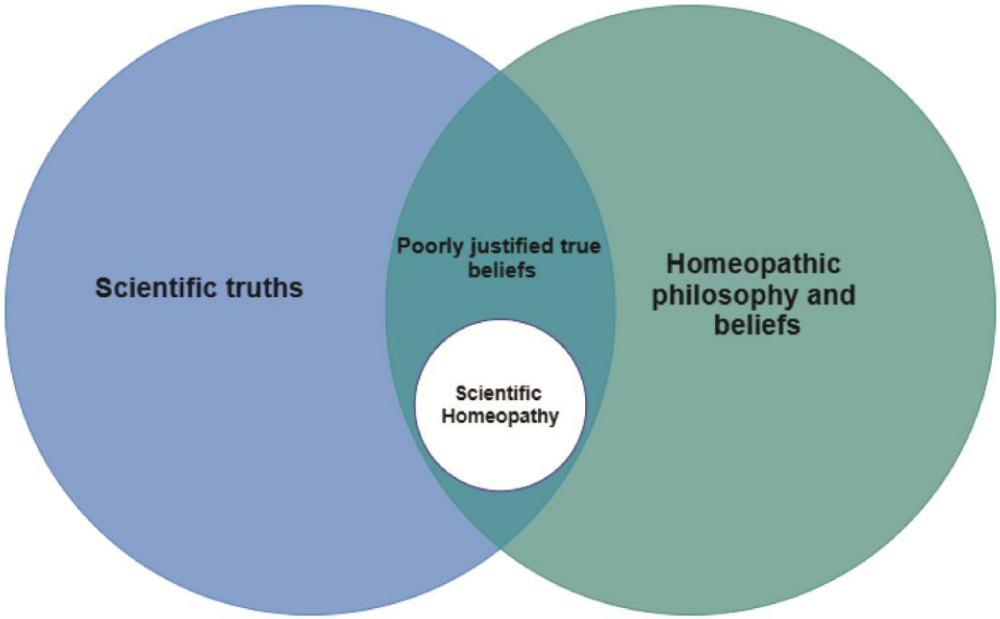

Figure 1: Scientific Homeopathy

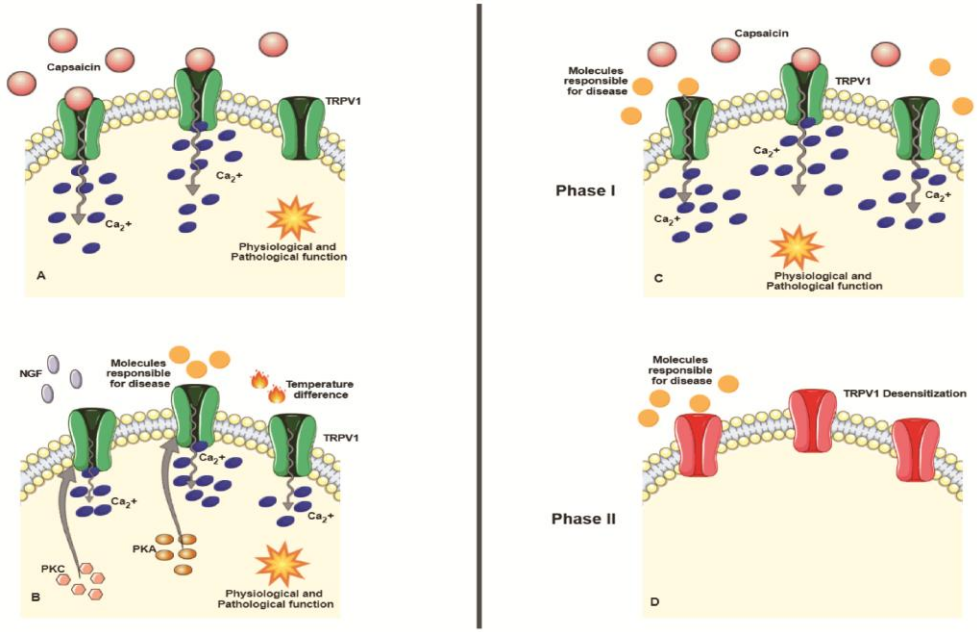

Figure 2: A. Action of medicine during drug proving (Drug pathogenesis); B. Disease Pathogenesis; C. Primary Action of Indicated medicine (Similimum) - Phase I; D. Curative Action of Indicated medicine (Similimum) – Phase II