



In vitro, In vivo Studies and Clinical Studies Provide Significant Results that Facilitate a Scientific Discussion on the Therapeutic Efficacy of Homeopathic Medicines

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ABSTRACT

Homeopathy, founded about two centuries ago by Samuel Hahnemann, is a clinical methodology based on the law of similarity: *similia similibus curentur*. During homeopathic therapy, *small doses* of substances are administered to the patient which, if administered to a healthy subject in *large doses*, would produce symptoms *similar* to those suffered by the patient. The active ingredients contained in homeopathic medicines are extremely diluted, in fact, in some medicines, the active ingredients are not present at all, therefore homeopathy is often compared to a placebo therapy by numerous skeptics who disapprove and criticize it harshly, but, based on the results obtained with scientific research, many disapprovals and many criticisms can be revised and scaled down significantly, in fact, authoritative *in vitro* studies, *in vivo* studies and clinical studies provide very significant information that facilitate a scientific discussion on the effectiveness of homeopathic medicine. If it is true that some homeopathic medicines are totally devoid of active ingredients, it is equally true that they are effective, not because of the placebo effect, but probably because of the so-called *water memory*. The theory is interesting: the water in which the active ingredients are diluted and homeopathically dynamized would undergo significant modifications, and even when the active ingredients disappear definitively from the aqueous solution through progressive dilutions, the water would retain the memory of them. This theory is now supported by authoritative scientific studies and enlightening experiments on the basis of which it is possible to suppose that the active ingredients, even when they are no longer present in the aqueous solution, remain imprinted in the *water's memory*. Alongside this supposition it is important to add some certainty: the *effects* of ultra-diluted homeopathic remedies have been clearly highlighted during some rigorous *in vitro* experiments. and the results were published in authoritative scientific journals. *In vitro* experiments, for obvious reasons, they provide information on real, not suggestive effects, in fact microscopists cannot suggest the cells they observe under the microscope and the cells observed microscopically cannot be suggested by the microscopists, in short, in *in vitro* studies the placebo effect cannot be called into question and the effects caused by homeopathic dilutions and clearly visible under

the microscope are obviously attributed to homeopathy, not to suggestion. This is why the effects highlighted in in vitro experiments facilitate the discussion on the concrete facts that are clearly visible under the microscope and on the concrete therapeutic potential of homeopathic medicines, they also facilitate the discussion on the efficacy of homeopathic medicines found in various in vivo experiments and in various clinical studies. Taking into account the authoritative scientific studies that have been carried out up to now, considering the importance of scientific progress, reflecting on the results reported in the authoritative articles examined during our bibliographical research, we believe that scientific research on homeopathy should be encouraged and not discouraged, therefore, with this article we intend to encourage, scale down some commonplaces on homeopathic medicine and address a discussion based on concrete facts, experiments and works carried out in compliance with science.

Keywords: homeopathy, homeopathic medicine, placebo effect, law of similarity.

INTRODUCTION

Homeopathy is a clinical methodology founded about two centuries ago by Samuel Hahnemann [1] and the *law of similarity* constitutes its main rule: *similia similibus curentur* [2]. Homeopathic remedies are very diluted and some of them do not even contain a molecule of active principle. With progressive homeopathic dilutions and dynamizations the active principles disappear from the aqueous solution, but, despite this, they remain imprinted in the so-called *water memory*. Some authoritative studies on the memory of water provide enlightening explanations based on rigorous scientific experiments [3]. Already in times gone by, an illustrious scientist, Luigi Fantappiè, professor and vice-president of the National Institute of Higher Mathematics of the University of Rome, expressed the following opinion: “The objection that, since a molecule of substance cannot exist in the very strong dilutions used by homeopathic medicine, there cannot be any effect, is not reasoning: it is nonsense; and it indicates in medicine (and also in biology) a tendency to materialize everything a bit, with the result that what is not material, weighable, is considered non-existent. Both in the phenomenon of solution, as in the possible phenomenon of anti-solution (dual), the actual process is made by the solute and the solvent and in the phenomenon, one cannot separate one thing from the other. Therefore, for example, one cannot exclude that, when there has been a certain substance in solution, its presence and the succussion operated in the complex, can bring about modifications in the solvent. Even if there is no molecule of solution, however there is was, and it is likely that the solvent, as such, has been modified” [4]. In short, the molecules present in the solution, while they disappear during the progressive homeopathic dilutions and dynamizations, would modify the solution itself. It may seem strange, but the very high homeopathic dilutions, totally devoid of active ingredients, are effective and their effectiveness has been found in various studies: in vitro studies, in vivo studies and clinical studies. The experiments in vitro, for obvious and reasonable reasons, provide information on real effects, not suggestive ones, in fact microscopists cannot suggest the cells they observe under the microscope and the cells observed microscopically cannot be suggested by microscopists, in short, the placebo effect cannot be called into question. This is why the real effects highlighted with in vitro experiments are very important, in fact, they facilitate a discussion on homeopathy based on the reality of the facts, and, to put it clearly, the *facts* are visible under the microscope, they are scientifically demonstrated, they are not caused by suggestive phenomena. Our discussion on homeopathy logically takes into account the results obtained with in vivo studies and with clinical studies,

in short, it takes into account the effectiveness of homeopathic medicines clearly highlighted by scientific research. Although further study on the subject is necessary, it is equally necessary to take into account the scientific evidence currently available which, in our opinion, is promising and encourages scientific research on homeopathy.

METHODS

Our work aims to identify homeopathic medicines that have proven to be effective in in vitro studies, in vivo studies and clinical studies, therefore, to acquire information, we have carried out a systematic bibliographic search using the electronic biomedical database PubMed/MEDLINE, the Google Scholar search engine and the Google search engine. During the bibliographic search, examining the scientific articles, we have constantly taken into account the authoritativeness of the authors and affiliations.

RESULTS

The results of our bibliographic research are presented below and, to facilitate communication, synthesis and transparency, short excerpts taken from the scientific articles are faithfully reported in quotation marks. **Adler et al.**: “A psychosocial rehabilitation setting improved recruitment but was not sufficient to decrease dropout frequency among Brazilian cocaine treatment seekers. Psychosocial rehabilitation plus homeopathic Q-potencies of opium and E. coca were more effective than psychosocial rehabilitation alone in reducing cocaine cravings” [5]. **Adler et al.**: “This study, in spite of its limitations, illustrates the feasibility of randomized controlled double-blind trials of homeopathy for depression and indicates the non-inferiority of individualized homeopathic Q-potencies as compared to fluoxetine in the acute treatment of outpatients with moderate to severe depression” [6]. **Alibeu & Jobert**: “Despite the use of modern analgesic methods and an improved use of narcotics, the combination pain-agitation sometimes persists in the recovery-room. Aconit seems to be an appropriate homeopathic treatment in this case”. “Aconit proved to be effective for children's postoperative agitation with 95% good results” [7]. **Ahmad et al.**: “Belladonna and Pyrogenium are commonly used to treat fever in homeopathy”. “Pyrogenium possesses marked antipyretic activity in rabbit's Baker's yeast fever model” [8]. **Ahmad et al.**: “Objective: To evaluate the effects of homeopathic ultrahigh dilutions of Aconitum napellus in Baker's yeast-induced fever in rabbits”. “Conclusion: The above findings indicate the effectiveness of ultrahigh dilutions of A. napellus in Baker's yeast-induced fever in rabbits” [9]. **Ahmad et al.**: “This review aims to describe literature available on the approach of Homeopathy in Cancer by searching various databases like Elsevier, Google Scholar, Pub Med, Scopus, Springer and Wiley online library, electronically. It was found that beneficial effect of Homeopathic medicines are reported on some cancer cell lines via apoptosis and immune modulation. Homeopathic treatment given as add on also improves the quality of life, survival time and presenting complaints. However, more evidence needs to be generated to demonstrate anti tumor or antimetastatic potential in controlled clinical trials” [10]. **Ahmad et al.**: “In the present study, effects of 3 homeopathic medicines on baker's yeast induced fever were investigated”. “Nux vomica ultra-high dilutions have normalized rectal temperature and prevented the abdominal writhing and loose stools in baker's yeast-induced fever model of rabbits” [11]. **Andrade et al.**: “The homeopathic medicine of Capsicum frutescens (Malagueta) was superior to placebo in reducing the intensity of hot flashes in menopausal women after 4 weeks of treatment» [12]. **Anser et al.**: “It is concluded from the results that all three homeopathic remedies produce comparable effects like standard drug while among all three remedies Staphysagria possess a potent antidepressant activity”

[13]. **Arumugam et al.**: "Coronavirus disease 2019 (COVID-19) is a potentially fatal disease caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Several studies have shown that hydroxychloroquine (HCQ) significantly inhibits SARS-CoV-2 infections in vitro". "Since the phytoconstituents of *Cinchona officinalis* (CO) are similar to those of HCQ, the objective of this study was to test the antiviral potential of different homeopathic formulations of CO". "Based on this in silico and in vitro evidence, we propose CO-MT as a promising antiviral medicine candidate for treating COVID-19. In vivo investigation is required to clarify the therapeutic potential of CO-MT in COVID-19" [14]. **Aphale et al.**: "The therapeutic effectiveness of mesenchymal stem cells (MSCs) and their secretome can be enhanced by means of physical, chemical and biological preconditioning. Arsenicum album 30C (AA30) has been one of the leading homeopathic medicines used in prophylaxis against SARS-CoV-2 infection". "Our data demonstrate that AA30 preconditioning enhances the therapeutic potency of MSCs and their secretome" [15]. **Arora et al.**: "This study provides preliminary laboratory evidence indicating the ability of homeopathic medicines as anticancer agents. Further studies of the action of these homeopathic remedies are warranted" [16]. **Arora & Tandon**: "In the present study, we investigated the anti-cancer effect of various potencies of *Ruta graveolens* (Ruta) on COLO-205 cell line, as evidenced by cytotoxicity, migration, clonogenicity, morphological and biochemical changes and modification in the levels of genes associated with apoptosis and cell cycle. On treatment of COLO-205 cells maximal effects were seen with mother tincture (MT) and 30C potencies...". "Our findings indicate that phytochemicals present in *Ruta* showed potential for natural therapeutic product development for colon carcinoma" [17]. **Banerjee et al.**: "Aim: To analyze the efficacy of homeopathic *Chelidonium majus* (Chel) 30C and 200C in amelioration of experimentally induced hepato-toxicity in rats". "Both the potencies of *Chelidonium* exhibited anti-tumor and anti-oxidative stress potential against artificially induced hepatic tumors and hepato-toxicity in rats. More studies are warranted" [18]. **Bhalerao et al.**: "Future studies with pragmatic study design and individualistic Homoeopathy can be undertaken to assess the effectiveness of treatment in urolithiasis" [19]. **Beghi et al.**: "The goal of this controlled observational study was to investigate the role of the homeopathic medicine in preventing respiratory tract infections (RTIs)". "These results suggest that homeopathic medicine may have a positive effect in preventing RTIs. However, randomized studies are needed before any firm conclusion can be reached" [20]. **Bellavite et al.**: "Homeopathic doses of *Gelsemium sempervirens* influence the emotional responses of mice to novel environments, suggesting an improvement in exploratory behavior and a diminution of thigmotaxis or neophobia" [21]. **Bell et al.**: "The present study demonstrated that individualized homeopathy is significantly better than placebo in lessening tender point pain and improving the quality of life and global health of persons with fibromyalgia" [22]. **Bell et al.**: "Polysomnography offers a modern methodology for evaluating the objective effects of taking homeopathic remedies that clinicians claim exert effects on sleep quality in susceptible individuals". "Verum remedies significantly increased PSG total sleep time and NREM, as well as awakenings and stage changes" [23]. **Bell et al.**: "Taken together, the nanoparticulate research data and the Banerji Protocols for homeopathic remedies in cancer suggest a way forward for generating advances in cancer treatment with natural product-derived nanomedicines" [24]. **Bigagli et al.**: "Diluted preparations obtained from *Apis mellifica* are reported in the homeopathic literature to have anti-inflammatory activity. The present study was designed to explore the effects on global gene expression profiles of human cells by means of microarrays, using *Apis mellifica* mother tincture (TM) and its 3C, 5C, 7C dynamized dilutions". "Apis mellifica TM modifies gene expression in human cells and has inhibitory effects

on regulatory processes of inflammation; in addition, extremely diluted dynamized dilutions (3C, 5C and 7C) still exert significant effects on genes involved in inflammation and oxidative stress” [25]. **Bigagli et al.**: “Our results showed that even the most diluted solutions retained the ability to trigger significant variations in gene expression” [26]. **Bukhsh**: “The results of the study under commentary provide yet another strong evidence of the capability of the potentized homeopathic drugs to trigger specific gene activity in the bacteria to render protective effects against phage attack. Since there is hardly any anti-viral drug without toxicity in the modern drug regimen, the results of the study assume special significance. The present findings would give support for the use of these potentized drugs more assuredly against influenza and other viral diseases” [27]. **Brinkhaus et al.**: “In all three trials, patients receiving homeopathic arnica showed a trend towards less postoperative swelling compared to patients receiving placebo” [28]. **Brustolin et al.**: “Lycopodium clavatum 13c promoted on rats infected with *T. cruzi* a beneficial immunomodulatory action reducing the pathogenic progression of digestive Chagas disease” [29]. **Cavalcanti et al.**: “Homeopathic treatment may represent a worthwhile alternative to relieve pruritus in patients undergoing haemodialysis” [30]. **Cazin et al.**: “Having developed a pharmacokinetic method for studying the fate of orally administered arsenious anhydride by a radioactive tracer method, the influence of Hahnemannian dilutions of arsenicum album on the elimination and retention of this toxin in the rat was then investigated”. “Overall, the decimal dilutions augmented the elimination of arsenic more than the centesimals” [31]. **Chalet & Marcus**: “Studies of homeopathic therapies to decrease postrhinoplasty ecchymosis have previously used subjective measurements, limiting their clinical significance. Recently, Arnica montana was shown to decrease postoperative ecchymosis after rhytidectomy, using an objective measuring tool”. “Arnica montana seems to accelerate postoperative healing, with quicker resolution of the extent and the intensity of ecchymosis after osteotomies in rhinoplasty surgery, which may dramatically affect patient satisfaction” [32]. **Chapman et al.**: “Mild traumatic brain injury (MTBI) affects 750,000 persons in the United States annually. Five to fifteen percent have persistent dysfunction and disability. No effective, standard pharmacological treatment exists specifically for this problem”. “This study suggests that homeopathy may have a role in treating persistent MTBI” [33]. **Chatterjee et al.**: “We prospectively studied the clinical efficacy of an alternative cancer treatment 'psorinum therapy' in treating advanced esophageal carcinoma (ECA)”. “The results of the study show clinical efficacy of psorinum therapy in treating patients with advanced ECA” [34]. **Chatterjee et al.**: “We prospectively studied the clinical efficacy of an alternative cancer treatment 'psorinum therapy' in treating unresectable metastatic colorectal carcinoma (UMCRC)”. “The results of the study show clinical efficacy of psorinum therapy in treating patients with UMCRC” [35]. **Chatterjee et al.**: “We prospectively studied the clinical efficacy of an alternative cancer treatment 'psorinum therapy' in treating metastatic bladder cancer (MBC)”. “The results of the study show clinical efficacy of psorinum therapy in treating patients with MBC” [36]. **Chatterjee et al.**: “We prospectively studied the clinical efficacy of an alternative cancer treatment 'psorinum therapy' in treating metastatic renal cell carcinoma (mRCC)”. “The results of the study show clinical efficacy of psorinum therapy in treating patients with mRCC” [37]. **Chatterjee & Biswas**: “The authors present 3 cases of various pathologically confirmed malignancies (one gallbladder, one periampullary, and one liver). These patients underwent Psorinum therapy as the primary cancer treatment. Psorinum therapy is a homeopathic approach to treat patients with cancer”. “This report indicates the clinical efficacy of Psorinum therapy in treating those 3 patients. Thorough basic research and well-designed clinical trials should be conducted for further investigation of this homeopathic

cancer treatment in order to integrate it into the mainstream of oncology treatments” [38]. **Chimthanawala:** “Aims: To see the efficacy of Homoeopathy in treating covid 19 patients – with mild, moderate, and severe symptoms”. “Homoeopathy has shown definite results in mild to moderate and moderate to severe cases up to 80% relief in mild to moderate 60% in moderate to severe. Mild to moderate cases where only Homoeopathy was given: China-ars, Ferrum-p, and Gelsemium were satisfactory. Baptisia and Carb-v adjuvant to Allopathy was also satisfactory” [39]. **Colombo et al.:** “Data from a single center from 2002 to 2011 were used. The analysis examined 455 patients who suffered from respiratory diseases. Of the total number of patients, 246 were treated with *Anas barbariae hepatis et cordis extractum* 200K while 209 were not treated (Control group)”. “Although the role of this medicine has often been debated, the protective effect observed in this analysis is consistent with other studies that have documented its effect on the treatment of flu and flu-like symptoms. These results are of great importance, not only because any gain in health offered by homeopathic medicines alone or in combination with symptomatic drugs could be considered of value to the health care system at the time of managing the seasonal epidemics that cause RTIs every year, but also because it could help in reducing the yearly expenditures of the NHS in treating these episodes” [40]. **Das et al.:** “This study examines if homeopathic drug Arsenicum Album 30C (Ars Alb 30C) can elicit ameliorative responses in yeast (*Saccharomyces cerevisiae*) exposed to arsenate”. “Ars Alb 30C triggers ameliorative responses in *S. cerevisiae* exposed to arsenate” [41]. **Davidson et al.:** “The database on studies of homeopathy and placebo in psychiatry is very limited, but results do not preclude the possibility of some benefit” [42]. **Davidson et al.:** “The benefit and potential mechanisms of action of homeopathy have long been debated. Almost entirely neglected has been the study of individualized homeopathy (IH) as a form of psychotherapy, which incorporates factors that are common to most therapies while using processes that are specific to IH”. “Recent research into the therapeutic components of IH is reviewed; similarities and differences between IH and other forms of psychotherapy are also described”. “IH includes elements found in humanistic therapy and narrative medicine and additionally incorporates idiographic material in treatment selection. It is structured in a manner that takes maximum advantage of the components of the placebo effect, which could further expand its effectiveness beyond those conditions thought usually amenable to psychotherapy” [43]. **Davidson et al.:** “Homeopathy may be useful in the treatment of affective and anxiety disorders in patients with mildly to severely symptomatic conditions” [44]. **De et al.:** “To examine if potentiated homeopathic drug Arsenicum Album 30C (Ars Alb 30C) can reduce sodium arsenite-induced toxicity in *Escherichia coli*”. “Ars Alb 30C ameliorated arsenic toxicity and DNA damage, validating efficacy of ultra-highly diluted remedies used in homeopathy” [45]. **De Giorgio & Tarro:** “In this article, scientific research is cited that helps to better understand homeopathy and to learn that, in the treatment of even serious viral diseases, such as AIDS and Covid-19, homeopathic treatment can prove useful and effective”. “Regarding the homeopathic treatment of viral diseases, we believe that the results and scientific data currently available are extremely encouraging, therefore, we believe that scientific research on homeopathy should be strongly supported” [46]. **Dos Santos et al.:** “The results point to an interference of well-selected homeopathic medicines with cell cycle and apoptotic mechanisms in cancer cells. However, these findings still need independent reproduction” [47]. **Eizayaga et al.:** “Atopic dermatitis (AD) is a highly prevalent chronic inflammatory skin disease which usually develops during childhood. Despite being a condition frequently treated with homeopathy, the evidence is still insufficient to define homeopathic treatment's efficacy and the best therapeutic strategies”. “This study suggests that in a general medical practice setting, homeopathic

treatment could be regarded as an effective choice for patients with AD” [48]. **Es et al.**: “These findings support that homeopathic preparations of Ruta and Hydrastis have significant antitumour activity” [49]. **Eyles et al.**: “This study shows the homeopath as an important component of the therapeutic context forming complex relationships and using communication that is skills based and inductively shaped to interpret and respond to each individual patient and their narrative in the consultation” [50]. **Ferley et al.**: “A controlled clinical trial was conducted to assess the effectiveness of a homeopathic preparation in the treatment of influenza-like syndromes. 2. 237 cases received the test drug and 241 were assigned to placebo”. “The proportion of cases who recovered within 48 h of treatment was greater among the active drug group than among the placebo group (17.1% against 10.3%, $P = 0.03$)” [51]. **Frass et al.**: “Patients with advanced non-small cell lung cancer (NSCLC) have limited treatment options. Alongside conventional anticancer treatment, additive homeopathy might help to alleviate side effects of conventional therapy. The aim of the present study was to investigate whether additive homeopathy might influence quality of life (QoL) and survival in patients with NSCLC”. “QoL improved significantly in the homeopathy group compared with placebo. In addition, survival was significantly longer in the homeopathy group versus placebo and control. A higher QoL might have contributed to the prolonged survival. The study suggests that homeopathy positively influences not only QoL but also survival. Further studies including other tumor entities are warranted” [52]. **Frass et al.**: “Based on the 2 cases, including 1 extreme situation, we suggest that adjunctive homeopathic treatment has a role in the treatment of acute Amanita phalloides-induced toxicity following mushroom poisoning. Additional studies may clarify a more precise dosing regimen, standardization, and better acceptance of homeopathic medicine in the intensive care setting” [53]. **Frei & Thurneysen**: “The sharp increase of the prescription of methylphenidate (MPD) in hyperactive children in recent years is a matter of increasing uneasiness among professionals, parents and politicians. There is little awareness of treatment alternatives. The purpose of this prospective trial was to assess the efficacy of homeopathy in hyperactive patients and to compare it MPD. The study was performed in a paediatric practice with conventional and homeopathic backgrounds. Children aged 3-17 y, conforming to the DSM-IV criteria for attention deficit hyperactivity disorder (ADHD) with a Conners Global Index (CGI) of 14 or higher were eligible for the study. All of them received an individual homeopathic treatment”. “In preschoolers, homeopathy appears a particularly useful treatment for ADHD” [54]. **Frenkel et al.**: “The use of ultra-diluted natural products in the management of disease and treatment of cancer has generated a lot of interest and controversy. We conducted an in vitro study to determine if products prescribed by a clinic in India have any effect on breast cancer cell lines. We studied four ultra-diluted remedies (Carcinosin, Phytolacca, Conium and Thuja) against two human breast adenocarcinoma cell lines (MCF-7 and MDA-MB-231) and a cell line derived from immortalized normal human mammary epithelial cells (HMLE). The remedies exerted preferential cytotoxic effects against the two breast cancer cell lines, causing cell cycle delay/arrest and apoptosis” [55]. **Frenkel**: “The findings from several lab and clinical studies suggest that homeopathy might have some beneficial effect in cancer care; however, further large, comprehensive clinical studies are needed to determine these beneficial effects. Although additional studies are needed to confirm these findings, given the low cost, minimal risks, and the potential magnitude of homeopathy's effects, this use might be considered in certain situations as an additional tool to integrate into cancer care” [56]. **Frenkel & Hermoni**: “This retrospective outcome study demonstrates cost savings for an Israeli health maintenance organization. The homeopathic intervention led to a modest but significant reduction in the use of medications commonly used to treat allergic

conditions and their complications. Larger controlled studies are needed to verify these findings" [57]. **Gaertner et al.**: "The Department of Haematology/Oncology at the University Children's Hospital Bern (HONK), has adopted an integrative approach in addition to state of the art oncological care and implemented a collaboration with the Institute of Complementary Medicine IKOM, University of Bern, over the past 10 years. Stakeholder satisfaction with this service was high. We present descriptive data and report on 4 exemplary patients treated with additional individualized homeopathy (iHOM)". "We present four characteristic patient histories, in which iHOM was used in addition to standard treatment for mucositis, permissive tissue infection, insomnia and affective dysfunctions. All four patients clinically improved in an immediate temporal relationship to the additional treatment" [58]. **Gaertner et al.**: "Here, four female cases with recurrent urinary tract infections are reported. They were treated successfully with the homeopathic strategy after several conventional approaches revealed no improvement" [59]. **Gibson et al.**: "Twenty-three patients with rheumatoid arthritis on orthodox first-line anti-inflammatory treatment plus homeopathy were compared with a similar group of twenty-three patients on orthodox first-line treatment plus an inert preparation. There was a significant improvement in subjective pain, articular index, stiffness and grip strength in those patients receiving homeopathic remedies whereas there was no significant change in the patients who received placebo" [60]. **Gleiss et al.**: "In conclusion, bearing in mind all limitations, the results of this retrospective study suggest that patients with advanced stages of cancer might benefit from additional homeopathic treatment until a survival time of up to 12 months after diagnosis" [61]. **Gupta et al.**: "Sepia is able to allay the menopausal symptoms when prescribed on symptomatic indications as per homeopathic principles" [62]. **Gupta & Das**: "Results of the analysis showed the usefulness of Sepia in management of distress during climacteric years" [63]. **Hanif et al.**: "Lycopodium clavatum (Lyc) is a widely used homeopathic medicine for the liver, urinary and digestive disorders. Recently, acetyl cholinesterase (AChE) inhibitory activity has been found in Lyc alkaloid extract, which could be beneficial in dementia disorder. However, the effect of Lyc has not yet been explored in animal model of memory impairment and on cerebral blood flow". "The present study was planned to explore the effect of Lyc on learning and memory function and cerebral blood flow (CBF) in intracerebroventricularly (ICV) administered streptozotocin (STZ) induced memory impairment in rats". "The above study suggests that Lyc may be used as a drug of choice in condition of memory impairment due to its beneficial effect on CBF" [64]. **Haque et al.**: "Loss of lumbar lordosis causing pain and curvature of the vertebral skeleton to one side is a relatively uncommon disease. To our knowledge, successful treatment of loss of lumbar lordosis with any potentized homeopathic drug diluted above Avogadro's limit (that is, above a potency of 12C) has not been documented so far. In this communication, we intend to document a relatively rare case of loss of lumbar lordosis with osteophytic lippings, disc desiccation, and protrusion, causing a narrowing of secondary spinal canal and a bilateral neural foramina, leading to vertebral column curvature with acute pain in an adolescent boy". "The symptoms were effectively treated with different potencies of a single homeopathic drug, Calcarea phos. X-ray and magnetic resonance imaging (MRI) supported recovery and a change in the skeletal curvature that was accompanied by removal of pain and other acute symptoms of the ailment" [65]. **Hock et al.**: "The application of homeopathic treatment quickly becomes a matter of ideological confrontation; however, homeopathy is steadily gaining in sympathy in the population. Although the possible effectiveness and the modes of action are currently not scientifically elucidated and the study situation regarding homeopathic treatment in psychiatry is still manageable, there is a whole series of positive evidence for the effects of homeopathic

remedies for mental disorders, such as depression, anxiety disorders and addiction” [66]. **Ive et al.**: “The study provided evidence that a biotechnological method (namely cell viability) may be used to scientifically evaluate the physiological effects of homeopathic potencies on human cells; it confirmed that the homeopathic potencies did have therapeutic effects; and that succussion was not required in the potentization method in order to produce a curative remedy” [67]. **Jacobs et al.**: “The results from these studies confirm that individualized homeopathic treatment decreases the duration of acute childhood diarrhea and suggest that larger sample sizes be used in future homeopathic research to ensure adequate statistical power. Homeopathy should be considered for use as an adjunct to oral rehydration for this illness” [68]. **Keil et al.**: “This observational study is the first long-term prospective investigation to compare homeopathic and conventional treatment of eczema in children. Over a period of 12 months, both therapy groups improved similarly regarding perception of eczema symptoms (assessed by patients or parents) and disease-related quality of life” [69]. **Kleijnen et al.**: “The results showed a positive trend regardless of the quality of the trial or the variety of homeopathy used. Overall, of the 105 trials with interpretable results, 81 trials indicated positive results whereas in 24 trials no positive effects of homeopathy were found. The results of the review may be complicated by publication bias, especially in such a controversial subject as homeopathy.” [70]. **Kurd et al.**: “All 5 patients responded to homeopathic treatment in an unexpectedly short time span, improving both physically and mentally”. “The present case series emphasizes the rapidity of response among moderate to severely ill patients to homeopathic treatment, when conventional medical options have been unable to relieve or shorten the disease. The observations described should encourage use of homeopathy in treating patients with COVID-19 during the acute phase of the disease” [71]. **Lakshmi Prabhakar et al.**: “The homeopathic preparation of Pulsatilla nigricans is used in the treatment of anxiety related disorders. Though in clinical use for many years, the anxiolytic activity of Pulsatilla nigricans (Puls) has not been evaluated experimentally. Hence the present study was conducted in Swiss albino mice to evaluate the anxiolytic activity of Puls and compare its activity with the standard anxiolytic drug, diazepam”. “The study showed an anxiolytic effect of homeopathic preparation of Pulsatilla nigricans comparable to that found with a standard drug” [72]. **Linde et al.**: “The results of our meta-analysis are not compatible with the hypothesis that the clinical effects of homeopathy are completely due to placebo” [73]. **Linde & Melchart**: “The results of the available randomized trials suggest that individualized homeopathy has an effect over placebo. The evidence, however, is not convincing because of methodological shortcomings and inconsistencies. Future research should focus on replication of existing promising studies. New randomized studies should be preceded by pilot studies” [74]. **MacLaughlin et al.**: “The authors' work assessed the antiproliferative effects of homeopathic preparations of Sabal serrulata, Thuja occidentalis, and Conium maculatum, in vivo, on nude mouse xenografts, and in vitro, on PC-3 and DU-145 human prostate cancer as well as MDA-MB-231 human breast cancer cell lines. Treatment with Sabal serrulata in vitro resulted in a 33% decrease of PC-3 cell proliferation at 72 hours and a 23% reduction of DU-145 cell proliferation at 24 hours (P<.01)”. “Sabal serrulata should thus be further investigated as a specific homeopathic remedy for prostate pathology” [75]. **Magnani et al.**: “This study was designed to investigate the putative anxiolytic-like activity of ultra-low doses of Gelsemium sempervirens (*G. sempervirens*), produced according to the homeopathic pharmacopeia”. “The overall pattern of results provides evidence that *G. sempervirens* acts on the emotional reactivity of mice, and that its anxiolytic-like effects are apparent, with a non-linear relationship, even at high dilutions” [76]. **Maiti et al.**: “*Syzygium jambolanum* (*S. jambolanum*)

is widely used in homeopathy for treating patients with diabetes mellitus. In the present study, an attempt has been made to investigate the remedial effect of homeopathic drug *S jambolanum* on carbohydrate and lipid metabolic disorders on streptozotocin induced diabetic rat". "The result of the present study indicated that the homeopathic drug *S jambolanum* (mother tincture) has a protective effect on diabetic induced carbohydrate and lipid metabolic disorders in STZ-induced diabetic animal" [77]. **Mallick et al.**: "Arsenic in groundwater and its accumulation in plants and animals have assumed a menacing proportion in a large part of West Bengal, India and adjoining areas of Bangladesh. Because of the tremendous magnitude of the problem, there seems to be no way to tackle the problem overnight. Efforts to provide arsenic free water to the millions of people living in these dreaded zones are being made, but are awfully inadequate. In our quest for finding out an easy, safe and affordable means to combat this problem, a homeopathic drug, *Arsenicum Album-30*, appears to yield promising results in mice. The relative efficacies of two micro doses of this drug, namely, *Arsenicum Album-30* and *Arsenicum Album-200*, in combating arsenic toxicity have been determined in the present study on the basis of some accepted biochemical protocols". "The results lend further support to our earlier views that microdoses of potentized *Arsenicum Album* are capable of combating arsenic intoxication in mice, and thus are strong candidates for possible use in human subjects in arsenic contaminated areas under medical supervision" [78]. **Mahesh et al.**: "This case series demonstrates that classical homeopathy may have a solution to psoriasis and its complications which goes beyond skin clearance and achieves general well-being" [79]. **Mazzocchi & Montanaro**: "Data on pain and swelling following pure titanium implants were reviewed. Patients were treated postoperatively with ketoprofen only or ketoprofen and *Symphytum 5CH*, according to the treating dentist's usual practice". "Adding *Symphytum 5CH* to conventional analgesia may reduce pain and swelling after minor dental implant surgery" [80]. **Mendes et al.**: "This study aims to describe the health signs and symptoms of some healthcare and essential professionals during the use of *China officinalis*". "The homeopathic intervention was *C. officinalis 6CH* and a dosage of six drops per day". "*C. officinalis* was very acceptability by participants, and its use during the coronavirus pandemic contributed to health promotion" [81]. **Möllinger et al.**: "Homeopathy uses information gathered from healthy volunteers taking homeopathic substances (pathogenetic trials) for clinical treatment. It is controversial whether such studies produce symptoms different from those produced by placebo". "Three armed, double-blind, placebo controlled randomised experimental pathogenetic study in 25 healthy volunteers who took either one of two homeopathic remedies, *Natrum muriaticum* and *Arsenicum album* in 30CH or identical placebo". "Homeopathic remedies produce different symptoms than placebo" [82]. **Mondal et al.**: "Effects of homeopathic *Psorinum 6x* on cell viability were initially determined in several cancer cell lines, including A549, HepG2 and MCF-7, using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay, and an ethanol 6x control". "*Psorinum 6x* triggered apoptosis in A549 cells via both up- and down-regulations of relevant signal proteins, including p53, caspase-3, Bax and Bcl-2" [83]. **Mourão et al.**: "The aim of this study was test the hypothesis that homeopathy (H) enhances the effects of scaling and root planing (SRP) in patients with chronic periodontitis (CP)". "The findings of this 1-year follow-up randomized clinical trial suggest that homeopathic medicines, as an adjunctive to SRP, can provide significant local and systemic improvements for CP patients" [84]. **Mukherjee et al.**: "Objective: To examine if the ultra-highly diluted homeopathic remedy *Thuja 30C* can ameliorate benzo(a)pyrene (BaP)-induced DNA damage, stress and viability of perfused lung cells of Swiss albino mice in vitro". "*Thuja 30C* ameliorates BaP-induced toxicity, stress and DNA damage in perfused lung cells of mice and it apparently has no effect on normal lung cells" [85].

Naudé et al.: “The homeopathic simillimum treatment of primary insomnia was effective, compared to placebo. Homeopathy is a viable treatment modality for this condition and further research is justified” [86]. **Nayak et al.:** “Homeopathic therapy was found to be useful in relieving menopausal distressing symptoms such as hot flashes, night sweats, anxiety, palpitation, depression, insomnia, and so on. Influence on serum levels of FSH, high-density lipoprotein, and low-density lipoprotein was not significant but serum levels of cholesterol, triglycerides, and very-low-density lipoprotein decreased significantly. Effect size of the study was found to be large. The medicines found to be most frequently indicated and useful were Sepia, Lachesis, Calcarea carb., Lycopodium, and Sulphur” [87]. **Nayak et al.:** “This article reports the clinical outcomes of integrative homeopathic care in a hospital setting during a severe outbreak of dengue in New Delhi, India, during the period September to December 2015”. “These results suggest a positive role of adjuvant homeopathy in thrombocytopenia due to dengue. Randomized controlled trials may be conducted to obtain more insight into the comparative effectiveness of this integrative approach” [88]. **Oberbaum et al.:** “Highly diluted solutions of silica are widely used in homeopathic medicine to treat lesions such as chronic wounds, ulcers, and abscesses. We tested the therapeutic effects of homeopathic dilutions of silica on induced chronic wounds. Holes were made in the ears of mice by dental wire, which then remained hanging from the ear to cause persistent mechanical irritation”. “The results showed that in 7/11 experiments the ear holes of the silica-treated animals were significantly smaller (p less than 0.05-0.001) and healed faster than in those treated with saline” [89]. **Oberbaum et al.:** “Treatment with homeopathic Arnica montana and Bellis perennis may reduce postpartum blood loss, as compared with placebo” [90]. **Oberbaum et al.:** “Our report suggests that homeopathy may be applicable even for critically ill patients. We discuss the obstacles encountered, including a dearth of tools for successful homeopathic prescription in these situations, suspicion and lack of cooperation by patients and conventional colleagues, and the highly suppressive nature of concomitant conventional therapies. We suggest the development of algorithms and other tools to aid rapid homeopathic prescription in critical care patients and discuss the importance of familiarizing physicians and medical students with homeopathy in order to facilitate communication and cooperation between these complementary branches of medicine” [91]. **Pal, Sanjoy Kumar:** “There is a great scientific debate on homeopathic. However, despite all controversies, it has been observed that homeopathy use among cancer patient is increasing globally. In recent years a homeopathic approach called the 'Psorinum' therapy have gained tremendous popularity among cancer patients in Kolkata, India. The advocate of this alternative cancer is Dr. Ashim Kumar Chatterjee. However, the treatment method of Dr. Chatterjee differs from classic homeopathy”. “Before coming to a conclusion that homeopathic works for cancer Dr. Chatterjee researched over 15-20 years with many important low potency homeopathic medicines; however, few of these medicines viz. Psorinum, Phytolacca decandra, Hydrastic canadensis, Thuja occidentalis, Chelidonium majus, Carduus marianus, Crotalus horridus, Lachesis and Naja, gave desirable results”. “A compilation of 25 case reports was also presented to the National Cancer Institute, USA for the 'Best Case Series' presentation. With solid support of objective evidence about effectiveness, oncologists now have a positive opinion about this alternative therapy. The evolution of this therapy is discussed” [92]. **Pannek et al.:** “We present the case of a paraplegic man who developed a massive paralytic ileus after ileocystoplasty and surgical revision. Conventional stimulation of bowel function was unsuccessful; only by an adjunctive homeopathic treatment was normalization of bowel function achieved” [93]. **Pannek et al.:** “Context/Objective: to investigate the usefulness of classical homeopathy for the prevention of

recurrent urinary tract infections (UTI) in patients with spinal cord injury (SCI). Design: prospective study". "Adjunctive homeopathic treatment lead to a significant decrease of UTI in SCI patients. Therefore, classical homeopathy could be considered in SCI patients with recurrent UTI" [94]. **Pathak et al.**: "We investigated the brain cancer cell-killing activity of a homeopathic medicine, Ruta, isolated from a plant, Ruta graveolens. We treated human brain cancer and HL-60 leukemia cells, normal B-lymphoid cells, and murine melanoma cells in vitro with different concentrations of Ruta in combination with $\text{Ca}_3(\text{PO}_4)_2$. Fifteen patients diagnosed with intracranial tumors were treated with Ruta 6 and $\text{Ca}_3(\text{PO}_4)_2$. Of these 15 patients, 6 of the 7 glioma patients showed complete regression of tumors" [95]. **Patil et al.**: "Aurum metallicum is the homeopathic preparation of gold. The present study was done to evaluate whether Aurum metallicum is having any anti-rheumatic activity". "Aurum metallicum has anti-arthritic activity at dilution of 6cH as shown by various parameters discussed above" [96]. **Prado Neto Jde A et al.**: "The anti-inflammatory effect of Causticum was evaluated using acute and chronic inflammatory models in vivo". "Carrageenin induced rat paw oedema was significantly inhibited ($P < 0.05$) in the group treated with Causticum 30cH solution compared to control. Groups treated with potentized Causticum (6cH, 12cH, 30cH and 200cH), showed significant inhibition ($P < 0.05$) of the inflammation pre-induced by carrageenin" [97]. **Preethi et al.**: "The following drugs were used in the study: Ruta 200C, Carcinosinum 200C, Hydrastis 200C, Thuja 200C, and Thuja 1M". "Ruta 200C produced morphological changes in the Dalton's lymphoma ascites tumor cells and induced DNA laddering. Carcinosinum 200C increased apoptotic gene p53 and Ruta 200C decreased antiapoptotic gene Bcl2. Administration of potentiated homeopathic drugs to tumor-bearing mice induced TUNEL-positive cells in the tumor, showing increased apoptosis of tumor cells. Microarray analysis of cells treated with homeopathic drugs indicated that many enzymes related to apoptosis were increased by homeopathic drugs". "These data indicate that apoptosis is one of the mechanisms of tumor reduction of homeopathic drugs" [98]. **Rastogi et al.**: "This study was aimed to evaluate the immuno-modulator role of homeopathic remedies in Human Immunodeficiency Virus (HIV) infection". "The study suggests a possible role of homeopathic treatment in HIV infection in symptomatic phase, as evidenced by a statistically significant elevation of base line immune status in persistent generalised lymphadenopathy" [99]. **Reilly et al.**: "The hypothesis that homeopathic potencies are placebos was tested in a randomised, double-blind, placebo-controlled trial". "The hypothesis that homeopathic potencies are placebos was tested in a randomised, double-blind, placebo-controlled trial. The study model chosen compared the effects of a homeopathic preparation of mixed grass pollens with placebo in 144 patients with active hayfever. The homeopathically treated patients showed a significant reduction in patient and doctor assessed symptom scores". "No evidence emerged to support the idea that placebo action fully explains the clinical responses to homeopathic drugs" [100]. **Remya & Kuttan**: "We evaluated the effects of Thuja occidentalis, Carcinosinum and Ruta graveolens 1M, 200c and 30c on the immune system of Balb/c mice". "The results suggest immunomodulatory activity of homeopathic preparations in high dilution. This may be a mechanism through which homeopathic preparations act" [101]. **Robertson et al.**: "Objective: To evaluate the efficacy of Homeopathic Arnica in reducing the morbidity following tonsillectomy". "Randomised double blind, placebo controlled trial at a tertiary referral centre. 190 patients over the age of 18 undergoing tonsillectomy were randomised into intervention and control groups receiving either Arnica 30c or identical placebo, 2 tablets 6 times in the first post-operative day and then 2 tablets twice a day for the next 7 days". "The results of this trial suggest that Arnica montana given after tonsillectomy provides a small, but statistically significant, decrease in pain scores

compared to placebo" [102]. **Rostock et al.:** "We conducted a prospective observational study with cancer patients in two differently treated cohorts: one cohort with patients under complementary homeopathic treatment (HG; n = 259), and one cohort with conventionally treated cancer patients (CG; n = 380). For a direct comparison, matched pairs with patients of the same tumour entity and comparable prognosis were to be formed". "In our prospective study, we observed an improvement of quality of life as well as a tendency of fatigue symptoms to decrease in cancer patients under complementary homeopathic treatment. It would take considerably larger samples to find matched pairs suitable for comparison in order to establish a definite causal relation between these effects and homeopathic treatment" [103]. **Ruiz-Vega et al.:** "To investigate the effect of the homeopathic medicine *Coffea cruda* on sleep pattern, it was orally administered to rats at the beginning of their waking period. EEG from the parietal region was recorded during their next sleep cycle". "The results indicate that an enhancement in EEG slow delta activity is associated with *Coffea cruda*" [104]. **Saha et al.:** "Adverse side effects of chemotherapy during cancer treatment have shifted considerable focus towards therapies that are not only targeted but are also devoid of toxic side effects. We evaluated the antitumorigenic activity of sulphur, and delineated the molecular mechanisms underlying sulphur-induced apoptosis in non-small cell lung carcinoma (NSCLC) cells". "Overall, the findings of this preclinical study clearly delineated the molecular mechanism underlying the apoptogenic effect of the non-toxic homeopathic remedy, sulphur, in NSCLC cells" [105]. **Sampath et al.:** "Homeopathy is a holistic method of treatment that uses microdoses of natural substances originating from plants, minerals, or animal parts. *Syzygium jambolanum* and *Cephalandra indica* are used in homeopathy for treatment of type-2 diabetes. However, the molecular mechanisms responsible for such effects are not known". "In the present study homeopathic preparations of *S. jambolanum* and *C. indica*, including ultramolecular dilutions exhibit antidiabetic effects, improving insulin action through activation of insulin signaling molecules in skeletal muscle of type-2 diabetic rats" [106]. **Sarkar et al.:** "The aim of the present study was to evaluate the anti-rheumatic and anti-oxidant activity of homeopathic preparations of *Guaiacum officinale* (Gua) on experimental animal model". "These findings suggest that homeopathic *G. officinale* possesses anti-rheumatic and anti-oxidant activity in experimental animal and these activities may be more significant in higher potencies" [107]. **Sinha et al.:** "In mosquito vectors, dengue virus (DENV) invasion occurs through midgut cells, but available mosquito cell lines for in vitro study of DENV are prepared from eggs or larvae, which are not appropriate models, to study its infectivity. Hence, we developed a new primary cell culture, from *Aedes albopictus* mosquito midgut, and standardized it for in vitro study of DENV, with an aim to find out any possible role of homeopathic medicines, in preventing or reducing DENV invasiveness in these midgut cells". "In this paper, we observed the direct effect of homeopathic medicine *Rhus toxicodendron* 6C (*Rhus tox* 6C) (ultra dilution of 10-12) on this primary cell culture, to find out significant changes, to be used as baseline data in future experiments to observe possible role of *Rhus tox* 6C against DENV infection in these cells". "In our experiments, we found that *Rhus tox* 6C could increase cell size and help organization of cells on the solid surface as observed under scanning electron microscope although the total number of cells was decreased. Moreover, *Rhus tox* 6C treated cells were healthier as indicated by less number of deformed, clump, and diploform cells". [108]. **Shinde et al.:** "The presented review focuses on relapses and harmful effects caused by acyclovir in modern medicine and the probable antiherpetic activity of *Rhus Tox* on HSV infection based on its pathophysiology, preclinical findings, on primary cultured mouse chondrocytes, mouse cell line MC3T3e1 and a comparative study of *Natrum Mur* with *Rhus Tox* on HSV infection". "The review includes

fifteen articles, including 4 full-text articles on HSV, 6 in vitro studies of homeopathic compounds performed on the herpes virus, and 5 articles based on the pathophysiology and effects of Rhus tox. The review article proposes the anti-inflammatory and antiviral action of the homeopathic remedy Rhus Tox which can be used in crisis conditions when the physician doubts the simillimum, as it prevents further outbreaks of HSV infection" [109]. **Sukul et al.**: "Adult toads, *Bufo melanostictus*, were administered *Nux vomica* (*Nux v*) 30 prepared with and without succussion on the tongue". "*Nux v* 30 was prepared by successive dilution and succussion in 30 steps, *Nux v* 30 u was prepared by successive dilution only". "Both *Nux v* 30 and *Nux v* 30 u significantly reduced ethanol induced sleep time in toads as compared to their respective controls" [110]. **Tarro & De Giorgio**: "Although the experiments and scientific research on homeopathy must be further explored, although homeopathic medicines cannot replace chemotherapy, although the evidence must be completed with other evidence, some scientific studies allow us to seriously reflect on the therapeutic potential of homeopathic medicines, medicines that can be used in the treatment of serious diseases, including cancer. This is why we believe that homeopathy, in the treatment of cancer, is a hope that must be nurtured" [111]. **Taylor et al.**: "Randomised, double blind, placebo controlled, parallel group, multicentre study". "The objective results reinforce earlier evidence that homeopathic dilutions differ from placebo" [112]. **Teixeira et al.**: "Objective: To evaluate the efficacy and safety of potentized estrogen compared to placebo in homeopathic treatment of endometriosis-associated pelvic pain (EAPP)". "Conclusions: Potentized estrogen (12cH, 18cH and 24cH) at a dose of 3 drops twice daily for 24 weeks was significantly more effective than placebo for reducing endometriosis-associated pelvic pain" [113]. **To et al.**: "Individualized homeopathic treatment was associated with better glycaemic control compared with standard conventional treatment alone" [114]. **Tsintzas et al.**: "Classical homeopathy can be included among the treatment options for congenital heterotopic ossification" [115]. **Tveiten & Brusset**: "Objective: To examine whether the homeopathic medicine *Arnica D30* has an effect on muscle soreness and cell damage after marathon running". "The subjects were 82 marathon runners from two separate randomised double-blind placebo controlled trials participating in the Oslo Marathon in 1990 and 1995". "Muscle soreness immediately after the marathon run was lower in the *Arnica* group than in the placebo group ($P = 0.04$). Cell damage measured by enzymes was similar in the *Arnica* and the placebo group" [116]. **Vaezi et al.**: "In the present study, the ability of homeopathic remedy *Symphytum officinale* to induce osteogenic differentiation of rat bone marrow-derived mesenchymal stem cells (rat BM-MSCs) was studied". "According to this finding, *Symphytum* could enhance osteogenic differentiation of MSCs and can be considered as a safe, low cost, and highly effective drug for bone regeneration" [117]. **Valle et al.**: "Homeopathic therapy can be used in different contexts and is an additional alternative for treating cancer patients in Integrative Medicine. Within this context, hepatocellular carcinoma has a high mortality rate and, in most cases, is diagnosed in advanced cases. Therefore, this study evaluated the in vitro efficacy of the association of the homeopathic medicines *Taraxacum officinale* and *Lycopodium clavatum* against HepG2 cells". "In conclusion, the homeopathic medicine *Taraxacum D4* + *Taraxacum D8* + *Taraxacum D12*, in accord of potencies, is promising against hepatocellular carcinoma cells and can be used to aid in the treatment of this type of cancer" [118]. **Witt et al.**: "A total of 3,981 patients were studied including 2,851 adults (29% men, mean age 42.5 +/- 13.1 years; 71% women, 39.9 +/- 12.4 years) and 1,130 children (52% boys, 6.5 +/- 3.9 years; 48% girls, 7.0 +/- 4.3 years). Ninety-seven percent of all diagnoses were chronic with an average duration of 8.8 +/- 8 years". "Disease severity and quality of life demonstrated marked and sustained improvements following homeopathic treatment period.

Our findings indicate that homeopathic medical therapy may play a beneficial role in the long-term care of patients with chronic diseases" [119]. **Witt et al.**: "One hundred twenty-nine adults (64.3% women, mean age 43.6 +/- 12.7 y) were treated by 48 physicians. The patients mainly had chronic low back pain (average duration 9.6 +/- 9.0 y) and other chronic diseases. Nearly all the patients (91.3%) had been pretreated". "Classic homeopathic treatment represents an effective treatment for low back pain and other diagnoses. It improves health-related QoL and reduces the use of other healthcare services" [120]. **Witt et al.**: "Under classical homeopathic treatment, patients with psoriasis improved in symptoms and QoL" [121]. **Yadav et al.**: "Available data suggest that homeopathy has potency not only to treat various types of cancers but also to reduce the side effects caused by standard therapeutic modalities like chemotherapy, radiotherapy or surgery. Although homeopathy has been widely used for management of cancers, its efficacy is still under question. In the present review, the anti-cancer effect of various homeopathic drugs against different kinds of cancers has been discussed and future course of action has also been suggested" [122]. **Yakir et al.**: "In a double-blind placebo-controlled randomized trial with parallel groups, the efficacy of individually prescribed homeopathic medicines was evaluated in women with premenstrual syndrome (PMS)". "In an outpatient department of a university clinic in Jerusalem, Israel (1996-1999), women with PMS, aged 18 to 50 years, entered a 2-month screening phase with prospective daily recording of premenstrual symptoms by the Menstrual Distress Questionnaire (MDQ). They were included after being diagnosed with PMS". "Each participant was administered active medicine or placebo via random allocation. Primary outcome measures were differences in changes in mean daily premenstrual symptom (PM) scores by the MDQ. Analysis was by intention-to-treat". "Individually prescribed homeopathic medicines were associated with significantly greater improvement of PM scores in women with PMS, compared to placebo. Replication, with larger sample size and other refinements, is recommended to confirm the efficacy of this treatment in other settings" [123].

DISCUSSION

The results acquired during our bibliographic research allow us to carefully discuss several scientifically studied homeopathic medicines, in fact, some important in vitro studies, in vivo studies and clinical studies provide very significant results that facilitate our discussion on the therapeutic efficacy of homeopathy. Although studies on homeopathy need to be further explored, it must be admitted that the results currently provided by scientific research are promising. The articles we have examined report data, numbers, scientific results based on which it is easy to understand that the efficacy of homeopathy is not attributable to the placebo effect or suggestibility, but to the real effects that are also found during some important in vitro experiments. In addition to clinical studies and in vivo studies, we believe that in vitro studies are extremely important, for obvious reasons, in particular because in in vitro studies the placebo effect can be excluded. The efficacy of homeopathy is often explained by the placebo effect, but we believe that this explanation should be revised. In fact, cells observed under the microscope cannot be influenced and the placebo effect, which is a suggestive and psychological effect, cannot be called into question in the in vitro experiment. Therefore, if it is true that homeopathy is often criticized for using ultra-diluted homeopathic remedies that sometimes contain only water, it is also true that the curative *homeopathic water* produces *effects*, even in vitro, and such *effects* can be explained by virtue of the so-called *memory of water* [3]. Already in the past Luigi Fantappiè, professor and vice-president of the National Institute of Higher Mathematics of the University of Rome, said: "It cannot be excluded that, when there has been

a certain substance in solution, its presence and the succussion operated in the complex, can bring about modifications in the solvent. Even if there is no molecule of solution, however there has been, and it is likely that the solvent, as such, has been modified" [4]. There are, therefore, various scientific explanations regarding the effectiveness of the so-called *homeopathic water*, and above all there are studies, research, scientifically significant experiments that provide data, numbers, results for which it is truly difficult to devalue homeopathy and consider it, at most, a *placebo therapy*. The authoritative scientific research cited in this article allows us to valorize homeopathy and put into perspective some commonplaces based on which it is truly difficult to grasp the meaning of homeopathic medicine. The commonplaces, both those favorable and those unfavorable to homeopathy, are only commonplaces, while the scientific results are significant data that must not be confused with the commonplaces. We hope that this article of ours can contribute to clearing away the commonplaces and to give support to all the authoritative researchers seriously engaged in scientific research on homeopathy.

CONCLUSIONS

Several homeopathic medicines are now being scientifically studied and several in vitro studies, in vivo studies and clinical studies are enlightening because they provide significant results that facilitate a scientific discussion on the therapeutic efficacy of homeopathy. Although studies on homeopathy need to be further explored, currently the results of scientific research are promising and, in our opinion, some results are even enlightening because they clear up some commonplaces that confuse, disorientate, do not clarify the meaning, value and potential of homeopathic medicine.

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