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Developments in Homeopathy Research 2024-2025

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Introduction

The 'HRI Evidence Summary 2024'[1] established a comprehensive overview of homeopathy research, synthesising findings from physicochemical, preclinical and clinical studies. This assessment of subsequent developments builds on these foundations, considering newly published material within the context of previous findings.

Several key developments in homeopathy research are highlighted in this update: clarification of the multiple theories of mechanism of action of homeopathic medicines; advances in integrative experimental designs linking physicochemical characterisation to biological outcomes; strengthening of clinical evidence in acute infectious conditions (particularly regarding impacts on antibiotic use); plus increasing research activity assessing use of homeopathic preparations in agriculture and aquaculture – experimental areas not subject to placebo effects.

Importantly, the overall direction of findings emerging from literature published in 2025 remains consistent with patterns described, and conclusions drawn, in 2024.

Physicochemical Research in Homeopathy

Physicochemical studies have long reported specific differences between homeopathic preparations and control solvents, captured by modern technology[2–4]. The HRI Evidence Summary noted that 72% of high-quality studies reported distinctive structural, thermal or spectroscopic features[3].

A notable contribution since 2024 addresses the conceptual foundations of this research field. Dombrowsky et al. (2025) conducted a comprehensive scoping review, identifying 216 publications organised into 14 conceptual frameworks proposed to explain homeopathy's mechanism of action; these frameworks include complex systems theory, nanostructure-based models and water organisation hypotheses[5]. This descriptive mapping provides researchers with a structured overview of the field's theoretical diversity, helping to inform future basic research, without validating any single explanatory model.

A key methodological limitation highlighted in the 2024 Summary was the limited articulation between physicochemical characterisation and biological responses. This gap is now beginning to be addressed through integrative experimental designs. Adler et al. (2025) implemented a double-blind, randomised, placebo-controlled, cross-over N-of-1 study combining physicochemical analyses with biological and clinical outcomes[6]. A single female patient with Major Depressive Disorder randomly received phases of either the indicated homeopathic prescription (*Sulphur* LM4-7) or placebo, with both patient and prescriber blinded to which was being used at any given time point.

Key findings

- A comprehensive review identified 14 distinct conceptual frameworks proposed to explain the mechanism of action of homeopathy (Dombrowsky *et al.* 2025)
- Integrative study designs link physicochemical characterisation to biological and clinical outcomes (Adler *et al.* 2025)
- Real-world evidence from ~600,000 patients finds homeopathic treatment is associated with reduced antibiotic use in acute infections (Banik *et al.* 2025)
- Creation of a Core Outcome Set for acute otitis media trials will improve future evidence synthesis (van der Werf *et al.* 2025)
- Agriculture and aquaculture studies demonstrate objective biological effects of homeopathic preparations in placebo-free models
- Consistent patterns seen in recent research results across countries, study designs and experimental systems, reinforce conclusions drawn in the 'HRI Evidence Summary 2024'.

The study found that *Sulphur* LM treatment phases were associated with lower depression scores than placebo phases[6] In addition to clinical observations, the study integrated multiple levels of analysis: advanced physicochemical techniques (electron microscopy, light scattering, mass spectrometry) identified nanoparticles and measurable sulphur concentrations across potencies, while plasma proteomic profiling revealed signals involving immune-related pathways during active treatment[6].

Clinical Research

Since publication of the 2024 Summary, continued scientific surveillance has identified 177 additional clinical publications relevant to homeopathy (period: Oct 2024 – Dec 2025), including randomised controlled trials, observational studies and evidence syntheses, reflecting sustained research activity in this field.

As described, the clinical evidence base for homeopathy spans a wide range of indications, study designs and outcome measures. Within this landscape, acute infectious conditions have attracted particular attention. Both randomised controlled trials and real-world effectiveness studies have suggested that homeopathic treatment achieves comparable clinical outcomes to conventional medicine, but with reduced antibiotic use – a pattern first documented

in the French EPI3 study, which found 57% fewer antibiotic prescriptions for respiratory infections in patients managed by general practitioners trained in homeopathy[7]. In 2025, we see a focus specifically on acute otitis media (AOM) and acute upper respiratory tract infections (aURTI), with new evidence aligning with, and strengthening, these earlier observations.

Perry et al. (2024) conducted a systematic review and meta-analysis evaluating homeopathy in AOM and otitis media with effusion[8]. The review included nine studies, seven randomised controlled trials and two non-randomised studies comparing homeopathy with placebo or standard care. Across the seven RCTs, four reported statistically significant outcomes favouring homeopathy at specific time points, most commonly for symptom scores, middle ear effusion or antibiotic use. However, substantial heterogeneity in study designs, interventions and outcome definitions limited the feasibility of quantitative synthesis. Meta-analysis was possible only for antibiotic use in studies assessing the impact of non-individualised homeopathy provided in addition to usual care. Pooling results from 2 studies indicated a trend towards fewer filled antibiotic prescriptions in the homeopathy group (RR = 0.54, 95% CI 0.28–1.06; p = 0.07; I^2 = 12%). While statistical significance was not achieved – likely due to limited sample sizes – the RR of 0.54 suggests a clinically meaningful reduction of approximately 46%, and the low heterogeneity indicates consistent effects across studies.

While individual studies show positive effects on symptom relief and reduced antibiotic use among patients with OM, the Perry et al. review identified heterogeneity in outcomes as a key barrier to synthesising evidence. In response to this limitation, van der Werf et al. (2025) developed the first internationally agreed Core Outcome Set for Acute Otitis Media (COS-AOM) for primary and community care studies. This work was guided by the COMET Initiative guidelines and employed a rigorous four-phase consensus methodology, including input from patients/carers, GPs, TCIM practitioners, and Pharmacists, confirmed by a scientific committee. This represents a concrete methodological response to limitations identified in the homeopathy literature and aligns with broader efforts to standardise outcome selection in TCIM research.

Complementing these findings from controlled trials, Banik et al. (2025) conducted a large real-world cohort study using German healthcare databases[10]. The study examined outcomes in ~600,000 patients treated for aURTI, with a 12-month follow-up period. Patients prescribed homeopathic medicines were compared with those receiving conventional symptomatic treatments or antibiotics. After adjustment for baseline characteristics, patients in the homeopathy group received significantly fewer antibiotic prescriptions, with longer intervals before first prescription. These effects were observed across age subgroups including children and adolescents. This study represents one of the largest real-world investigations of homeopathy in acute infections to date.

Recent controlled and real-world findings consistently indicate comparable clinical trajectories from homeopathic versus conventional treatment of acute infectious conditions, alongside observations of lower antibiotic use in homeopathy groups. These converging patterns – observed across different countries, healthcare systems and study designs – reinforce the potential relevance of homeopathy to antibiotic stewardship strategies, essential to the future of public health.

Emerging domains: agrohomeopathy and aquahomeopathy

Beyond human medicine, agriculture and aquaculture (fish farming) face challenges requiring novel solutions, such as homeopathy. Global aquaculture production suffers significant disease-related losses, with conventional management relying heavily on antibiotics[11]. Modern crop production depends on synthetic fertilisers and pesticides, raising concerns over soil degradation and food safety[12]. In both contexts, research into sustainable, less toxic alternatives is essential to inform future environmental and public health policy.

Agrohomeopathy and aquahomeopathy – the use of homeopathic preparations in agriculture and aquaculture – are rapidly emerging subfields of homeopathy research. The 2024–2025 period saw notable research activity in both these areas, enabling investigation of biological responses to homeopathic preparations under controlled experimental conditions, with objective, quantifiable endpoints and minimal or absent placebo effects.

Mattos *et al.* (2024) conducted greenhouse studies examining developmental and physiological responses in fig plants *(Ficus carica)* following repeated application of high dilution homeopathically-prepared substances[13]. The study assessed plant development parameters - including the rate of new leaf emergence and leaf retention across developmental stages - as well as physiological measures including net CO_2 absorption, stomatal conductance and transpiration rate. Treated plants exhibited increased leaf emission and higher retention at specific developmental stages, alongside transient increases in photosynthetic activity. Experimental results were influenced by the exact cultivated variety of plant used, as well as seasonal variations, reinforcing the context-dependent nature of biological effects observed in crop models.

Recent aquahomeopathy studies have investigated biological responses to high dilution homeopathically-prepared substances in molluscs[14], fish[15] and crustaceans[16] under controlled farming conditions. These studies assess objective production parameters – survival, growth, reproduction – alongside physiological and molecular markers, providing complementary perspectives on biological activity.

García-Corona et al. (2024) investigated effects on reproductive biology and energy allocation in mussel broodstock *(Modiolus capax)* - parameters directly relevant to aquaculture productivity and breeding programmes[14]. Homeopathically-treated mussels exhibited significantly enhanced gonadal development alongside improved oocyte (egg) quality and coherent changes in energy metabolism – suggesting system-level physiological coordination.

Complementing these findings, a study by Mazón-Suástegui *et al.* (2025) found that homeopathic treatment of juvenile rose snapper (*Lutjanus guttatus*), increased survival rates during periods of handling and environmental stress, with improvements in weight gain and condition factor, accompanied by modulation of stress-related physiological markers[15].

A third aquaculture model focused on juvenile Pacific white shrimp *(Penaeus vannamei)* – one of the world's most commercially important aquaculture species, increasingly affected by disease challenges[16]. Mazón-Suástegui *et al.* (2025)

evaluated effects of a homeopathic 7C potency combination of Vibrio lysates, phosphoric acid and silica compounds on growth performance and gut microbiota composition - alone or combined with probiotic *Streptomyces* strains. Shrimps receiving the homeopathic preparation showed statistically significant increases in weight gain and survival rates ($p < 0.05$). Treatment with homeopathy alone was associated with significant reductions in *Vibrio* spp. counts while maintaining beneficial heterotrophic bacteria, indicating favourable modulation of the microbial environment rather than broad antimicrobial effects. These findings suggest that homeopathy can offer promising alternatives for sustainable disease management, helping to limit antibiotic use and address growing concerns over antimicrobial resistance.

These experimental systems offer distinct methodological advantages: plants, fish and invertebrates do not respond to expectation, eliminating placebo effects as a confounding factor. At the same time, responses remain context-dependent, and heterogeneity in study design limits direct comparability – a methodological challenge parallel to that identified in clinical research.

Conclusion

This research update consolidates and extends findings presented in the HRI Evidence Summary 2024. Across multiple domains – physicochemical, clinical and emerging experimental crop and livestock models – recent publications reinforce previously identified patterns i.e. measurable biological effects under controlled conditions, non-linear and context-dependent responses, and coherent outcomes across multiple levels of analysis.

A notable feature of recent research is the increasing use of robust, well-established analytical techniques. Physicochemical investigations employ electron microscopy, dynamic light scattering and mass spectrometry; clinical research incorporates large-scale healthcare database analyses; and aquahomeopathy studies apply microbiome sequencing alongside production metrics. These standard tools in contemporary biomedical research lend methodological credibility across the evidence base.

Several limitations persist. The clinical evidence base remains dispersed across numerous conditions, and heterogeneity in study designs continues to limit robust meta-analytic synthesis. These challenges are not unique to homeopathy, being shared across the field of Traditional, Complementary and Integrative Medicine (TCIM) as well as biomedical research.

The 'HRI Evidence Summary 2024' concluded that homeopathy has the potential to play a valuable role in future healthcare provision. Subsequent study findings generated throughout 2025 remain consistent with that assessment, particularly regarding antibiotic stewardship – an area of urgent public health priority. Recent studies can be seen to add depth, methodological sophistication and incremental confirmation to an evidence base that warrants continued scientific attention and appropriate resource allocation.

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