

# ***RESEARCH AT A GLANCE***



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# ***Research at a Glance***

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# **PREFACE**

## **Introduction**

The library of the Central Council for Research in Homoeopathy has been circulating "Research at a Glance". The main objective is to disseminate precise information/citation about scientific articles published in various journals/magazine other than the journals subscribed by this Council.

## **Scope**

This volume covers articles on Homeopathy, Ayurveda, Unani, Yoga.

## **Arrangement of Entries**

The articles are indexed under the name of the authors, arranged in alphabetical order. The entries have been made in the following order:

Author  
Title  
Name of Journal  
year of publication; Volume (issue no.): pagination  
Abstract

## **Acknowledgement**

We are grateful to Dr. R.K. Manchanda, Director General, CCRH for his encouragement and valuable suggestions from time to time. We sincerely acknowledge the cooperation of Mrs. Nisha Adhikari, DEO in compiling this bulletin.

**(Meenakshi Bhatia)**  
**Librarian Incharge**

# HOMOEOPATHY

**Francoz D, Wellemans V, Dupre JP et al. Invited review: A systematic review and qualitative analysis of treatments other than conventional antimicrobials for clinical mastitis in dairy cows. *J Dairy Sci.* 2017; 100(10):7751-70p.**

## **Abstract:**

Clinical mastitis is an important disease in dairies. Its treatment is mainly based on the use of antimicrobial drugs. Numerous non-antimicrobial drugs and treatment strategies have already been reported for clinical mastitis treatment, but data on their efficacy have never been collated in a systematic way. The objective of this systematic review was to identify treatments other than conventional antimicrobials for the treatment of clinical mastitis in lactating dairy cows. A systematic review was performed with studies written in English or French selected from CAB Abstracts, PubMed, and Web of Science from January 1970 to June 2014. Controlled clinical trials, observational studies, and experimental challenges were retained. Lactating dairy cows with clinical mastitis were the participant of interest. All treatments other than conventional antimicrobials for clinical mastitis during lactation were retained. Only studies comparing the treatment under investigation to a negative or positive control, or both, were included. Outcomes evaluated were clinical and bacteriological cure rates and milk production. Selection of the study, data extraction, and assessment of risk of bias was performed by 3 reviewers. Assessment of risk of bias was evaluated using the Cochrane Collaboration tool for systematic review of interventions. A total of 2,451 manuscripts were first identified and 39 manuscripts corresponding to 41 studies were included. Among these, 22 were clinical trials, 18 were experimental studies, and 1 was an observational study. The treatments evaluated were conventional anti-inflammatory drugs (n = 14), oxytocin with or without frequent milk out (n = 5), biologics (n = 9), homeopathy (n = 5), botanicals (n = 4), probiotics (n = 2), and other alternative products (n = 2). All trials had at least one unclear or high risk of bias. Most trials (n = 13) did not observe significant differences in clinical or bacteriological cure rates in comparison with negative or positive controls. Few studies evaluated the effect of treatment on milk yield. In general, the power of the different studies was very low, thus precluding conclusions on noninferiority or nonsuperiority of the treatments investigated. No evidence-based recommendations could be given for the use of an alternative or non-antimicrobial conventional treatment for clinical mastitis. However, probiotics and oxytocin with or without frequent milk out should not be recommended. We concluded that homeopathic treatments are not efficient for management of clinical mastitis.

**Grise DE, Peyman T, Langland J. Remission of schizoaffective disorder using homeopathic medicine: 2 case reports. *Altern Ther Health Med.* 2017; Oct 2. pii: AT5497.**

## **Abstract:**

**Context:** Research on the schizophrenia spectrum is primarily focused on pharmaceutical interventions, although alternative treatments have been gaining increasing popularity in recent years because patients are seeking treatments that are effective and have reduced side effects. A significant body of evidence already exists supporting the effectiveness of homeopathy to treat a wide array of illnesses.

**Objective:** The research team intended to demonstrate the need for using both alternative and conventional treatments to improve clinical outcomes in the treatment of schizoaffective disorder.

**Design:** The research team performed 2 case studies.

**Setting:** The study took place at Arizona Natural Health Center (Tempe, AZ, USA), an outpatient clinic where Dr Tara Peyman worked as a naturopathic doctor from 2008 to 2014.

**Participants:** The participants were a 23-y-old female (case 1) and a 34-y-old female (case 2), both of whom had been diagnosed with schizoaffective disorder of the bipolar type.

**Intervention:** Individualized homeopathic treatment was initiated for the 2 patients, who previously had received medication of atypical antipsychotics and mood stabilizers.

**Outcome Measures:** A Likert scale was used to evaluate the intensity of each patient's symptoms at each follow-up, based on self-reporting, using a scale from 1 to 10, with a score of 10 being the highest.

**Results:** During the course of treatment, both patients' symptoms normalized, and they regained their ability to hold jobs, attend school, and maintain healthy relationships with their families and partners while requiring fewer pharmaceutical interventions.

**Conclusions:** The 2 current case reports demonstrate a successful integrative approach to the treatment of schizoaffective disorder. They illustrate the value of individualized homeopathic prescriptions with proper case management in the successful treatment of that disorder. Future large-scale, double-blind, placebo-controlled studies should investigate individualized homeopathic treatments for mental health concerns, because the diseases cause great economic and social burden.

**Hernandez Berrones J. Homeopathy for Mexicans': Medical popularisation, commercial endeavours, and patients' choice in the Mexican medical marketplace, 1853-1872. *Med Hist.* 2017; 61(4):568-89p.**

**Abstract:**

This paper focuses on homeopaths' strategies to popularise homeopathy from 1850 to 1870. I argue that homeopaths created a space for homeopathy in Mexico City in the mid-nineteenth century by facilitating patients' access to medical knowledge, consultation and practice. In this period, when national and international armed conflicts limited the diffusion and regulation of academic medicine, homeopaths popularised homeopathy by framing it as a life-enhancing therapy with tools that responded to patients' needs. Patients' preference for homeopathy evolved into commercial endeavours that promoted the practice of homeopathy through the use of domestic manuals. Using rare publications and archival records, I analyse the popularisation of homeopathy in Ramón Comellas's homeopathic manual, the commercialisation of Julián González's family guides, and patients' and doctors' reception of homeopathy. I show that narratives of conversion to homeopathy relied on the different experiences of patients and trained doctors, and that patients' positive experience with homeopathy weighed more than the doctors' efforts to explain to the public how academic medicine worked. The fact that homeopaths and patients used

a shared language to describe disease experiences framed the possibility of a horizontal transmission of medical knowledge, opening up the possibility for patients to become practitioners. By relying on the long tradition of domestic medicine in Mexico, the popularisation of homeopathy disrupted the professional boundaries that academic physicians had begun to build, making homeopaths the largest group that challenged the emergent medical academic culture and its diffusion in Mexico in the nineteenth century.

**Lytsy P. Creating falseness-how to establish statistical evidence of the untrue. *J Eval Clin Pract.* 2017; 23(5):923-27p.**

**Abstract:**

Null hypothesis significance testing is the typical statistical approach in search of the truthfulness of hypotheses. This method does not formally consider the prior credence in the hypothesis, which affects the chances of reaching correct conclusions. When scientifically implausible or empirically weakly supported hypotheses are tested, there is an increased risk that a positive finding in a test in fact is false positive. This article argues that when scientifically weakly supported hypotheses are tested repeatedly—such as when studying the clinical effects of homeopathy—the accumulation of false positive study findings will risk providing false evidence also in systematic reviews and meta-analyses. False positive findings are detrimental to science and society, as once published, they accumulate persistent untrue evidence, which risks giving rise to nonpurposive research programmes, policy changes, and promotion of ineffective treatments. The problems with false positive findings are discussed, and advice is given on how to minimize the problem. The standard of evidence of a hypothesis should depend not only on the results of statistical analyses but also on its a priori support. Positive findings from studies investigating hypotheses with poor theoretical and empirical foundations should be viewed as tentative until the results are replicated and/or the hypothesis gains more empirical evidence supporting it as likely to be true.

**Markun S, Maeder M, Rosemann T et al. Beliefs, endorsement and application of homeopathy disclosed: A survey among ambulatory care physicians. *Swiss Med Wkly.* 2017; 147: w14505.**

**Abstract:**

**Background:** Explanation models for the effectiveness of homeopathy are not supported by natural sciences and the aggregated evidence from clinical trials is unconvincing. From this standpoint, placebo effects seem the most obvious explanation for the therapeutic effects experienced in homeopathy. Still, many physicians continue to prescribe homeopathic treatments.

**Objectives:** Whether physicians who prescribe homeopathic treatments aim to achieve placebo effects or actually believe in specific effects is poorly understood. However, this distinction has important educational and ethical implications. Therefore, we aimed to describe the use of homeopathy among physicians working in outpatient care, factors associated with prescribing homeopathy, and the therapeutic intentions and attitudes involved.

**Methods:** All physicians working in outpatient care in the Swiss Canton of Zurich in the year 2015 (n = 4072) were approached. Outcomes of the study were: association of prescribing homeopathy with medical specialties (odds ratios [OR] and 95% confidence intervals [95% CI] from multivariable logistic regression); intentions behind

prescriptions (to induce specific or nonspecific/placebo effects); level of agreement with specific attitudes; and views towards homeopathy including explanatory models, rating of homeopathy's evidence base, the endorsement of indications, and reimbursement of homeopathic treatment by statutory health insurance providers.

**Results:** The participation rate was 38%, mean age 54 years, 61% male, and 40% specialised in general internal medicine. Homeopathy was prescribed at least once a year by 23% of the respondents. Medical specialisations associated with prescribing homeopathy were: no medical specialisation (OR 3.9; 95% CI 1.7-9.0), specialisation in paediatrics (OR 3.8 95% CI 1.8-8.0) and gynaecology/obstetrics (OR 3.1 95% CI 1.5-6.7). Among prescribers, only 50% clearly intended to induce specific homeopathic effects, only 27% strongly adhered to homeopathic prescription doctrines, and only 23% thought there was scientific evidence to prove homeopathy's effectiveness. Seeing homeopathy as a way to induce placebo effects had the strongest endorsement among prescribers and non-prescribers of homeopathy (63% and 74% endorsement respectively). Reimbursement of homeopathic remedies by statutory health insurance was rejected by 61% of all respondents.

**Conclusion:** Medical specialties use homeopathy with significantly varying frequency and only half of the prescribers clearly intend to achieve specific effects. Moreover, the majority of prescribers acknowledge that effectiveness is unproven and give little importance to traditional principles behind homeopathy. Medical specialties and associated patient demands but also physicians' openness towards placebo interventions may play a role in homeopathy prescriptions. Education should therefore address not only the evidence base of homeopathy, but also ethical dilemmas with placebo interventions.

**Nwabudike LC, Tatu AL. Response to - Chronic exposure to tetracyclines and subsequent diagnosis for non-melanoma skin cancer in a large Mid-Western US population. *J Eur Acad Dermatol Venereol.* 2017; doi: 10.1111/jdv.14657.**

**Abstract:**

I would first of all like to begin by congratulating the authors on their work<sup>1</sup>, which, with the large population analysed, has the potential to pertinently contribute to answering the question of risk of non-melanoma skin cancer (NMSC) with tetracycline use. Certain questions arise from a reading of this work, which I would request of the authors to clarify for all readers. This article is protected by copyright. All rights reserved.

## AYURVEDA

**Abat JK, Kumar S, Mohanty A. Ethnomedicinal, phytochemical and ethnopharmacological aspects of four medicinal plants of malvaceae used in Indian traditional medicines: A review. Medicines (Basel). 2017 Oct 18;4(4). pii: E75**

### **Abstract:**

The ethnomedicinal values of plants form the basis of the herbal drug industry. India has contributed its knowledge of traditional system medicines (Ayurveda and Siddha) to develop herbal medicines with negligible side effects. The World Health Organization has also recognized the benefits of drugs developed from natural products. *Abutilon indicum*, *Hibiscus sabdariffa*, *Sida acuta* and *Sida rhombifolia* are ethnomedicinal plants of Malvaceae, commonly used in Indian traditional system of medicines. Traditionally these plants were used in the form of extracts/powder/paste by tribal populations of India for treating common ailments like cough and cold, fever, stomach, kidney and liver disorders, pains, inflammations, wounds, etc. The present review is an overview of phytochemistry and ethnopharmacological studies that support many of the traditional ethnomedicinal uses of these plants. Many phytoconstituents have been isolated from the four ethnomedicinal plants and some of them have shown pharmacological activities that have been demonstrated by in vivo and/or in vitro experiments. Ethnomedicinal uses, supported by scientific evidences is essential for ensuring safe and effective utilization of herbal medicines.

**Adedapo AA, Fagbohun OA, Dawurung C et al. Aqueous tuber extract of *Pueraria tuberosa* (Willd.) D.C. caused cytotoxic effect on HT 29 cell lines with down regulation of nuclear factor-kappa B (NF-κB). *J Complement Integr Med.* 2017; pii: /j/jcim.ahead-of-print/jcim-2016-0119/jcim-2016-0119.xml. doi: 10.1515/jcim-2016-0119.**

### **Abstract:**

**Background:** *Pueraria tuberosa* (Willd) D.C. (Fabaceae) tubers are already used in traditional medicine by Ayurvedic physicians for the management of fertility disorders, general weakness, and also as anti-ageing therapies. Other known pharmacological properties include: anti-hyperglycemics, hepatoprotective, anti-hyperlipidemic, diuretic, nutritive, and anti-fertility agents in male rats.

**Methods:** The anti-proliferative effect of the aqueous tuberous root extract of *Pueraria tuberosa* on vascular smooth muscle cells (VSMCs) and Human Colorectal Adenocarcinoma Cell lines (HT-29) was investigated using the Cell Titer 96 MTT Proliferation Assay where the viable cells were seeded at a density of  $5 \times 10^4$  (100  $\mu$ L/well). For VSMC, log concentrations of the extract at 200 and 800  $\mu$ g/mL were added and incubated for 24 and 48 h time points. Incubation of the extract in the presence of vascular endothelial growth factor (VEGF) and ET-1 was also conducted at different times. Concentrations of the extract (200, 400 and 700  $\mu$ g/mL) were also added and incubated with the HT 29 cell lines for 24, 48 and 72 h time points. The effect of the tuber aqueous extract of the plant on nuclear



factor- $\kappa$ B (NF- $\kappa$ B) expression after 2 h was also carried out using immunoblotting technique. Results The result showed that after 24 h, the effect of the extract in the presence of the mitogens and on the VSMC was more of proliferation. However, at 48 h, the 200  $\mu$ g/mL dose, both alone and in the presence of VEGF caused 11.1% and 25.9% decreases respectively, in cell proliferation. In the HT 29 cytotoxic study the 200  $\mu$ g/mL concentration caused the greatest cytotoxic effect at 77.1% cell inhibition followed by 400  $\mu$ g/mL concentration at 71.4% after 72 h. The immunoblotting assay showed a down regulation of NF- $\kappa$ B expressions with 0.7  $\mu$ g/mL concentration showing the greatest effect. NF- $\kappa$ B, a pro-inflammatory agent is increasingly recognized as a crucial player in many steps of cancer initiation and progression.

**Conclusions:** It could therefore be concluded that the aqueous root extract of *Pueraria tuberosa* possesses cytotoxic effect and could serve as a lead compound for anticancer and anti-inflammatory agents.

**Amalraj A, Varma K, Jacob J et al. Novel highly bioavailable curcumin formulation improves symptoms and diagnostic indicators in rheumatoid arthritis patients: A randomized, double-blind, placebo-controlled, two-dose, three-arm, and parallel-group study. *J Med Food*. 2017; 20(10): 1022-1030p.**

**Abstract:**

Rheumatoid arthritis (RA) is an autoimmune, chronic systemic inflammatory disorder. The long-term use of currently available drugs for the treatment of RA has many potential side effects. Natural phytonutrients may serve as alternative strategies for the safe and effective treatment of RA, and curcuminoids have been used in Ayurvedic medicine for the treatment of inflammatory conditions for centuries. In this study, a novel, highly bioavailable form of curcumin in a completely natural turmeric matrix was evaluated for its ability to improve the clinical symptoms of RA. A randomized, double-blind, placebo-controlled, three-arm, parallel-group study was conducted to evaluate the comparative efficacy of two different doses of curcumin with that of a placebo in active RA patients. Twelve patients in each group received placebo, 250 or 500 mg of the curcumin product twice daily for 90 days. The responses of the patients were assessed using the American College of Rheumatology (ACR) response, visual analog scale (VAS), C-reactive protein (CRP), Disease Activity Score 28 (DAS28), erythrocyte sedimentation rate (ESR), and rheumatoid factor (RF) values. RA patients who received the curcumin product at both low and high doses reported statistically significant changes in their clinical symptoms at the end of the study. These observations were confirmed by significant changes in ESR, CPR, and RF values in patients receiving the study product compared to baseline and placebo. The results indicate that this novel curcumin in a turmeric matrix acts as an analgesic and anti-inflammatory agent for the management of RA at a dose as low as 250 mg twice daily as evidenced by significant improvement in the ESR, CRP, VAS, RF, DAS28, and ACR responses compared to placebo. Both doses of the study product were well tolerated and without side effects.

**Bora KS, Kumar A, Bisht G. Evaluation of antimicrobial potential of successive extracts of *ulmus wallichiana* planch. *J Ayurveda Integr Med*. 2017; pii: S0975-9476(16)30497-1.**

**Abstract:**

**Background:** The plant *Ulmus wallichiana* Planch. is found in hills of Uttarakhand, India. Bark of *U. wallichiana* is commonly used as traditional healer for bone fracture of animals as well as human beings and also used as wound healer remedy.

**Objective:** The present study was designed to evaluate antimicrobial potential of various extracts of *U. wallichiana* bark.

**Materials and methods:** Soxhlet extraction method was used for preparation of different extracts viz. petroleum ether, chloroform, ethyl acetate, ethanol and aqueous. Antioxidant activity was determined by DPPH and FRAP assay method. In vitro antimicrobial activity was evaluated using agar well diffusion method.

**Results:** Ethyl acetate extract exhibited the highest significant antioxidant activity. Antibacterial activity was performed against *Escherichia coli*, *Bacillus subtilis*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Amongst the various extracts tested, only ethyl acetate exhibited highest zone of inhibition as compared to other extracts and greater than standard drug. Chloroform extract also showed moderate zone of inhibition. Antifungal activity was evaluated against *Aspergillus fumigatus* and *Aspergillus flavus*. The ethyl acetate extract showed maximum zone of inhibition as compared to other extracts. Chloroform extract showed mild antifungal activity. Chloramphenicol and nystatin were used as a positive control as antibacterial and antifungal agent respectively. Furthermore, the highest percentage of phenolic and flavonoid compounds was estimated in ethyl acetate extract.

**Conclusion:** The ethyl acetate extract of *U. wallichiana* showed the highest antimicrobial activity, and should be further investigated for isolating active compound(s) responsible for antimicrobial activity.

**Khanal MK, Dhungana RR, Bhandari P et al. Prevalence, associated factors, awareness, treatment, and control of hypertension: Findings from a cross sectional study conducted as a part of a community based intervention trial in Surkhet, Mid-western region of Nepal. *PLoS One*. 2017; 2(10):e0185806.**

**Abstract:**

**Background:** Hypertension is one of the leading public health problems globally. About half of the deaths from cardiovascular diseases were attributed to hypertension in 2008. Reduction of blood pressure to normal range is one of the major challenges in preventing complications and future burden of cardiovascular diseases. Therefore, this study aims to determine prevalence, awareness, treatment and control of hypertension and its associated factors in Nepal.

**Methods:** This was a community based cross-sectional study conducted as a part of a community based intervention trial in Birendranagar Municipality of Surkhet district located at the Mid-western region of Nepal. We enrolled 1159 subjects aged 30 years and above. Out of 12 wards (administrative unit), four wards were selected randomly. Three hundred participants were recruited from each selected ward. Trained enumerator collected

socio-demographic, anthropometric, and clinical data using standard STEPS questionnaires.

**Results:** Out of all participants, women were 71% and mean age was 47±12.6 years. The overall prevalence of hypertension was 38.9% (95% CI: 36-41.7) while age and sex adjusted prevalence was 40.6%. The hypertension was present in 48.1% (95% CI: 45.2-50.9) of men and 35.2% (95% CI: 32.4-37.9) of women. Male gender (OR = 1.49), older age (OR = 1.04 per year), Dalit caste (OR = 1.71), past history of cigarettes smoking (OR = 2.78), current alcohol consumption (OR = 1.75), and raised body mass index (OR = 1.17 per unit) were identified as significant factors associated with hypertension. Of total hypertensive respondents, 53.4% (95% CI: 48.7-58) were aware, 29% (95% CI: 24.8-33.1) were receiving treatment for high blood pressure, and 8.2% (95% CI: 5.6-10.7) had controlled blood pressure. The awareness, treatment, and control status were worse in younger participants.

**Conclusions:** The study revealed high prevalence with low awareness, treatment, and control of hypertension in Nepal. Gender, age, ethnicity, smoking, drinking alcohol, and body mass index were associated with hypertension. Immediate public health and individual measures are warranted to reduce future burden of cardiovascular diseases.

**Kumar A, Singh AK, Kaushik MS et al. Interaction of turmeric (*Curcuma longa* L.) with beneficial microbes: A review. *3 Biotech.* 2017; 7(6): 357p.**

**Abstract:**

*Curcuma longa* L., commonly known as turmeric, is a rhizomatous herb of the family Zingiberaceae. It is mostly used as a spice, a coloring agent and broadly used in traditional medicine such as Ayurveda, Unani, etc., Turmeric rhizomes interact with a large numbers of rhizosphere-associated microbial species, and some enter the plant tissue and act as endophytes. Both rhizospheric and endophytic species are directly or indirectly involved in growth promotion and disease management in plants and also play an important role in the modulation of morphological growth, secondary metabolite production, curcumin content, antioxidant properties, etc. The present review focuses on the rhizobacterial and endophytic bacterial and fungal populations associated with the turmeric.

**Kumar V, Singh S, Singh R et al. Design, synthesis, and characterization of 2,2-bis(2,4-dinitrophenyl)-2-(phosphonomethylamino) acetate as a herbicidal and biological active agent. *J Chem Biol.* 2017; 10(4):179-90p.**

**Abstract:**

The present study was designed to synthesize the bioactive molecule 2,2-bis(2,4-dinitrophenyl)-2-(phosphonomethylamino)acetate (1), having excellent applications in the field of plant protection as a herbicide. Structure of newly synthesized molecule 1 was confirmed by using the elemental analysis, mass spectrometric, NMR, UV-visible, and FTIR spectroscopic techniques. To obtain better structural insights of molecule 1, 3D molecular modeling was performed using the GAMESS programme. Microbial activities of 1 were checked against the pathogenic strains *Aspergillus fumigatus* (NCIM 902) and *Salmonella*

*typhimurium* (NCIM 2501). Molecule 1 has shown excellent activities against fungal strain *A. fumigates* (35 µg/l) and bacterial strain *S. typhimurium* (25 µg/l). To check the medicinal significance of molecule 1, interactions with bovine serum albumin (BSA) protein were checked. The calculated value of binding constant of molecule 1-BSA complex was  $1.4 \times 10^6 \text{ M}^{-1}$ , which were similar to most effective drugs like salicylic acid. More significantly, as compared to herbicide glyphosate, molecule 1 has exhibited excellent herbicidal activities, in pre- and post-experiments on three weeds; barnyard grass (*Echinochloa Crus*), red spranglitop (*Leptochloa filiformis*), and yellow nuts (*Cyperus Esculenus*). Further, effects of molecule 1 on plant growth-promoting rhizobacterial (PGPR) strains were checked. More interestingly, as compared to glyphosate, molecule 1 has shown least adverse effects on soil PGPR strains including the *Rhizobium leguminosarum* (NCIM 2749), *Pseudomonas fluorescens* (NCIM 5096), and *Pseudomonas putida*(NCIM 2847).

**Patel BP, Singh PK. Viscum articulatum Burm. f: A review on its phytochemistry, pharmacology and traditional uses. J Pharm Pharmacol. 2017; doi: 10.1111/jphp.12837.**

**Abstract:**

**Objectives:** The aim of this study was to review and highlight traditional and ethnobotanical uses, phytochemical constituents, IP status, biological activity and pharmacological activity of *Viscum articulatum*.

**Methods:** Thorough literature searches were performed on *Viscum articulatum*, and data were analysed for reported traditional uses, pharmacological activity, phytochemicals present and patents filed. Scientific and patent databases such as PubMed, Science Direct, Google Scholar, Google patents, USPTO and Espacenet were searched using different keywords.

**Key findings:** *Viscum articulatum* has been traditionally used in different parts of the world for treatment of various ailments. Almost all the parts such as leaves, root, stem and bark are having medicinal values and are reported for their uses in Ayurvedic and Chinese system of medicine for the management of various diseases. Modern scientific studies demonstrate efficacy of this plant against hypertension, ulcer, epilepsy, inflammation, wound, nephrotoxicity, HIV, cancer, etc. Major bioactive phytochemicals include oleanolic acid, betulinic acid, eriodictyol, naringenin, β-amyrin acetate, visartisides, etc.

**Conclusions:** Side effects of allopathic medicines have created a global opportunity, acceptance and demand for phytomedicines. *Viscum articulatum* could be an excellent source of effective and safe phytomedicine for various ailments if focused translational efforts are undertaken by integrating the existing outcomes of researches.

**Sathiyabama M, Parthasarathy R. Withanolide production by fungal endophyte isolated from *Withania somnifera*. Nat Prod Res. 2017; 1-5. doi: 10.1080/14786419.2017.1389934.**

**Abstract:**

Withanolides, the secondary metabolite from *Withania* species is used in Ayurvedic medicine and now proved to have potential use in treating cardiovascular, Alzheimer's disease, etc. Its production in plants varies between genotypes with very low yield. For improved industrial commercialisation, there is a need to increase its production. Endophytic fungi are symbiotically associated with plants and can synthesise the same bioactive compounds and natural products as their host plant. There are no reports available on withanolide-producing (endophytic) fungi. The present study identified an endophytic fungus (*Taleromyces pinophilus*) from leaves of *Withania somnifera* which produces withanolides in the medium. The structure of withanolide was confirmed by <sup>1</sup>H NMR, LC-MS analyses and quantified by HPLC analysis. The fungus produces high amount of withanolide when compared to leaf and root of *W. somnifera*. The fungus can be exploited to produce the withanolide to meet its demand.

**Singla S, Malhotra R, Shashikiran ND et al. Antibacterial efficacy of mouthwash prepared from pomegranate, grape seed and guava extracts against oral streptococci: An in vivo study. *J Clin Pediatr Dent.* 2017; doi: 10.17796/1053-4628-42.2.5.**

**Abstract:**

**Background:** Pomegranate, Grape seed and Guava extracts have much been reviewed in Ayurveda and has been proven to have antibacterial action Aim: The objective of the study is to investigate and compare the mouthwash prepared from pomegranate, grape seed and guava extracts on salivary streptococci levels at the end of 48 hr and 7 days, of twice a day usage.

**Study Design:** 40 school going children aged 8-10 yrs, randomly allocated into 4 groups (n=10 for experimental group) were asked to rinse with a) Mouthwash prepared from Pomegranate extract, 15 ml twice a day b) Mouthwash prepared from Grape seed extract, 15 ml twice a day, c) Mouthwash prepared from guava extract, 15 ml twice a day, d) Control-Distil water, twice a day. The oral streptococci colony forming units/ml (CFU/ml) was assessed by inoculating the salivary samples on blood agar media at the end of 48 hrs, and 7 days.

**Results and conclusion:** the aqueous extracts of the chosen herbal plants showed an acceptable antibacterial efficacy against oral streptococci.

**Tiwari P, Kutum R, Sethi T et al. Recapitulation of Ayurveda constitution types by machine learning of phenotypic traits. *PLoS One.* 2017; 12(10): e0185380.**

**Abstract:**

In Ayurveda system of medicine individuals are classified into seven constitution types, "Prakriti", for assessing disease susceptibility and drug responsiveness. Prakriti evaluation involves clinical examination including questions about physiological and behavioural traits. A need was felt to develop models for accurately predicting Prakriti classes that have been shown to exhibit molecular differences. The present study was carried out on data of phenotypic attributes in 147 healthy individuals of three extreme Prakriti types, from a genetically homogeneous population of Western India. Unsupervised and supervised machine learning approaches were used to infer inherent structure of the data, and for

feature selection and building classification models for Prakriti respectively. These models were validated in a North Indian population. Unsupervised clustering led to emergence of three natural clusters corresponding to three extreme Prakriti classes. The supervised modelling approaches could classify individuals, with distinct Prakriti types, in the training and validation sets. This study is the first to demonstrate that Prakriti types are distinct verifiable clusters within a multidimensional space of multiple interrelated phenotypic traits. It also provides a computational framework for predicting Prakriti classes from phenotypic attributes. This approach may be useful in precision medicine for stratification of endophenotypes in healthy and diseased populations.

**Velu P, Vinothkumar V, Babukumar S et al. Chemopreventive effect of syringic acid on 7,12-dimethylbenz(a)anthracene induced hamster buccal pouch carcinogenesis. *Toxicol Mech Methods*. 2017; 27(8): 631-40p.**

**Abstract:**

Oral squamous cell carcinoma is most prevalent and refractory cancers worldwide. Recently, chemoprevention could be a promising approach in developing countries. The present study investigates the mechanism of syringic acid (SA), a phenolic constituent of plant *Alpinia calcarata* Roscoe, and their leaves are used as traditional Indian Ayurveda medicines, mediated chemoprevention on 7,12-dimethylbenz(a)anthracene (DMBA)-induced hamster buccal pouch carcinogenesis (HBPC). Lipid peroxidation and antioxidants were measured in the plasma and buccal tissues in experimental hamsters. Modulating effect of SA on the expression pattern of PCNA, Cyclin D1, and mutant p53 markers was used for immunoprecipitation and western blotting analysis. In the present study, 100% tumor formation with marked abnormalities in the biochemical parameters of lipid peroxidation and antioxidants through up-regulation of molecular markers like PCNA, Cyclin D1, and mutant p53 was accompanied with tumor-bearing hamsters. Oral administration of SA at the doses of 50 and 100 mg/kg body weight (bw) to DMBA-treated hamsters significantly inhibited adverse changes in the biochemical parameters of the plasma and buccal mucosal tissues and also down-regulation of molecular marker expression (PCNA, Cyclin D1, and mutant p53). The present study thus suggests that SA has potent anti-lipid peroxidative, antioxidant, anti-cell proliferative, and apoptosis-inducing properties during DMBA-induced HBPC.

## UNANI MEDICINE

**Kumar A, Singh AK, Kaushik MS et al. Interaction of turmeric (*Curcuma longa* L.) with beneficial microbes: A review. 3 *Biotech.* 2017; 7(6): 357p.**

### **Abstract:**

*Curcuma longa* L., commonly known as turmeric, is a rhizomatous herb of the family Zingiberaceae. It is mostly used as a spice, a coloring agent and broadly used in traditional medicine such as Ayurveda, Unani, etc., Turmeric rhizomes interact with a large numbers of rhizosphere-associated microbial species, and some enter the plant tissue and act as endophytes. Both rhizospheric and endophytic species are directly or indirectly involved in growth promotion and disease management in plants and also play an important role in the modulation of morphological growth, secondary metabolite production, curcumin content, antioxidant properties, etc. The present review focuses on the rhizobacterial and endophytic bacterial and fungal populations associated with the turmeric.

## YOGA

**Anderson JG, Rogers CE, Bossen A et al. Mind-Body therapies in individuals with dementia: An integrative review. *Res Gerontol Nurs.* 2017; Oct 5:1-16. doi: 10.3928/19404921-20170928-01**

### **Abstract:**

Mind-body therapies frequently derive from Eastern philosophies and are becoming increasingly popular. These therapies, such as meditation, yoga, tai chi, qigong, biofield therapies, and guided imagery, have many reported benefits for improving symptoms and physiological measures associated with various chronic diseases. However, clinical research data concerning the effectiveness of these practices in individuals with dementia have not been evaluated using a synthesis approach. Thus, an integrative review was conducted to evaluate studies examining the efficacy of mind-body therapies as supportive care modalities for management of symptoms experienced by individuals with dementia. Findings from the studies reviewed support the clinical efficacy of mind-body practices in improving behavioral and psychological symptoms exhibited by individuals with dementia. [Res Gerontol Nurs. 2017; x(x):xx-xx.].

**Cramer H, Sibbritt D, Park CL et al. Is the practice of yoga or meditation associated with a healthy lifestyle? results of a national cross-sectional survey of 28,695 Australian women. *J Psychosom Res.* 2017; 101: 104-109p.**

### **Abstract:**

**Objectives:** To examine the relationship between yoga/meditation practice and health behavior in Australian women.

**Methods:** Women aged 19-25years, 31-36years, and 62-67years from the Australian Longitudinal Study on Women's Health (ALSWH) were surveyed regarding smoking, alcohol or drug use, physical activity and dietary behavior; and whether they practiced yoga/meditation on a regular basis. Associations of health behaviors with yoga/meditation practice were analyzed using multiple logistic regression modelling.

**Results:** 11,344, 8200, and 9151 women aged 19-25years, 31-36years, and 62-67years, respectively, were included of which 29.0%, 21.7%, and 20.7%, respectively, practiced yoga/meditation. Women practicing yoga/meditation were significantly more likely to report at least moderate physical activity levels (OR=1.50-2.79), to follow a vegetarian (OR=1.67-3.22) or vegan (OR=2.26-3.68) diet, and to report the use of marijuana (OR=1.28-1.89) and illicit drugs in the last 12 months (OR=1.23-1.98).

**Conclusions:** Yoga/meditation practice was associated with higher physical activity levels, a higher likelihood of vegetarian or vegan diet use, and a higher likelihood of drug use. While health professionals should keep the potential vulnerability of yoga/meditation practitioners to drug use in mind, the positive associations of yoga/meditation with a variety of positive health behaviors warrant its consideration in preventive medicine and healthcare.



**Evans MW Jr, Ndetan H, Ka Sekhon V et al. Adult use of complementary and integrative approaches to improve athletic performance. *Altern Ther Health Med.* 2017; Oct 2. pii: AT5625.**

**Abstract:**

**Context:** In the United States in 2007, approximately 38% of adults, or 4 in 10, used some form of complementary and alternative medicine (CAM). An area in which little is known is the personal integration of CAM therapies by those individuals seeking to improve athletic performance.

**Objectives:** The study intended to assess the use of integrative care by adult athletes in the United States as well as their satisfaction with it, as reported in the 2012 National Health Interview Survey (NHIS).

**Design:** A secondary analysis of the data from the Adult Alternative Health/Complementary Medicine file of the 2012 NHIS was performed.

**SETTING:** The analysis was performed at the Research Institute of Parker University (Dallas, TX, USA).

**Participants:** The NHIS survey was a representative sample of Americans, with more than 30 000 respondents.

**Outcome Measures:** National population estimates were generated for all related variables. The study assessed the likelihood that a respondent who reported use of a specific complementary and integrative therapy as their first top therapeutic modality to enhance sport or athletic performance had perceived it helpful compared with those who used it for other non-sport-related reasons.

**Results:** Complementary and integrative therapies were used by more than 14 million adults (20.5%) to improve athletic performance, with 97.6% of them perceiving therapies as helpful. The most used therapies were yoga, herbal supplements, manipulation, and massage. The median age of those reporting specific use to improve athletic performance was slightly less than 38 y, and women were almost 3 times as likely as men to report therapies as helpful.

**Conclusions:** Complementary and integrative therapies were used for improvement of athletic performance by respondents of the 2012 NHIS, with high satisfaction among users. Future research could evaluate athletic-specific use, adverse effects, physiological mechanisms that may exist for the modalities, and ways to integrate these methods better with traditional medical care.

**Gaddy MA. Implementation of an integrative medicine treatment program at a veterans health administration residential mental health facility. *Psychol Serv.* 2017; doi: 10.1037/ser0000189.**

**Abstract:**

A 4-week interdisciplinary integrative medicine program was recently added to the core treatment offerings for veterans participating in the Mental Health Residential Rehabilitation Program at the Dwight D. Eisenhower Veterans Affairs Medical Center. The new integrative medicine program teaches veterans about using meditative practices, nutrition, creative expression, tai chi, hatha yoga, sensory and breathing techniques, and lifestyle changes to enhance well-being. The groups are run by professionals from a variety of disciplines including recreation therapy, art therapy, occupational therapy, psychology, and nutrition. For the first 42 veterans to complete the program, the Short Form 12-item Health Survey was administered before and after participation in the integrative medicine program to assess the potential effectiveness of the program in enhancing physical and psychological well-being. In addition, a brief semistructured interview was used to assess veteran opinions about the program. Results suggest that the program was well received and that both physical and mental health scores improved from before to after treatment in this sample of veterans with complex behavioral health concerns. (PsycINFO Database Record

**Hagglund E, Hagerman I, Stromberg A. Response to the Letter to the Editor on: Effect of yoga versus hydrotherapy training on health-related quality of life and exercise capacity in patients with heart failure: A randomized controlled study. *Eur J Cardiovasc Nurs.* 2017; 1474515117735097. doi: 10.1177/1474515117735097.**

**Holowaychuk MK. Strategies for fostering resilience as veterinary care providers. *Can Vet J.* 2017; 58(10):1113-16p.**

**Huberty J, Eckert R, Gowin K et al. Feasibility study of online yoga for symptom management in patients with myeloproliferative neoplasms. *Haematologica.* 2017; 102(10) :e384-e388p.**

**Kerekes N, Fielding C, Apelqvist S. Yoga in correctional settings: A randomized controlled study. *Front Psychiatry.* 2017; 8: 204p.**

**Abstract:**

**Background:** The effect of yoga in the reduction of depressive symptoms, anxiety, stress, anger as well as in the increased ability of behavioral control has been shown. These effects of yoga are highly relevant for prison inmates who often have poor mental health and low impulse control. While it has been shown that yoga and meditation can be effective in improving subjective well-being, mental health, and executive functioning within prison populations, only a limited number of studies have proved this, using randomized controlled settings.

**Methods:** A total of 152 participants from nine Swedish correctional facilities were randomly assigned to a 10-week yoga group (one class a week; N = 77) or a control group (N = 75). Before and after the intervention period, participants answered questionnaires measuring stress, aggression, affective states, sleep quality, and psychological well-being and completed a computerized test measuring attention and impulsivity.

**Results:** After the intervention period, significant improvements were found on 13 of the 16 variables within the yoga group (e.g., less perceived stress, better sleep quality, an increased psychological and emotional well-being, less aggressive, and antisocial behavior) and on two within the control group. Compared to the control group, yoga class participants reported significantly improved emotional well-being and less antisocial behavior after 10 weeks of yoga. They also showed improved performance on the computerized test that measures attention and impulse control.

**Conclusion:** It can be concluded that the yoga practiced in Swedish correctional facilities has positive effects on inmates' well-being and on considerable risk factors associated with recidivism, such as impulsivity and antisocial behavior. Accordingly, the results show that yoga practice can play an important part in the rehabilitation of prison inmates.

**Lopez G, Liu W, Madden K, Fellman B et al. Adolescent-young adults (AYA) with cancer seeking integrative oncology consultations: demographics, characteristics, and self-reported outcomes. *Support Care Cancer*. 2017; doi: 10.1007/s00520-017-3937-8.**

**Abstract:**

**Purpose:** Integrative Oncology (IO) consultations offer cancer patients counseling regarding complementary integrative medicine (CIM). We explored the CIM interests and symptom burden of AYA cancer patients presenting for an IO consultation.

**Methods:** Patients referred for an IO physician consultation at an academic medical center from September 1, 2009 to December 31, 2013 completed an assessment on presentation: MYCaW, ESAS (10 symptoms, 0-10, 10 worst possible), CIM use survey, and SF-12 QOL survey. We compared findings of AYA patients (ages 15-39) with a control sample of adult patients (age  $\geq$  40).

**Results:** Of the total 2474 consecutive patients, 286 (12%) were AYA, 73.1% female, with the most common diagnosis of breast cancer (30%). Areas of greatest interest for both AYA and adult patients included developing a holistic approach, herbals, and diet, with no significant difference between groups. Comparing groups, AYA patients had significantly higher anxiety (3.4 vs 3.1,  $p = 0.042$ ). AYA physical health was significantly higher (37.5 vs 35,  $p = 0.001$ ), with no significant between group differences in mental health. AYA patients were more likely to have participated in yoga (22 vs 11%,  $p = 0.001$ ) and pilates (9.2 vs 4.5%,  $p = 0.04$ ), with no significant difference regarding overall CIM use. Differences persisted after correcting for stage.

**Conclusion:** AYA patients make up a small number of overall referrals to an IO consultation, presenting with a low to moderate symptom burden. Physical CIM interventions such as yoga and pilates are of greater interest to the AYA population, suggesting the importance of making such interventions available in cancer programs serving this population.

**Mehling WE, Chesney MA, Metzler TJ et al. 12-week integrative exercise program improves self-reported mindfulness and interoceptive awareness in war veterans**

with posttraumatic stress symptoms. *J Clin Psychol.* 2017; doi: 10.1002/jclp.22549.

**Abstract:**

**Objective:** Innovative approaches to the treatment of war-related posttraumatic stress disorder (PTSD) are needed. We report on secondary psychological outcomes of a randomized controlled trial of integrative exercise (IE) using aerobic and resistance exercise with mindfulness-based principles and yoga. We expected in parallel to observed improvements in PTSD intensity and quality of life-improvements in mindfulness, interoceptive bodily awareness, and positive states of mind.

**Method:** A total of 47 war veterans with PTSD were randomized to 12-week IE versus waitlist. Changes in mindfulness, interoceptive awareness, and states of mind were assessed by self-report standard measures.

**Results:** Large effect sizes for the intervention were observed on Five-Facet Mindfulness Questionnaire Non-Reactivity ( $d = .85$ ), Multidimensional Assessment of Interoceptive Awareness Body Listening ( $d = .80$ ), and Self-Regulation ( $d = 1.05$ ).

**Conclusion:** In a randomized controlled trial of a 12-week IE program for war veterans with PTSD, we saw significant improvements in mindfulness, interoceptive bodily awareness, and positive states of mind compared to a waitlist.

**Miller P, Soundy A. Pharmacological and non-pharmacological interventions for the management of fatigue related multiple sclerosis. *J Neurol Sci.* 2017; 381: 41-54p.**

**Abstract:**

**Aim:** The clinical aim was to provide up-to-date evidence-based recommendations for the treatment of MS-related fatigue (MSRF). The scientific aim was to prioritise topics for future randomised clinical trials with sufficient power.

**Methods:** A systematic search of review based research that considered MSRF in adults (18years and over) was undertaken in May 2016. Data from reviews was extracted, critically appraised and synthesised using four specific techniques.

**Results:** A total of 24 reviews were identified (17 non-pharmacological, 5 pharmacological, 2 combining both), which contained 339 studies on interventions designed to improve MSRF. The methodological quality of the reviews was identified by an average AMSTAR score of 6.5 (SD=1.87; 95% CI=5.75-7.25). No pharmacological intervention had strong evidence for improving MSRF. Limited/conflicting evidence was found for Amantadine and Prokarin and potential benefits for Modafinil were identified. Pemoline and Carnitine contained unclear/no evidence for fatigue management. Non-pharmacological interventions produced mixed conclusions regarding the effectiveness of the intervention to improve MSRF. Education (energy conservation and fatigue management) and exercise had supporting evidence for reducing MSRF but mixed conclusions gathered from subtypes of exercise. Reviews considering psycho-behavioural interventions (CBT and mindfulness) had limited

information considering effectiveness. Finally, a single intervention combining physical and cognitive strategies showed more promising results.

**Conclusion:** Further research into Pharmacological interventions for MSRF is required notably considering the potential of Modafinil. Yoga and energy conservation/fatigue management programs had strong evidence supporting use in management of MSRF. Due to the dissimilar interventions used in combined training the subtype of exercise cannot be recommended. Future research into Amantadine, psycho-behavioural interventions is vital to justify the current National Institute for Health and Care Excellence guidelines. The methodological quality of studies inhibited the ability of this review to provide other recommendations.

**Mooventhan A, Nivethitha L. Evidence based effects of yoga practice on various health related problems of elderly people: A review. *J Bodyw Mov Ther.* 2017; 21(4):1028-32p.**

**Abstract:**

More than 50% of the elderly above 60 years of age suffer from chronic medical conditions, the prevalence of which increases with age. Though Yoga has been reported as an effective modality in improving various physical and psychological aspects of elderly populations, a comprehensive review of Yoga and its effects on various health related problems of elderly populations has not yet been reported. Hence, we performed PubMed/Medline search to review relevant articles, using keyword "yoga and elderly". Relevant articles published since inception till 6th October 2016 were included for the review. Based on the available scientific literature, this review suggests that the regular practice of Yoga can be considered as an effective intervention in improving physical (reduces heart rate, blood pressure, blood glucose, oxidative damage, fatigue, weakness, fear of fall, and improve heart rate variability, baroreflex sensitivity, insulin sensitivity, physical functions, mobility, flexibility, and urinary incontinence), mental (reduces depression, anxiety), emotional (reduces anger, stress, tension and improve self-efficacy), social (improve life satisfaction), and vital (improved vitality) planes of elderly individuals, offering a better quality of sleep and quality of life.

**Pal R, Gupta N. Yogic practices on oxidative stress and of antioxidant level: A systematic review of randomized controlled trials. *J Complement Integr Med.* 2017; pii: /j/jcim.ahead-of-print/jcim-2017-0079/jcim-2017-0079.xml. doi: 10.1515/jcim-2017-0079.**

**Abstract:**

Background Many clinical trials have evaluated the oxidative stress reduction and enhancement of antioxidant status following yogic practices, but a review has not been reported earlier. Present study is designed to systematically review the effect of yogic practices on oxidative stress and antioxidant status. Content Using the MEDLINE, EMBASE SCOPEDMED, and Indian database electronic searches were performed through August 2016 using the keywords yoga AND oxidative stress OR antioxidant which yielded 97 studies. Selections were made to include only experimental studies written in English, published in peer-reviewed journals and

investigating the effects of regular yogic practices on oxidative stress and antioxidant status in these studies. Summary and outlook Search yielded a total of 97 trials, 11 met rigorous criteria for final systematic review. Healthy population showed overall enhancement of antioxidant status and reduced oxidative stress following yogic practices. Diabetic patients showed increased glutathione, vitamin C content and superoxide dismutase activity and decreased malondialdehyde content following yogic practices. Prediabetic and hypertensive patients showed reduced malondialdehyde content following yogic practices. Renal disease patients showed decreased protein oxidation, and increased superoxide dismutase activity following yogic practices. Regular yogic practices can improve antioxidants and reduce oxidative stress in healthy, diabetic, prediabetic, hypertensive and renal disease patients. Studies on other disease population have rarely been reported and studies are very few to conclude strongly.

**Panebianco M, Sridharan K, Ramaratnam S. Yoga for epilepsy. *Cochrane Database Syst Rev.* 2017; Oct 5;10:CD001524.**

**Abstract:**

**Background:** This is an updated version of the original Cochrane Review published in the Cochrane Library, Issue 5, 2015. Yoga may induce relaxation and stress reduction, and influence the electroencephalogram and the autonomic nervous system, thereby controlling seizures. Yoga would be an attractive therapeutic option for epilepsy if proved effective.

**Objectives:** To assess whether people with epilepsy treated with yoga:(a) have a greater probability of becoming seizure free;(b) have a significant reduction in the frequency or duration of seizures, or both; and(c) have a better quality of life.

**Search methods:** For this update, we searched the Cochrane Epilepsy Group Specialized Register (3 January 2017), the Cochrane Central Register of Controlled Trials (CENTRAL; 2016, Issue 12) in the Cochrane Library (searched 3 January 2017), MEDLINE (Ovid, 1946 to 3 January 2017), SCOPUS (1823 to 3 January 2017), ClinicalTrials.gov (searched 3 January 2017), the World Health Organization (WHO) International Clinical Trials Registry Platform (ICTRP) (searched 3 January 2017), and also registries of the Yoga Biomedical Trust and the Research Council for Complementary Medicine. In addition, we searched the references of all the identified studies. No language restrictions were imposed.

**Selection criteria:** The following study designs were eligible for inclusion: randomised controlled trials (RCT) of treatment of epilepsy with yoga. The studies could be double-, single- or unblinded. Eligible participants were adults with uncontrolled epilepsy comparing yoga with no treatment or different behavioural treatments.

**Data collection and analysis:** Two review authors independently assessed the trials for inclusion and extracted data. The following outcomes were assessed: (a) percentage of people rendered seizure free; (b) seizure frequency and duration; (c) quality of life. Analyses were on an intention-to-treat basis. Odds ratio (OR) with 95% confidence intervals (95% CIs) were estimated for the outcomes.

**Main results:** We did not identify any new studies for this update, therefore the results are unchanged. For the previous version of the review, the authors found two unblinded trials in people with refractory epilepsy. In total these two studies included 50 people (18 treated with yoga and 32 to control interventions). Antiepileptic drugs were continued in all the participants. Baseline phase lasted three months in both studies and treatment phase from five weeks to six months in the two trials. Randomisation was by roll of a die in one study and using a computerised randomisation table in the other one but neither study provided details of concealment of allocation and were rated as unclear risk of bias. Overall, the two studies were rated as low risk of bias (all participants were included in the analysis; all expected and pre-expected outcomes were reported; no other sources of bias). The overall ORs with 95% CI were as follows: (i) seizure free for six months - for yoga versus sham yoga the OR was 14.54 (95% CI 0.67 to 316.69) and for yoga versus 'no treatment' group it was 17.31 (95% CI 0.80 to 373.45); for Acceptance and Commitment Therapy (ACT) versus yoga the OR was 1.00 (95% CI 0.16 to 6.42); (ii) reduction in seizure frequency - the mean difference between yoga versus sham yoga group was -2.10 (95% CI -3.15 to -1.05) and for yoga versus 'no treatment' group it was -1.10 (95% CI -1.80 to -0.40); (iii) more than 50% reduction in seizure frequency - for yoga versus sham yoga group, OR was 81.00 (95% CI 4.36 to 1504.46) and for the yoga versus 'no treatment' group it was 158.33 (95% CI 5.78 to 4335.63); ACT versus yoga OR was 0.78 (95% CI 0.04 to 14.75); (iv) more than 50% reduction in seizure duration - for yoga versus sham yoga group OR was 45.00 (95% CI 2.01 to 1006.75) and for yoga versus 'no treatment' group it was 53.57 (95% CI 2.42 to 1187.26); ACT versus yoga OR was 0.67 (95% CI 0.10 to 4.35). In addition in Panjwani 1996 the authors reported that the one-way analysis of variance revealed no statistically significant differences between the three groups. A P-Lambda test taking into account the P values between the three groups also indicated that the duration of epilepsy in the three groups was not comparable. No data were available regarding quality of life. In Lundgren 2008 the authors reported that there was no significant difference between the yoga and ACT groups in seizure-free rates, 50% or greater reduction in seizure frequency or seizure duration at one-year follow-up. The yoga group showed significant improvement in their quality of life according to the Satisfaction With Life Scale (SWLS) ( $P < 0.05$ ), while the ACT group had significant improvement in the World Health Organization Quality of Life-BREF (WHOQOL-BREF) scale ( $P < 0.01$ ). Overall, we assessed the quality of evidence as low; no reliable conclusions can be drawn at present regarding the efficacy of yoga as a treatment for epilepsy.

**Authors' conclusions:** A study of 50 subjects with epilepsy from two trials reveals a possible beneficial effect in control of seizures. Results of the overall efficacy analysis show that yoga treatment was better when compared with no intervention or interventions other than yoga (postural exercises mimicking yoga). There was no difference between yoga and Acceptance and Commitment Therapy. However no reliable conclusions can be drawn regarding the efficacy of yoga as a treatment for uncontrolled epilepsy, in view of methodological deficiencies such as limited number of studies, limited number of participants randomised to yoga, lack of blinding and limited data on quality-of-life outcome. Physician blinding would normally be taken to be the person delivering the intervention, whereas we think the 'physician' would

in fact be the outcome assessor (who could be blinded), so that would be a reduction in detection bias rather than performance bias. In addition, evidence to inform outcomes is limited and of low quality. Further high-quality research is needed to fully evaluate the efficacy of yoga for refractory epilepsy. Since we did not find any new studies, our conclusions remain unchanged.

**Schumann D, Langhorst J, Dobos G et al. Randomised clinical trial: Yoga vs a low-FODMAP diet in patients with irritable bowel syndrome. *Aliment Pharmacol Ther.* 2017; doi: 10.1111/apt.14400.**

**Abstract:**

**Background:** Irritable bowel syndrome is the most frequent gastrointestinal disorder. It is assumed that lifestyle interventions might be a rational treatment approach.

**Aim:** To examine the effect of a yoga-based intervention vs a low-FODMAP diet on patients with irritable bowel syndrome.

**Methods:** Fifty-nine patients with irritable bowel syndrome undertook a single-blind, randomised controlled trial involving yoga or a low-FODMAP diet for 12 weeks. Patients in the yoga group received two sessions weekly, while patients in the low-FODMAP group received a total of three sessions of nutritional counselling. The primary outcome was a change in gastrointestinal symptoms (IBS-SSS). Secondary outcomes explored changes in quality of life (IBS-QOL), health (SF-36), perceived stress (CPSS, PSQ), body awareness (BAQ), body responsiveness (BRS) and safety of the interventions. Outcomes were examined in weeks 12 and 24 by assessors "blinded" to patients' group allocation.

**Results:** No statistically significant difference was found between the intervention groups, with regard to IBS-SSS score, at either 12 ( $\Delta = 31.80$ ; 95%CI = -11.90, 75.50;  $P = .151$ ) or 24 weeks ( $\Delta = 33.41$ ; 95%CI = -4.21, 71.04;  $P = .081$ ). Within-group comparisons showed statistically significant effects for yoga and low-FODMAP diet at both 12 and 24 weeks (all  $P < .001$ ). Comparable within-group effects occurred for the other outcomes. One patient in each intervention group experienced serious adverse events ( $P = 1.00$ ) and another, also in each group, experienced nonserious adverse events ( $P = 1.00$ ).

**Conclusions:** Patients with irritable bowel syndrome might benefit from yoga and a low-FODMAP diet, as both groups showed a reduction in gastrointestinal symptoms. More research on the underlying mechanisms of both interventions is warranted, as well as exploration of potential benefits from their combined use.

**Wu R, Liu Y, Wang L et al. Activity patterns elicited by airflow in the olfactory bulb and their possible functions. *J Neurosci.* 2017; Oct 2. pii: 2210-17. doi: 10.1523/JNEUROSCI.2210-17.2017.**

**Abstract:**

Olfactory sensory neurons (OSNs) can sense both odorants and airflows. In the olfactory bulb (OB), the coding of odor information is well studied, but the coding of



mechanical stimulation is rarely investigated. Unlike odor sensing, the functions of airflow sensing of OSNs are also largely unknown. Here, the activity patterns elicited by mechanical airflow in male rat OBs were mapped using fMRI and correlated with local field potential recordings. In an attempt to reveal possible functions of airflow sensing, the relationship between airflow patterns and physiological parameters was also examined. We found that: a) the activity pattern in the OB evoked by airflow in the nasal cavity was more broadly distributed, compared with those evoked by odors; b) the pattern intensity increases with total airflow, while the pattern topography is rather similar; and c) the heart rate, spontaneous respiratory rate, and EEG power in  $\beta$ -band were reduced under regular mechanical airflow, compared with no airflow through the nasal cavity. The mapping results provide evidence that the signals elicited by mechanical airflow in OSNs are transmitted to the OB, and that the OB has the potential to code and process mechanical information. Our functional data indicate that airflow rhythm in the olfactory system is able to regulate the physiological and brain states, providing an explanation for the effects of breath controlling in meditation, yoga, and Taoism practices.

**Significant statement:** The studies about presentation of odor information in the olfactory bulb is comprehensive, while that of breathing features is rare. Here we investigated the global activity patterns in the rat olfactory bulb elicited by airflow in the nasal cavity using BOLD-fMRI for the first time and found that the activity pattern elicited by airflow is broadly distributed, with increasing pattern intensity and similar topography under increasing total airflow. Further, heart rate, spontaneous respiratory rate in the lung, and EEG power in  $\beta$ -band decreased with regular airflow in the nasal cavity. Our study provides knowledge of the airflow map in the olfactory bulb *in vivo*, and evidence for the possible functions of olfactory sensory neuron's mechanosensitivity.

**Yonglitthipagon P, Muansiangsai S, Wongkhumngern W et al. Effect of yoga on the menstrual pain, physical fitness, and quality of life of young women with primary dysmenorrhea. *J Bodyw Mov Ther.* 2017; 21(4): 840-46p.**

**Abstract:**

The aim of the present study was to investigate effect of specially designed yoga program on the menstrual pain, physical fitness, and quality of life (QOL) of non-athlete women with primary dysmenorrhea (PD) aged 18-22 years. Thirty-four volunteers were randomly assigned into control and yoga groups. Menstrual pain, physical fitness, and QOL were evaluated at baseline and at the end of the 12-week study period. The yoga group was asked to practice yoga for 30 min per day, twice a week, for 12 weeks at home, while the control group did not receive any form of exercise over the study period. There were significant improve in menstrual pain, physical fitness, and QOL in the yoga group more than the control group. Therefore, this specially designed yoga program may be a possible complementary treatment for PD.