

# ***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

**Beer AM. Homeopathic remedies as an alternative to synthetic medicines? MMW Fortschr Med. 2018 Apr;160(6):60-62p.**

**De Nonneville A, Gonçalves A. Homeopathy in cancer patients: What does the "best" evidence tell us? Bull Cancer. 2018; Apr;105(4):426-430.**

## **Abstract:**

Homeopathic medicines are used by many patients with cancer, usually alongside conventional treatment. A recent report by the European Academies' Science Advisory Council concluded that "that there are no robust and reproducible evidence that homeopathy is effective". This literature review aims to make the analysis of published controlled randomized trials involving homeopathic treatment in the field of oncology.

**Hawke K, van Driel ML, Buffington BJ et al. Homeopathic medicinal products for preventing and treating acute respiratory tract infections in children. Cochrane Database Syst Rev. 2018 Apr 9;4:CD005974.**

## **Abstract:**

**Background:** Acute respiratory tract infections (ARTIs) are common and may lead to complications. Most children experience between three and six ARTIs each year. Although these infections are self limiting, the symptoms can be distressing. Many treatments are used to control symptoms and shorten the duration of illness. They often have minimal benefit and may lead to adverse effects. Oral homeopathic medicinal products could play a role in the treatment of ARTIs for children if evidence for effectiveness is established.

**Objectives:** To assess the effectiveness and safety of oral homeopathic medicinal products compared with placebo or conventional therapy to prevent and treat acute respiratory tract infections in children.

**Search Methods:** We searched CENTRAL (2017, Issue 11), which contains the Cochrane Acute Respiratory Infections Specialised Register, MEDLINE (1946 to 27 November 2017), Embase (2010 to 27 November 2017), CINAHL (1981 to 27 November 2017), AMED (1985 to December 2014), CAMbase (searched 29 March 2018), British Homeopathic Library (searched 26 June 2013 - no longer operating). We also searched the WHO ICTRP and ClinicalTrials.gov trials registers (29 March 2018), checked references, and contacted study authors to identify additional studies.

**Selection Criteria:** Double-blind, randomised controlled trials (RCTs) or double-blind cluster-RCTs comparing oral homeopathy medicinal products with identical placebo or self selected conventional treatments to prevent or treat ARTIs in children aged 0 to 16 years.

**Data Collection And Analysis:** We used standard methodological procedures expected by Cochrane.

**Main Results:** We included eight RCTs of 1562 children receiving oral homeopathic medicinal products or a control treatment (placebo or conventional treatment) for

upper respiratory tract infections (URTIs). Four treatment studies examined the effect on recovery from URTIs, and four studies investigated the effect on preventing URTIs after one to three months of treatment and followed up for the remainder of the year. Two treatment and two prevention studies involved homeopaths individualising treatment for children. The other studies used predetermined, non-individualised treatments. All studies involved highly diluted homeopathic medicinal products. We found several key limitations to the included studies, in particular methodological inconsistencies and high attrition rates, failure to conduct intention-to-treat analysis, selective reporting, and apparent protocol deviations. We assessed three studies as at high risk of bias in at least one domain, and many had additional domains with unclear risk of bias. Three studies received funding from homeopathy manufacturers; one reported support from a non-government organisation; two received government support; one was cosponsored by a university; and one did not report funding support. Methodological inconsistencies and significant clinical and statistical heterogeneity precluded robust quantitative meta-analysis. Only four outcomes were common to more than one study and could be combined for analysis. Odds ratios (OR) were generally small with wide confidence intervals (CI), and the contributing studies found conflicting effects, so there was little certainty that the efficacy of the intervention could be ascertained. All studies assessed as at low risk of bias showed no benefit from oral homeopathic medicinal products; trials at uncertain and high risk of bias reported beneficial effects. We found low-quality evidence that non-individualised homeopathic medicinal products confer little preventive effect on ARTIs (OR 1.14, 95% CI 0.83 to 1.57). We found low-quality evidence from two individualised prevention studies that homeopathy has little impact on the need for antibiotic usage (N = 369) (OR 0.79, 95% CI 0.35 to 1.76). We also assessed adverse events, hospitalisation rates and length of stay, days off school (or work for parents), and quality of life, but were not able to pool data from any of these secondary outcomes. There is insufficient evidence from two pooled individualised treatment studies (N = 155) to determine the effect of homeopathy on short-term cure (OR 1.31, 95% CI 0.09 to 19.54; very low-quality evidence) and long-term cure rates (OR 1.01, 95% CI 0.10 to 9.96; very low-quality evidence). Adverse events were reported inconsistently; however, serious events were not reported. One study found an increase in the occurrence of non-severe adverse events in the treatment group.

**Authors' Conclusions:** Pooling of two prevention and two treatment studies did not show any benefit of homeopathic medicinal products compared to placebo on recurrence of ARTI or cure rates in children. We found no evidence to support the efficacy of homeopathic medicinal products for ARTIs in children. Adverse events were poorly reported, so conclusions about safety could not be drawn.

**Heating up: Homeopathy debate turns 'nasty'. Vet Rec. 2018 Apr 28;182(17):470-471**

**Iacobucci G. Poorly performing general practices are more likely to prescribe homeopathy. BMJ. 2018; Apr 19;361:k1754. doi: 10.1136/bmj.k1754.**

**Keller D, Sundrum A. Comparative effectiveness of individualised homeopathy and antibiotics in the treatment of bovine clinical mastitis: randomised controlled trial. Vet Rec. 2018 Apr 7;182(14):407.**

**Abstract:**

Based on the widespread use of homeopathy in dairy farm practice when treating mastitis, a blind randomised controlled trial (RCT) was conducted to assess the effectiveness of homeopathic treatment of clinical mastitis on four dairy farms. The study considered specific guidelines for RCTs as well as the basic principles of individualised homeopathy and involved 180 lactating dairy cows. Evaluation of cure rates was based on clinical investigation of the udder and on laboratory analysis of milk samples. In culture-positive cases, the antibiotic treatment provided suboptimal bacteriological cures (60-81 per cent) but was more effective than individualised homeopathy (33-43 per cent) whose effects appeared little different to those of placebos (45-47 per cent) ( $P \leq 0.05$ ). On the cytological cure level, all three treatment methods were similarly ineffective: antibiotic being 2-21 per cent, individualised homeopathy 0-8 per cent and placebo 3-13 per cent ( $P \leq 0.05$ ;  $P = 0.13$ ). Antibiotics, individualised homeopathy and placebo had similar effects on bacteriological and cytological cure in cases of culture-negative milk samples ( $P > 0.4$ ) and *Escherichia coli* infections ( $P = 1.0$ ). The study results implied that the effectiveness of individualised homeopathy does not go beyond a placebo effect and successful treatment is highly dependent on the specific mastitis pathogen. Thus, antimicrobial or alternative remedies used should be based on the bacterial culture of the milk sample.

**Kwakye GF, Jimenez J, Jimenez JA et al. Atropa belladonna neurotoxicity: Implications to neurological disorders. *Food Chem Toxicol.* 2018; Apr 10. pii: S0278-6915(18)30224-2.**

**Abstract:**

*Atropa belladonna*, commonly known as belladonna or deadly nightshade, ranks among one of the most poisonous plants in Europe and other parts of the world. The plant contains tropane alkaloids, including atropine, scopolamine, and hyoscyamine, which are used as anticholinergics in Food and Drug Administration (FDA) approved drugs and homeopathic remedies. These alkaloids can be very toxic at high dose. The FDA has recently reported that Hyland's baby teething tablets contain inconsistent amounts of *Atropa belladonna* that may have adverse effects on the nervous system and cause death in children, thus recalled the product in 2017. A greater understanding of the neurotoxicity of *Atropa belladonna* and its modification of genetic polymorphisms in the nervous system is critical in order to develop better treatment strategies, therapies, regulations, education of at-risk populations, and a more cohesive paradigm for future research. This review offers an integrated view of the homeopathy and neurotoxicity of *Atropa belladonna* in children, adults and animal models, as well as its implications to neurological disorders. Particular attention is dedicated to the pharmaco/toxicodynamics, pharmaco/toxicokinetics, pathophysiology, epidemiological cases, and animal studies associated with the effects of *Atropa belladonna* on the nervous system. Additionally, we discuss the influence of active tropane alkaloids in *Atropa belladonna* and other similar plants on FDA-approved therapeutic drugs for treatment of neurological disorders.

**Raak C, Scharbrodt W, Berger B et al. Hypericum perforatum to improve post-operative Pain Outcome after monosegmental Spinal microdiscectomy (HYPOS): A study protocol for a randomised, double-blind, placebo-controlled trial. *Trials.* 2018 Apr 25;19(1):253**

**Abstract:**

Background: Spinal disc herniation is a frequently occurring degenerative disease of the spine. Many patients undergoing surgery suffer from radicular pain, known as memory pain, beginning from the third post-operative day. This results in the prescription of high-dose opioid medications. In homeopathy, *Hypericum perforatum* is known as a remedy for unbearable, shooting or jabbing pain especially when neural damage is involved. Reduction of pain after application of *H. perforatum* has been observed in previous studies. This study is aimed to investigate whether homeopathic *H. perforatum* in a potentisation of C200 leads to the reduction of post-operative pain and a decrease of pain medication compared to placebo.

Methods/design: This is a monocentric, double-blind, randomised placebo-controlled trial conducted at the Department of Neurosurgery at the Community Hospital Herdecke, Germany. One hundred study participants are being recruited from inpatients undergoing elective, monosegmental, lumbar microdiscectomy surgery. Patients are randomly allocated to receive homeopathic treatment or placebo in addition to usual pain management after surgery. The primary clinical outcome is pain reduction after 3 days of inpatient care as measured by pain reduction of subjective pain on a 100-mm Visual Analogue Scale (VAS) at the third post-operative day. Statistical analysis will be carried out by means of a covariance model with adjustment for baseline values and patient expectation for all randomised patients.

Discussion: This study is the first trial of classical homeopathy that will evaluate the efficacy of homeopathic *H. perforatum* after monosegmental spinal microdiscectomy. We intend to clarify the potential of homeopathic *H. perforatum* to reduce surgery-associated pain.

**Thomas G. National Medical Commission - More of the same. Indian J Med Ethics. 2018 Apr 16;(-):1-2.**

**Abstract:**

The Cabinet chaired by the Prime Minister has accepted six amendments to the National Medical Commission Bill suggested by the Department-related Parliamentary Standing Committee (1). These amendments are: the proposed National Licentiate Examination has been replaced by a countrywide final MBBS examination called the National Exit Test (NEXT); the bridge course to train practitioners from AYUSH (Ayurveda, Unani, Siddha and Homeopathy) in modern medicine has been removed, and it has been left to individual states to take a decision about this; the percentage of seats in private medical training institutions under fee regulation has been increased from 40% to 50%; the number of nominees from the states and Union territories who are members of the Commission has been increased from three to six; the penalties for non-compliance with educational norms for colleges has been modified; and the punishment for practising modern medicine without qualification has been made imprisonment up to one year and a fine of Rs 5 lakh.

**Waters A. Homeopathy - need it get so personal? Vet Rec. 2018 Apr 28;182(17):469.**

**Whitehead M, Jessop M, Gough A et al. Support for Defra's position on homeopathy. Vet Rec. 2018 Apr 28;182(17):489-490.**

## AYURVEDA

**Bhat OM, Kumar PU, Rao KR et al. Terminalia arjuna prevents Interleukin-18-induced atherosclerosis via modulation of NF- $\kappa$ B/PPAR- $\gamma$ -mediated pathway in Apo E<sup>-/-</sup> mice. Inflammopharmacology. 2018 Apr;26(2):583-598.**

### **Abstract:**

**Aim of the study:** Terminalia arjuna is a medicinal plant well known as a cardiogenic in Ayurvedic system of medicine. We hypothesized that aqueous stem bark extract of T. arjuna (TAE) may inhibit IL-18-induced atherosclerosis via NF- $\kappa$ B/PPAR- $\gamma$ -mediated pathway in Apo E<sup>-/-</sup> mice.

**Materials and methods:** 12-week-old, male Apo E<sup>-/-</sup> mice divided into four groups (n = 6/group) fed with normal chow-diet were employed: GP I: phosphate buffer saline (PBS) (2 month); GP II: rIL-18 (1 month) followed by PBS (1 month); GP III: rIL-18 (1 month) followed by TAE (1 month); GP IV: rIL-18 (1 month) followed by atorvastatin (1 month).

**Results:** IL-18 treatment induced a significant increase (p < 0.001) in pro-inflammatory marker (IL-18) (170  $\pm$  9.16 vs. 1178.66  $\pm$  8.08, pg/ml), and downregulated cholesterol efflux gene (PPAR- $\gamma$ ) by ~0.6-fold vs. 1.00 in IL-18-treated mice as compared to the control animals, respectively. TAE treatment to both groups caused a significant reduction in IL-18 to 281.66  $\pm$  9.60 vs. 1178.66  $\pm$  8.08 (pg/ml), upregulated cholesterol efflux gene by ~1.5- vs. 0.6-fold in TAE-treated group, decreased atherogenic lipids, and percentage atherosclerotic lesion area, demonstrating comparable effects with atorvastatin.

**Conclusion:** Our data demonstrate that TAE protects against IL-18-induced atherosclerosis via NF- $\kappa$ B/PPAR- $\gamma$ -mediated pathway.

**Agawane SB, Gupta VS, Kulkarni MJ et al. Patho-physiological evaluation of Duranta erecta for the treatment of urolithiasis. J Ayurveda Integr Med. 2018 Apr 7. pii: S0975-9476(17)30247-4.**

### **Abstract:**

**Background:** Urolithiasis is the third common disorder of the urinary system affecting 10-15% of the general population. In recent years, search for new antilithiatic drugs from natural sources has assumed greater importance.

**Objectives:** This study was performed to investigate the anti-urolithiatic activity of methanolic extract of Duranta erecta leaves by in vitro and in vivo analysis.

**Materials and methods:** The study was designed to determine presence of phytochemicals in D. erecta, its yield in percentage, antioxidant activity against 2, 2-diphenyl-1-picrylhydrazyl (DPPH) and anti-microbial property against few bacteria. In vitro analysis was carried out study anti-urolithiatic property of D. erecta by nucleation assay and synthetic urine assay for inhibition of calcium oxalate and calcium oxalate monohydrate crystals formation. An in vivo experiment was performed on Wistar rats for confirmation of anti-urolithiatic property of D. erecta in animal model.

**Results:** *D. erecta* has the presence of primary and secondary metabolites like glycoside, saponins, sterols, flavonoids, phenols, tannins, alkaloids, carbohydrates and proteins. Methanolic extract of *D. erecta* gave a very good yield (60%). *D. erecta* proved its antioxidant potential by 93.51% inhibition of DPPH radical at a concentration of 1000 µg/mL where ascorbic showed 94.71% of DPPH radical at the same concentration. In vitro tests like nucleation assay and synthetic urine assay showed that *D. erecta* inhibits formation of calcium oxalate and calcium oxalate monohydrate crystals. It also showed the anti-microbial property by formation of zone of inhibition against few bacteria. An in vivo experiment on Wistar rat animal model confirmed the anti-urolithiatic property of *D. erecta* L. leaves extract.

**Conclusions:** Based on the results, we reported that *D. erecta* may treat calcium oxalate crystal deposition in the kidney by preventing hyperoxaluria-induced peroxidative damage to the renal tubular membrane surface (lipid peroxidation). It has anti-microbial potential so it may also inhibit the secondary bacterial infection in kidney. Based on the data, it can be concluded that this herb can be used as a potential anti-urolithiasis agent for kidney stone removal.

**Al Akeel R, Mateen A, Alharbi KK et al. Purification and MIC analysis of antimicrobial proteins from *Cucumis sativus* L. seeds. BMC Complement Altern Med. 2018 Apr 3;18(1):121.**

**Abstract:**

**Background:** *Cucumis sativus* L. (cucumber), from the family Cucurbitaceae, is a therapeutic plant with various pharmacological benefits, broadly utilized as a part of complementary medicine (e.g., Unani, Ayurveda, Siddha, and Traditional Chinese). In light of past research discoveries, this plant had been chosen to consider its potential antibacterial action.

**Methods:** Extracts were purified by dialysis and ion exchange chromatography strategy and then assayed for antibacterial activity against four standard pathogenic bacterial strains known to cause foodborne infections and spoilage of food and herbal drugs. Antimicrobial peptides were extracted from seeds using a sodium phosphate citrate (pH 7.2) - CTAB cradle (pH 6.0).

**Results:** The highest protein concentration was seen with elute fractions 1 and 3 (370 mg/mL) compared with elute fractions 2 and 4 (340 mg/mL). Among the bacteria utilized, *E. coli* was clearly the most sensitive out of selected four strains.

**Conclusion:** Our results suggest that *Cucumis sativus* L seeds extracts have significant potentials as new antimicrobial agents.

**Alam F, Khan GN, Asad MHHB. *Psoralea corylifolia* L: Ethnobotanical, biological, and chemical aspects: A review. Phytother Res. 2018 Apr;32(4):597-615.**

**Abstract:**

*Psoralea corylifolia* L. (Leguminosae) is a well-known traditional medicinal plant used from ancient times for treatment of various ailments. It is widely distributed and an important part of therapeutics in Ayurveda and in Chinese medicines. The aim of this review is to present comprehensive and most up to date report on its ethnobotanical, ethnopharmacological, clinical, phytochemical, and side effects. Studies on the ethnobotanical, ethnopharmacological, clinical, phytochemical, and side effects of

*P. corylifolia* were published until year 2017 and were searched using various scientific databases. The scientific literature searched revealed that these plant species has been extensively investigated in vivo and in vitro for various biological and phytochemical studies. It has cardiogenic, vasodilator, pigment, antitumor, antibacterial, cytotoxic, and anti-helminthic properties and locally used for alopecia, inflammation, leukoderma, leprosy, psoriasis, and eczema. So far, about a hundred bioactive compounds have been isolated from seeds and fruits, and most important compounds identified belongs to coumarins, flavonoids, and meroterpenes groups. This review article summarized the most updated scientific literature on bioactive phytochemical and biological activities of *P. corylifolia*. This article will be a useful addition to providing information for future research, and more standard clinical trials are needed for the plant to be used as therapeutic agent.

**Cheruvu HS, Yadav NK, Valicherla GR et al. LC-MS/MS method for the simultaneous quantification of luteolin, wedelolactone and apigenin in mice plasma using hansen solubility parameters for liquid-liquid extraction: Application to pharmacokinetics of Eclipta alba chloroform fraction. J Chromatogr B Analyt Technol Biomed Life Sci. 2018 Apr 1;1081-1082:76-86**

**Abstract:**

*Eclipta alba* (Bhringraj) in ayurveda has been widely used as a traditional medicine for its multi-therapeutic properties for ages. Luteolin (LTL), wedelolactone (WDL) and apigenin (APG) are the three main bioactive phytochemicals present in *Eclipta alba* extract. However there was a lack of sensitive bioanalytical method for the pharmacokinetics of these free compounds in plasma which majorly contributes for their activities after oral administration of *Eclipta alba*. The present study aims to develop a sensitive, rapid and reliable liquid chromatography tandem mass spectrometry (LC-MS/MS) method for the simultaneous estimation of mice plasma concentrations of LTL, WDL and APG using quercetin as an internal standard for the pharmacokinetic analysis. Analytes were separated on Phenomenex Luna C18 (150 × 4.6 mm, 3.0 μm) column with mobile phase containing methanol: acetonitrile (90: 10, v/v) and 0.1% formic acid in 10 mM ammonium formate buffer in the ratio of 70: 30 (v/v) in isocratic mode. Liquid-liquid extraction was optimized using Hansen solubility parameters and diethyl ether finalized as an extraction solvent for the recovery ranging from 61 to 76% for all analytes in mice plasma. The validated method has an accuracy and precision over the linearity range of 0.1-200 ng/mL with a correlation coefficient ( $r^2$ ) of  $\geq 0.997$ . The intra and inter-day assay accuracy was between 98.17 and 107% and 95.83-107.89% respectively and the intra and inter day assay precision ranged from 0.37-6.05% and 1.85-10.76%, respectively for all the analytes. This validated method can be used for future clinical investigation studies of *Eclipta alba* extracts.

**Hara K, Someya T, Sano K et al. Antioxidant activities of traditional plants in Sri Lanka by DPPH free radical-scavenging assay. Data Brief. 2018 Feb 10;17:870-875**

**Abstract:**

This article describes free radical-scavenging activities of extracts of several plants harvested in Sri Lanka through the 1,1-diphenyl-2-picrylhydrazyl (DPPH) assay. These plants have traditionally been used in the indigenous systems of medicine in Sri Lanka, such as Ayurveda, as described below. (English name, "local name in Sri Lanka," (scientific name)). bougainvillea plant, "bougainvillea," (*Bougainvillea grabba*),

purple fruited pea eggplant, "welthibbatu," (*Solanum trilobatum*) [1], country borage plant, "kapparawalliya," (*Plectranthus amboinicus*) [2], malabar nut plant, "adhatoda," (*Justicia adhatoda*) [3], long pepper plant, "thippili," (*Piper longum*) [4], holy basil plant, "maduruthala," (*Ocimum tenuiflorum*) [5], air plant, "akkapana," (*Kalanchoe pinnata*) [6], plumed cockscomb plant, "kiri-henda," (*Celosia argentea*) [7], neem plant, "kohomba," (*Azadirachta indica*) [8], balipoovu plant, "polpala," (*Aerva lanata*) [9], balloon-vine plant, "wel penera," (*Cardiospermum halicacabum*) [10], emblic myrobalan plant, "nelli," (*Phyllanthus emblica*) [11], indian copperleaf plant, "kuppameniya," (*Acalypha indica*) [12], spreading hogweed plant, "pita sudu sarana," (*Boerhavia diffusa*) [13], curry leaf plant, "karapincha," (*Murraya koenigii*) [14], indian pennywort plant, "gotukola," (*Centera asiatica*) [15], jewish plum plant, "ambarella," (*Spondias dulcis*) [16].

**Jacob J, Babu BM, Mohan MC et al. Inhibition of proinflammatory pathways by bioactive fraction of *Tinospora cordifolia*. Inflammopharmacology. 2018 Apr;26(2):531-538**

**Abstract:**

*Tinospora cordifolia* (Willd.) Miers ex Hook. f. & Thomson, a known immunomodulatory agent extensively used in ayurveda, has not been effectively validated for the mechanisms involved in immunomodulation and the identification of the active principles. The bioactive fraction of *T. cordifolia* (TBF) in methanol was used for nitric oxide (NO) radical scavenging activity, lipoxygenase (LOX) and cyclooxygenase (COX) dual inhibition and cytotoxicity studies. Production of the proinflammatory cytokines, tumour necrosis factor- $\alpha$  (TNF- $\alpha$ ) and interleukin-1 $\beta$  (IL-1 $\beta$ ) in dendritic cell (DC) suspensions treated with lipopolysaccharide (LPS) was also studied. The bioactive principles involved were identified with ultra-performance liquid chromatography-quadrupole-time of flight mass spectrometric (UPLC-Q-ToF MS/MS) system. The results indicate significantly higher potency of TBF as compared to positive standards for LOX/COX inhibition with moderate NO radical scavenging activity and the fraction was also found to be non-cytotoxic to monocyte cells. A significant inhibition was also observed in TNF- $\alpha$  and IL-1 $\beta$  production in LPS-treated DC suspensions as compared to standards, rolipram and dexamethasone, respectively. 11 compounds were identified from TBF by MS/MS system. The potent inhibition of LOX and COX enzymes with moderate NO scavenging was indicative of a free radical scavenging-independent mechanism of immunomodulation. Further investigations into the active principles identified would result in the development of lead candidates with potent therapeutic implications.

**Kumar R, Arora R, Agarwal A et al. Protective effect of *Terminalia chebula* against seizures, seizure-induced cognitive impairment and oxidative stress in experimental models of seizures in rats. J Ethnopharmacol. 2018 Apr 6;215:124-131**

**Abstract:**

**Ethnopharmacological Relevance:** *Terminalia chebula* (TC) has been traditionally used in the Ayurvedic system of medicine primarily for gastrointestinal disorders. Its fruit extract has also been used to treat epilepsy and other CNS disorders.

**Aim of the study:** To evaluate the effect of hydroalcoholic fruit extract of *Terminalia chebula* (HETC) on experimental models of seizures, seizure-induced cognitive impairment and oxidative stress in rats.

**Materials and methods:** In vitro antioxidant activity of HETC was evaluated by using ABTS, NO and DPPH radical scavenging assay. For in-vivo study, seizures were induced in Wistar rats (200-225g) by pentylenetetrazole (PTZ) and maximal-electroshock. (MES). The anticonvulsant effect of the HETC (250, 500, and 1000mg/kg, orally) was evaluated in seizure models. The therapeutic and sub-therapeutic dose of valproate and phenytoin were also assayed. The potential effect of co-administration of HETC (500mg/kg) with sub-therapeutic dose of valproate and phenytoin were also evaluated in PTZ and MES seizures model respectively. Effect on cognition was assessed using elevated plus maze (EPM) and passive avoidance test (PA). The in- vivo oxidative stress parameters (malondialdehyde and glutathione) were assessed in the cerebral cortex and hippocampus part of rat brain.

**Results:** The IC<sub>50</sub> value of HETC in in vitro antioxidant assays i.e. ABTS, DPPH and NO radical scavenging assay was found to be 2.27µg/ml, 6.04µg/ml and 4.37µg/ml respectively. In experimental study, PTZ and MES treated groups exhibited 100% seizures with increased oxidative stress ( $p < 0.001$ ) and cognitive deficits ( $p < 0.01$ ) as compared to control group. HETC at highest dose (1000mg/kg) showed 83.33% (5/6) protection in MES induced seizures while 66.66% (4/6) protection in PTZ induced seizures. However, HETC (1000mg/kg) and co-administration of sub-therapeutic dose of HETC with valproate and phenytoin showed complete protection. In addition, it also attenuated the seizure induced oxidative stress and cognitive impairment as indicated by significant ( $p < 0.01$ ) improvement in the transfer latencies in EPM and PA as compared to PTZ and MES treated group.

**Conclusions:** The findings suggest that HETC exhibited significant anticonvulsant activity and also potentiated the subtherapeutic dose of phenytoin and valproate indicate its usefulness as an adjuvant to antiepileptic drugs with an advantage of preventing cognitive impairment and oxidative stress.

**Manandhar B, Paudel KR, Sharma B et al. Phytochemical profile and pharmacological activity of *Aegle marmelos* Linn. J Integr Med. 2018 Apr 21. pii: S2095-4964(18)30046-3.**

**Abstract:**

*Aegle marmelos* Linn. (Rutaceae), commonly known as "bael" in Nepal and India, is a valuable medicinal plant and is considered sacred by the Hindus. It is used to cure several diseases in the Indian traditional medicine system of Ayurveda and has had similar uses among many ethnic communities residing in Indian subcontinent for over 5000 years. Its leaves, bark, stem, fruits and seeds have been used for various medicinal purposes. Bael fruits are especially effective in the treatment of chronic diarrhea, dysentery and peptic ulcers, while they are also useful as a laxative and cure for respiratory infections. Scientific studies have validated many of the ethnomedicinal uses of *A. marmelos*, which include antibacterial, antiviral, antidiarrheal, gastroprotective, anti-ulcerative colitis, hepatoprotective, antidiabetic, cardioprotective and radioprotective effects. Recently, this plant has also received attention as an anticancer agent for the treatment of various types of cancers. Thus, this review focuses on scientific evidence verifying the important pharmacological activity such as antioxidant, antidiabetic, antimicrobial, hepatoprotective, cardioprotective and anticancer activity of *A. marmelos*.

**Nahar K, Kabir F, Islam P et al. Cardioprotective effect of *Amaranthus tricolor* extract in isoprenaline induced myocardial damage in ovariectomized rats. *Biomed Pharmacother.* 2018 Apr 27;103:1154-1162**

**Abstract:**

Red spinach (*Amaranthus tricolor*) has been reported to possess many benefits and medicinal properties and used as a part of traditional medicine in Ayurveda and Siddha. The aim of the study was to investigate the effects of *Amaranthus tricolor* on isoproterenol-induced oxidative stress, fibrosis, and myocardial damage in ovariectomized rats. Ovariectomy surgery was conducted to remove both ovaries from the rats. After recovery, rats were administered with ISO subcutaneously (50 mg/kg) twice a week and were treated with ethanolic extracts of *A. tricolor*. This investigation showed that the level of oxidative stress markers was significantly increased while the superoxide dismutase (SOD) activity decreased in ISO administered ovariectomized rats. *A. tricolor* extract and atenolol treatment prevented the rise of malondialdehyde, nitric oxide and advanced protein oxidation product. Moreover, elevated activities of AST, ALT, and CK-MB enzymes were also lowered by both atenolol and *A. tricolor* treatment. Increased uric acid and creatinine levels were also normalized by atenolol, and *A. Tricolor* treatment in ISO administered ovariectomized rats. ISO-induced ovariectomized rats also showed massive inflammatory cell infiltration, fibrosis and iron deposition in heart compared to sham rats. Atenolol and *A. tricolor* treatment prevented the inflammatory cells infiltration, fibrosis, and iron deposition. These results suggest that *A. tricolor* treatment may protect against ISO administered myocardial infarction in ovariectomized rats probably by preventing inflammation, oxidative stress, and fibrosis. Further research is warranted to examine molecular mechanism of cardioprotective effect of *A. tricolor*.

**Pandey AK, Gupta A, Tiwari M et al. Impact of stress on female reproductive health disorders: Possible beneficial effects of shatavari (*Asparagus racemosus*). *Biomed Pharmacother.* 2018 Apr 7;103:46-49.**

**Abstract:**

Stress is deeply rooted in the society and women are frequently exposed to psychological, physical and physiological stressors. Psychological stress disturbs reproductive health by inducing generation of reactive oxygen species (ROS) and thereby oxidative stress (OS). The increased OS may affect physiology of ovary, oocyte quality and cause female reproductive health disorders. To overcome stress-mediated reproductive health disorders in women, shatavari (*Asparagus racemosus*) is frequently recommended in Ayurvedic system of medicine. Although shatavari is one of the major health tonics and most popular rasayana drugs to treat reproductive ailments of women, underlying mechanism of shatavari action at the level of ovary remains poorly understood. Based on the existing studies, we propose that shatavari may improve female reproductive health complications including hormonal imbalance, polycystic ovarian syndrome (PCOS), follicular growth and development, oocyte quality and infertility possibly by reducing OS level and increasing antioxidants level in the body. Further studies are required to elucidate the mechanism of shatavari actions at the level of ovary and oocyte that directly impacts the reproductive health of women.

**Seethapathy GS, Ravikumar K, Paulsen BS et al. Ethnobotany of dioecious species: Traditional knowledge on dioecious plants in India. J Ethnopharmacol. 2018 Apr 7. pii: S0378-8741(18)30206-X. doi: 10.1016/j.jep.2018.04.011.**

**Abstract:**

**Ethnopharmacological Relevance:** More than 15,000 angiosperm species are dioecious, i.e., having distinct male and female individual plants. The allocation of resources between male and female plants is different, and also variation in secondary metabolites and sex-biased herbivory is reported among dioecious plants. However, little is known about the ethnobotany of dioecious species and whether preferences exist for a specific gender, e.g., in food, medicine or timber.

**Aim Of The Study:** The aim of this study was: 1) to study whether Indian folk healers have preference for plant genders, and to document their knowledge and use of dioecious species; 2) to understand the concept of plant gender in Indian systems of medicine and folk medicine, and whether Ayurvedic literature includes any references to gender preference.

**Materials and methods:** Lists of dioecious plants used in Indian systems of medicine and folk medicine were compiled. Ethnobotanical data was collected on perceptions and awareness of dioecious plants, and preferences of use of specific genders of dioecious species using semi-structured interviews with folk healers in Tamil Nadu, India. In addition, twenty Ayurvedic doctors were interviewed to gain insight into the concept of plant gender in Ayurveda.

**Results:** Indian systems of medicine contain 5-7% dioecious species, and this estimate is congruent the number of dioecious species in flowering plants in general. Informants recognized the phenomenon of dioecy in 31 out of 40 species, and reported gender preferences for 13 species with respect to uses as timber, food and medicine. Among informants different plant traits such as plant size, fruit size, and visibility of fruits determines the perception of a plant being a male or female. Ayurvedic classical literature provides no straightforward evidence on gender preferences in preparation of medicines or treatment illness, however it contains details about reproductive morphology and sexual differentiation of plants.

**Conclusions:** A knowledge gap exists in ethnobotanical and ethnopharmacological literature on traditional knowledge of dioecious plants. From this explorative study it is evident that people have traditional knowledge on plant gender and preferential usages towards one gender. Based on this, we propose that researchers conducting ethnobotanical and ethnopharmacological studies should consider documenting traditional knowledge on sexual systems of plants, and test the existence of gender specific usages in their conceptual framework and hypothesis testing. Incorporating such concepts could provide new dimensions of scientific knowledge with potential implications to conservation biology, chemical ecology, ethnoecology and drug discovery.

**Sikandan A, Shinomiya T, Nagahara Y. Ashwagandha root extract exerts anti-inflammatory effects in HaCaT cells by inhibiting the MAPK/NF- $\kappa$ B pathways and by regulating cytokines. Int J Mol Med. 2018 Apr 2. doi: 10.3892/ijmm.2018.3608.**

**Abstract:**

A paste composed of the boiled leaves and roots of the Ashwagandha plant is used to cure ulcer and swelling in Ayurvedic medicine. However, the effects of the hot water extract of Ashwagandha roots (ASH-WEX), which is also used in Ayurveda, on skin have not been fully elucidated. Therefore, the present study investigated the anti-inflammatory activity of ASH-WEX on skin, by using the human keratinocyte cell line HaCaT. The results indicated that ASH-WEX significantly inhibited mRNA expression of inflammatory cytokines, including interleukin (IL)-8, IL-6, tumor necrosis factor (TNF- $\alpha$ ), IL-1 $\beta$  and IL-12, and promoted the mRNA expression of the anti-inflammatory cytokine transforming growth factor (TGF)- $\beta$ 1 in HaCaT cells. In addition, ASH-WEX inhibited the lipopolysaccharide-induced phosphorylation of p38 and c-Jun N-terminal kinase, as well as the nuclear translocation of nuclear factor (NF)- $\kappa$ B p65. Downregulation of TNF- $\alpha$  mRNA and upregulation of TGF- $\beta$ 1 mRNA were also observed in vivo following ASH-WEX treatment of mouse skin. In conclusion, the present study demonstrated that the anti-inflammatory effect of ASH-WEX may be due to its ability to suppress the NF- $\kappa$ B and mitogen-activated protein kinase pathways, and to modulate cytokine expression. These results suggest that ASH-WEX can potentially protect against skin inflammation.

**Telapolu S, Kalachavedu M, Punnoose AM et al. MD-1, a poly herbal formulation indicated in diabetes mellitus ameliorates glucose uptake and inhibits adipogenesis - an in vitro study. BMC Complement Altern Med. 2018 Apr 2;18(1):113**

**Abstract:**

**Background:** Type 2 Diabetes (T2D) is a polygenic disease requiring a multipronged therapeutic approach. In the current scenario, the use of polyherbals is increasing among the diabetics. MD-1, a poly herbal formulation is constituted as a mixture of six popular anti diabetic herbs, used in the management of Diabetes mellitus (DM). The physicochemical, biochemical and in vitro efficacy studies have been carried out to ascertain the possible mechanisms underlying the anti-diabetic action of MD-1.

**Methods:** MD-1 was evaluated for residual toxins as per Ayurvedic Pharmacopoeia of India (API) procedures. The hydro alcoholic extract of the formulation (HAEF) was evaluated for anti oxidant activity against 2, 2-diphenyl-1-picrylhydrazil (DPPH) and nitric oxide radicals in vitro. The effect of HAEF on carbohydrate digestive enzymes  $\alpha$ -glucosidase and  $\alpha$ -amylase was studied using biochemical assays. HAEF was studied for its glucose lowering potential in L6 myotubes and 3T3L1 preadipocytes, using 2-deoxy-D-[1-3H] glucose (2-DG) uptake assay. Effect of MD-1 on adipogenesis was evaluated in 3T3L1 adipocytes using oil O red staining. The effect of HAEF on mRNA expression of peroxisome proliferator activated receptor gamma (PPAR $\gamma$ ) and glucose transporter 4 (GLUT4) in 3T3L1 adipocytes was investigated by reverse transcriptase polymerase chain reaction (RT-PCR). Statistical analysis was performed by student t-test, ANOVA.

**Results:** Residual toxins present within the API limits and HAEF demonstrated strong antioxidant potential and significantly inhibited the  $\alpha$ -glucosidase (IC<sub>50</sub> 63.6  $\pm$  0.46  $\mu$ g/mL) and  $\alpha$ -amylase (IC<sub>50</sub> 242.81  $\pm$  1.26  $\mu$ g/mL) activity. HAEF significantly ( $p < 0.05$ ) enhanced the insulin stimulated glucose uptake in both the cell lines studied. Unlike standard pioglitazone (PGZ), HAEF modulated the mRNA expression of PPAR $\gamma$  and GLUT4 ( $p < 0.0001$ ) in 3T3L1 adipocytes, without inducing adipogenesis.

**Conclusion:** Physicochemical parameters established in the study may serve as reference standards in regular quality control. Absence of residual toxins underpins the safety. The enhanced glucose uptake and favorable modulation of insulin sensitivity through a plausible weak PPAR $\gamma$  agonism is similar to the distinct PPAR $\gamma$  activation pattern of several reported natural compound agonists. The differential binding modes of such dynamic combinatorial ligands within the formulation unlike synthetic ligands like thiozolidinediones (TZD) can be linked to the safe mitigation of diabetic complications by MD-1.

**Thomas G. National Medical Commission - More of the same. Indian J Med Ethics. 2018 Apr 16;(-):1-2.**

**Abstract:**

The Cabinet chaired by the Prime Minister has accepted six amendments to the National Medical Commission Bill suggested by the Department-related Parliamentary Standing Committee (1). These amendments are: the proposed National Licentiate Examination has been replaced by a countrywide final MBBS examination called the National Exit Test (NEXT); the bridge course to train practitioners from AYUSH (Ayurveda, Unani, Siddha and Homeopathy) in modern medicine has been removed, and it has been left to individual states to take a decision about this; the percentage of seats in private medical training institutions under fee regulation has been increased from 40% to 50%; the number of nominees from the states and Union territories who are members of the Commission has been increased from three to six; the penalties for non-compliance with educational norms for colleges has been modified; and the punishment for practising modern medicine without qualification has been made imprisonment up to one year and a fine of Rs 5 lakh.

## UNANI MEDICINE

**Al Akeel R, Mateen A, Alharbi KK et al. Purification and MIC analysis of antimicrobial proteins from Cucumis sativus L. seeds. BMC Complement Altern Med. 2018 Apr 3;18(1):121.**

### **Abstract:**

**Background:** Cucumis sativus L. (cucumber), from the family Cucurbitaceae, is a therapeutic plant with various pharmacological benefits, broadly utilized as a part of complementary medicine (e.g., Unani, Ayurveda, Siddha, and Traditional Chinese). In light of past research discoveries, this plant had been chosen to consider its potential antibacterial action.

**Methods:** Extracts were purified by dialysis and ion exchange chromatography strategy and then assayed for antibacterial activity against four standard pathogenic bacterial strains known to cause foodborne infections and spoilage of food and herbal drugs. Antimicrobial peptides were extracted from seeds using a sodium phosphate citrate (pH 7.2) - CTAB cradle (pH 6.0).

**Results:** The highest protein concentration was seen with elute fractions 1 and 3 (370 mg/mL) compared with elute fractions 2 and 4 (340 mg/mL). Among the bacteria utilized, E. coli was clearly the most sensitive out of selected four strains.

**Conclusion:** Our results suggest that Cucumis sativus L seeds extracts have significant potentials as new antimicrobial agents.

**Thomas G. National Medical Commission - More of the same. Indian J Med Ethics. 2018 Apr 16;-(-):1-2.**

### **Abstract:**

The Cabinet chaired by the Prime Minister has accepted six amendments to the National Medical Commission Bill suggested by the Department-related Parliamentary Standing Committee (1). These amendments are: the proposed National Licentiate Examination has been replaced by a countrywide final MBBS examination called the National Exit Test (NEXT); the bridge course to train practitioners from AYUSH (Ayurveda, Unani, Siddha and Homeopathy) in modern medicine has been removed, and it has been left to individual states to take a decision about this; the percentage of seats in private medical training institutions under fee regulation has been increased from 40% to 50%; the number of nominees from the states and Union territories who are members of the Commission has been increased from three to six; the penalties for non-compliance with educational norms for colleges has been modified; and the punishment for practising modern medicine without qualification has been made imprisonment up to one year and a fine of Rs 5 lakh.

## YOGA

**Barassi G, Bellomo RG, Di Iulio A et al. Preoperative rehabilitation in lung cancer patients: Yoga approach. Adv Exp Med Biol. 2018 Apr 4. doi: 10.1007/5584\_2018\_186**

### **Abstract:**

Lung cancer is one of the leading causes of cancer death worldwide. Surgical removal remains the best option for most tumors of this type. Reduction of cigarette consumption in patients with lung cancer candidates for the surgery could limit the impact of tobacco on postsurgical outcomes. Breathing exercises appear to help combat cigarette cravings. Yoga exercise benefits have been studied in lung cancer survivors, rather than in the preoperative setting. In this study, we have recruited 32 active smokers affected by lung cancer and being candidates for pulmonary surgery. The patients were randomly assigned to two groups: one treated by standard breathing and the other treated by yoga breathing (YB). The groups were evaluated at times T0 (baseline) and T1 (after 7 days of treatment) to compare the effects of the two breathing treatments on pulmonary performance in a presurgery setting. Pulmonary and cardiocirculatory functions have been tested using a self-calibrating computerized spirometer and a portable pulse oximetry device. The findings demonstrate appreciable short-term improvement in lung function assessed by spirometry. We conclude that yoga breathing can be a beneficial preoperative support for thoracic surgery.

**Chopp Hurley JN, Prophet C, Thistle B et al. Scapular muscle activity during static yoga postures. J Orthop Sports Phys Ther. 2018; Apr 6:1-26. doi: 10.2519/jospt.2018.7311**

### **Abstract:**

Study Design Controlled laboratory study; cross-sectional. Background Despite the growing popularity of yoga, little is known about the muscle activity of the scapular stabilizers during isometric yoga postures and their potential utility in shoulder rehabilitation. Objectives To examine scapular stabilizer muscle activation during various yoga postures. Methods Twenty women with yoga experience and no shoulder pain or injury participated. Electromyography was used to record upper, middle and lower trapezius as well as serratus anterior muscle activity during 15 yoga postures. Results Muscle activity varied between yoga postures (3-57% maximum voluntary contraction (% MVIC)). Overall, the posture "locust arms forward" elicited the highest activity from the upper (22.4% MVIC), middle (41.8% MVIC) and lower (56.8% MVIC) trapezius, while several postures elicited moderate activity (>20% MVIC) from the serratus anterior. Alternatively, "dancer's pose right", "reverse tabletop", and "warrior II" demonstrated low activity ( $\leq 15.7\%$  MVIC) of the scapula stabilizers. Conclusions Strengthening the scapula stabilizer muscles is an important component of shoulder rehabilitation. Yoga postures have been identified that activate the scapular stabilizer muscles at varying levels of activity.

**Cotton V, Low LA, Villemure C et al. Unique autonomic responses to pain in yoga practitioners. Psychosom Med. 2018 Apr 3. doi: 10.1097/PSY.0000000000000587**

**Abstract:**

**Objectives:** Autonomic nervous system activity is associated with neurobehavioral aspects of pain. Yogis use breathing, relaxation and mindfulness to tolerate pain, which could influence autonomic responses. To evaluate how the link between autonomic responses and pain is altered by other factors, we compared perceptual and autonomic responses to pain between yogis and controls.

**Methods:** Nineteen yogis and 15 controls rated warm and painfully hot stimuli (1-cm thermode on calf), with visual anticipatory cues indicating certainly painful, certainly non-painful or uncertainly either painful or non-painful. Heart rate, skin conductance, respiration, and blood pressure were measured.

**Results:** At baseline, yogis breathed slower and deeper than controls, with no differences in other autonomic measures. During the task, perceptual ratings did not differ between groups in either the certain or uncertain conditions. Nevertheless, yogis had higher phasic skin conductance responses in anticipation of and response to all stimuli, but particularly during painful heat in uncertain contexts (Uncertain:  $0.46 \pm 0.34\mu\text{S}$ ; Certain:  $0.37 \pm 0.28\mu\text{S}$ ,  $t(18) = 3.962$ ,  $p = 0.001$ ). Furthermore, controls showed a decrease in heart rate to warm ( $-2.51 \pm 2.17$  bpm) versus painful stimuli ( $0.83 \pm 1.63$  bpm;  $t(13) = 5.212$ ,  $p < 0.001$ ) and lower respiratory sinus arrhythmia during pain than warm trials, whereas yogis had similar reactions to painful and non-painful stimuli.

**Conclusions:** Autonomic responses to pain differed in yogis and healthy volunteers, despite similar pain ratings. Thus, autonomic reactivity to pain may be altered by environmental and psychological factors throughout an individual's life.

**Danve A, Deodhar A. Complementary medicine for axial spondyloarthritis: Is there any scientific evidence? Curr Opin Rheumatol. 2018 Apr 9. doi: 10.1097/BOR.0000000000000513.**

**Abstract:**

**Purpose of review:** Majority of patients with axial spondyloarthritis (axSpA) report use of complementary and alternative medicine (CAM) therapies before and even after the diagnosis, due to perceived efficacy and wide-spread belief that these modalities lack side effects. In this review, we describe the available scientific evidence for the CAM therapies in axSpA.

**Recent findings:** Clinical trials of the CAM therapies in axSpA are generally hampered by small sample size, short duration, difficulties in blinding, lack of control groups and strong placebo effect. Nonetheless, exercise programs like Pilates and mind-body techniques such as Tai Chi may have favorable effect on the disease activity and function. Although not yet confirmed, the modulation of the microbiome with the help of probiotics or fecal transplant has face validity given the evolving scientific rationale. Diet has only limited role in the management of axSpA. Deep tissue massage, omega-3 fatty acids and Stanger bath were found to be useful in small studies. CAM therapies are not always entirely well tolerated, particularly the manipulative techniques like chiropractic and Tui-na in patients with advanced disease and osteoporosis. There are no trials of yoga in axSpA despite the wider acceptance and use of yoga as an effective mind-body technique.

**Summary:** Larger and better quality clinical trials of CAM therapies are needed to confirm their efficacy and safety in the management of axSpA and to include them in the 'mainstream' medicine.

**Gupta S, Schaffer G, Saps M. Pediatric irritable bowel syndrome and other functional abdominal pain disorders: An update of non-pharmacological treatments. *Expert Rev Gastroenterol Hepatol.* 2018; Apr 16:1-10.**

**Abstract:**

Functional abdominal pain disorders, including irritable bowel syndrome, are common in children and treatment can often be difficult. Pharmacological therapies and complementary treatments are widely used, despite the limited data in pediatrics. Areas covered: This review provides an overview of the available data for the use of diet, probiotics, percutaneous electrical nerve stimulation, and psychosocial interventions, including hypnotherapy, yoga, cognitive and behavioral therapy, and mind-body interventions for the treatment of functional abdominal pain disorders in children. The literature review included a PubMed search by each therapy, children, abdominal pain, and irritable bowel syndrome. Relevant articles to this review are discussed. Expert commentary: The decision on the use of pharmacological and complementary therapies should be based on clinical findings, evidence, availability, and in-depth discussion with the patient and family. The physician should provide education on the different interventions and their role on the treatment in an empathetic and warm manner providing ample time for the family to ask questions.

**Hawkins BL, Van Puymbroeck M, Walter A et al. Perceived activities and participation outcomes of a yoga intervention for individuals with parkinson's Disease: A mixed methods study. *Int J Yoga Therap.* 2018 Apr 9. doi: 10.17761/2018-00018R2.**

**Abstract:**

Parkinson's disease (PD) often leads to poor balance, increased falls, and fear of falling, all of which can reduce participation in life activities. Yoga, which usually includes physical exercise, can improve functioning and life participation; however, limited research has been conducted on the effects of yoga on life participation of individuals with PD. This study had two purposes: (1) to identify and understand the perceived activities and participation outcomes associated a therapeutic yoga intervention for individuals with PD; and (2) to compare the perceived activities and participation outcomes with the outcomes measured in the clinical trial. A single-blind, randomized, waitlist-controlled, phase II exploratory pilot study using an after-trial embedded mixed methods design (clinical trial Pro00041068) evaluated the effect of an 8-week Hatha Yoga intervention on individuals with PD. Directed content analysis was used to analyze focus group interviews with participants who completed the yoga intervention. Quantitative and qualitative data were merged and compared using a data comparison matrix. Qualitative analysis indicated many activities and participation outcomes. Comparison of qualitative and quantitative data indicated the yoga intervention led to improved balance, mobility, and functional gait, and fewer falls. These outcomes reached beyond the intervention and into participants' daily lives. Results support the use of Hatha Yoga as a community-based rehabilitation intervention for individuals with PD. Yoga, as part of an interdisciplinary approach to treatment, can improve

many types of activities and participation outcomes (e.g., mobility, social relationships, self-care, handling stress, recreation).

**Kleckner IR, Dunne RF, Asare M et al. Exercise for Toxicity Management in Cancer-A Narrative Review. *Oncol Hematol Rev.* 2018 Spring;14(1):28-37.**

**Abstract:**

Although the treatment of cancer is more effective now than ever, patients with cancer still face acute and chronic toxicities such as fatigue, cardiotoxicity, pain, cognitive impairment, and neurotoxicity. In this narrative review, we briefly discuss the use of exercise for toxicity management in patients with cancer, biological mechanisms underlying the toxicities and the effects of exercise, barriers that patients- especially underserved patients-face in adopting and adhering to exercise programs, and new technologies to overcome barriers to exercise. Our conclusions and clinical suggestions are: (1) exercise is safe and effective for treating many toxicities; (2) patients can benefit from a variety of exercise modalities (e.g., walking, cycling, resistance bands, yoga); (3) exercise should be started as soon as possible, even before treatments begin; (4) exercise should be continued as long as possible, as a lifestyle; and (5) barriers to exercise should be identified and addressed, (e.g., continually encouraging patients to exercise, using mobile technology, advocating for safe communities that encourage active lifestyles). Future research should inform definitive clinical guidelines for the use of exercise to ameliorate toxicities from cancer and its treatment.

**Kuntz AB, Chopp Hurley JN, Brenneman EC et al. Efficacy of a biomechanically-based yoga exercise program in knee osteoarthritis: A randomized controlled trial. *PLoS One.* 2018 Apr 17;13(4):e0195653.**

**Abstract:**

**Objective:** Certain exercises could overload the osteoarthritic knee. We developed an exercise program from yoga postures with a minimal knee adduction moment for knee osteoarthritis. The purpose was to compare the effectiveness of this biomechanically-based yoga exercise (YE), with traditional exercise (TE), and a no-exercise attention-equivalent control (NE) for improving pain, self-reported physical function and mobility performance in women with knee osteoarthritis.

**Design:** Single-blind, three-arm randomized controlled trial.

**Setting:** Community in Southwestern Ontario, Canada.

**Participants:** A convenience sample of 31 women with symptomatic knee osteoarthritis was recruited through rheumatology, orthopaedic and physiotherapy clinics, newspapers and word-of-mouth.

**Interventions:** Participants were stratified by disease severity and randomly allocated to one of three 12-week, supervised interventions. YE included biomechanically-based yoga exercises; TE included traditional leg strengthening on machines; and NE included meditation with no exercise. Participants were asked to attend three 1-hour group classes/sessions each week.

**Measurements:** Primary outcomes were pain, self-reported physical function and mobility performance. Secondary outcomes were knee strength, depression, and

health-related quality of life. All were assessed by a blinded assessor at baseline and immediately following the intervention.

**Results:** The YE group demonstrated greater improvements in KOOS pain (mean difference of 22.9 [95% CI, 6.9 to 38.8;  $p = 0.003$ ]), intermittent pain (mean difference of -19.6 [95% CI, -34.8 to -4.4;  $p = 0.009$ ]) and self-reported physical function (mean difference of 17.2 [95% CI, 5.2 to 29.2;  $p = 0.003$ ]) compared to NE. Improvements in these outcomes were similar between YE and TE. However, TE demonstrated a greater improvement in knee flexor strength compared to YE (mean difference of 0.1 [95% CI, 0.1 to 0.2]). Improvements from baseline to follow-up were present in quality of life score for YE and knee flexor strength for TE, while both also demonstrated improvements in mobility. No improvement in any outcome was present in NE.

**Conclusions:** The biomechanically-based yoga exercise program produced clinically meaningful improvements in pain, self-reported physical function and mobility in women with clinical knee OA compared to no exercise. While not statistically significant, improvements in these outcomes were larger than those elicited from the traditional exercise-based program. Though this may suggest that the yoga program may be more efficacious for knee OA, future research studying a larger sample is required.

**Mathersul DC, Mahoney LA, Bayley PJ. Tele-yoga for chronic pain: Current status and future directions. Glob Adv Health Med. 2018 Apr 2;7:2164956118766011. doi: 10.1177/2164956118766011.**

**Abstract:**

Pain is a pervasive, debilitating disorder that is resistant to long-term pharmacological interventions. Although psychological therapies such as cognitive behavior therapy demonstrate moderate efficacy, many individuals continue to have ongoing difficulties following treatment. There is a current trend to establish complementary and integrative health interventions for chronic pain, for which yoga has been found to have exciting potential. Nevertheless, an important consideration within the field is accessibility to adequate care. Telehealth can be used to provide real-time interactive video conferencing leading to increased access to health care for individuals located remotely or who otherwise have difficulty accessing services, perhaps through issues of mobility or proximity of adequate services. This article assesses the current status and feasibility of implementing tele-yoga for chronic pain. Methodological limitations and recommendations for future research are discussed.

**Nguyen Feng VN, Clark CJ, Butler ME. Yoga as an intervention for psychological symptoms following trauma: A systematic review and quantitative synthesis. Psychol Serv. 2018 Apr 5. doi: 10.1037/ser0000191**

**Abstract:**

Despite evidence of the physiologic impact of trauma, treatments are only beginning to focus on the impact of trauma on the body. Yoga may be a promising treatment for trauma sequelae, given research that supports yoga for general distress. The present study aims to systematically assess and quantitatively synthesize the effectiveness of yoga interventions for psychological symptoms (posttraumatic stress disorder [PTSD], depression, anxiety symptoms) following potentially traumatic life events. The following electronic databases were systematically searched: PsycINFO, Ovid

Medline/PubMed, Cumulative Index to Nursing and Allied Health Literature, and Embase/Embase Classic. Google Scholar, Mendeley, Open Research and Contributor Identification, and Fig Share were hand searched post hoc. The review focused on studies with a comparison group that measured psychological symptoms before and after intervention. After screening and reviewing, 12 articles (N = 791) were included, with interventions ranging from 2 days to 16 weeks. If a study contained multiple conditions, between-groups differences were only examined between the yoga and inactive control group. Though overall between-groups (yoga vs. comparison) effect sizes ranged from  $d_s = 0.40-1.06$ , the systematic review and quantitative synthesis did not find strong evidence for the effectiveness of yoga as an intervention for PTSD, depression, and anxiety symptoms following traumatic life experiences due to low quality and high risk of bias of studies. As yoga has promise for managing psychological symptoms among trauma survivors, this review calls for more rigorous design of future studies to allow definitive conclusions regarding the use of yoga in mental health treatment of trauma survivors. (PsycINFO Database Record.

**Oka T, Tanahashi T, Sudo N et al. Changes in fatigue, autonomic functions, and blood biomarkers due to sitting isometric yoga in patients with chronic fatigue syndrome. *Biopsychosoc Med.* 2018 Apr 10;12:3. doi: 10.1186/s13030-018-0123-2.**

**Abstract:**

**Background:** In a previous randomized controlled trial, we found that sitting isometric yoga improves fatigue in patients with chronic fatigue syndrome (CFS) who are resistant to conventional therapy. The aim of this study was to investigate possible mechanisms behind this finding, focusing on the short-term fatigue-relieving effect, by comparing autonomic nervous function and blood biomarkers before and after a session of isometric yoga.

**Methods:** Fifteen patients with CFS who remained symptomatic despite at least 6 months of conventional therapy practiced sitting isometric yoga (biweekly 20 min practice with a yoga instructor and daily home practice) for eight weeks. Acute effects of sitting isometric yoga on fatigue, autonomic function, and blood biomarkers were investigated after the final session with an instructor. The effect of a single session of sitting isometric yoga on fatigue was assessed by the Profile of Mood Status (POMS) questionnaire immediately before and after the session. Autonomic nervous function (heart rate (HR) variability) and blood biomarkers (cortisol, DHEA-S, TNF- $\alpha$ , IL-6, IFN- $\gamma$ , IFN- $\alpha$ , prolactin, carnitine, TGF- $\beta$ 1, BDNF, MHPG, and HVA) were compared before and after the session.

**Results:** Sitting isometric yoga significantly reduced the POMS fatigue score ( $p < 0.01$ ) and increased the vigor score ( $p < 0.01$ ). It also reduced HR ( $p < 0.05$ ) and increased the high frequency power ( $p < 0.05$ ) of HR variability. Sitting isometric yoga increased serum levels of DHEA-S ( $p < 0.05$ ), reduced levels of cortisol ( $p < 0.05$ ) and TNF- $\alpha$  ( $p < 0.05$ ), and had a tendency to reduce serum levels of prolactin ( $p < 0.1$ ). Decreases in fatigue scores correlated with changes in plasma levels of TGF- $\beta$ 1 and BDNF. In contrast, increased vigor positively correlated with HVA.

**Conclusions:** A single session of sitting isometric yoga reduced fatigue and increased vigor in patients with CFS. Yoga also increased vagal nerve function and changed

blood biomarkers in a pattern that suggested anti-stress and anti-inflammatory effects. These changes appear to be related to the short-term fatigue-relieving effect of sitting isometric yoga in patients with CFS. Furthermore, dopaminergic nervous system activation might account for sitting isometric yoga-induced increases in energy in this patient population.

**Okhominia VI, Seals SR, Anugu P et al. Adherence and retention of African Americans in a randomized controlled trial with a yoga-based intervention: The effects of health promoting programs on cardiovascular disease risk study. *Ethn Health*. 2018; Apr 2:1-13. doi: 10.1080/13557858.2018.1458073**

**Abstract:**

**Objectives:** Sedentary lifestyle is a risk factor for cardiovascular disease (CVD). Few alternative lifestyle interventions, such as yoga practice, focus on African Americans (AA), the population most vulnerable to CVD. Our objective is to compare the retention and adherence rates between yoga, walking, and health education interventions while providing information about the acceptance of various yoga regimens.

**Design:** Three hundred seventy-five AA participants were recruited exclusively from an active cohort study and randomized into a 48-week study (24 weeks intervention, 24 weeks follow-up) with 5 health promotion interventions: high frequency yoga, moderate frequency yoga, low frequency yoga, guided walking, and health education. In addition to examining the separate yoga interventions, a pooled yoga intervention is considered for comparison to guided walking and health education. Participant retention, adherence, and vitals were monitored at each intervention session. Participants were also scheduled for four clinic visits throughout the study where blood panels, health behavior, and medication surveys were administered.

**Results:** Of the 375 participants recruited, 31.7% did not complete the study. At baseline, in both the guided walking group and the high frequency yoga group, there were significant differences between those who completed the study and those who did not. Although intervention retention in the pooled yoga program (78.3%) was higher compared to the walking (60%) and education programs (74.3%) ( $p = 0.007$ ), differences in post-intervention retention was not significant. Median adherence rates for the pooled yoga program exceeded rates for guided walking and education with moderate frequency yoga out performing high and low frequency yoga.

**Conclusion:** Study-defined retention success rates were not reached by all health promotion programs. However, retention and adherence rates for the pooled yoga program show that older African Americans are receptive to participating in yoga-based health promotion practices.

**Pandey A, Hale D, Das S et al. Effectiveness of Universal Self-regulation-Based Interventions in Children and Adolescents: A Systematic Review and Meta-analysis. *JAMA Pediatr*. 2018 Apr 16. doi: 10.1001/jamapediatrics.2018.0232.**

**Abstract:**

**Importance:** Childhood and adolescence self-regulation (SR) is gaining importance as a target of intervention because of mounting evidence of its positive associations with health, social and educational outcomes.

**Objective:** To conduct a systematic review and meta-analysis of rigorously evaluated interventions to improve self-regulation in children and adolescents.

**Data sources:** Keyword searches of the PsycINFO, PubMed, EMBASE, CINAHL Plus, ERIC, British Education Index, Child Development and Adolescent Studies, and CENTRAL were used to identify all studies published through July 2016.

**Study selection:** To be eligible for this review, studies had to report cluster randomized trials or randomized clinical trials, evaluate universal interventions designed to improve self-regulation in children and adolescents aged 0 to 19 years, include outcomes associated with self-regulation skills, and be published in a peer-reviewed journal with the full text available in English.

**Data extraction and synthesis:** A total of 14 369 published records were screened, of which 147 were identified for full-text review and 49 studies reporting 50 interventions were included in the final review. Results were summarized by narrative review and meta-analysis.

**Main outcomes and measures:** Self-regulation outcomes in children and adolescents.

**Results:** This review identified 17 cluster randomized trials and 32 randomized clinical trials evaluating self-regulation interventions, which included a total of 23 098 participants ranging in age from 2 to 17 years (median age, 6.0 years). Consistent improvement in self-regulation was reported in 16 of 21 curriculum-based interventions (76%), 4 of the 8 mindfulness and yoga interventions (50%), 5 of 9 family-based programs (56%), 4 of 6 exercise-based programs (67%), and 4 of 6 social and personal skills interventions (67%), or a total of 33 of 50 interventions (66%). A meta-analysis evaluating associations of interventions with self-regulation task performance scores showed a positive effect of such interventions with pooled effect size of 0.42 (95% CI, 0.32-0.53). Only 24 studies reported data on distal outcomes (29 outcomes). Positive associations were reported in 11 of 13 studies (85%) on academic achievement, 4 of 5 studies on substance abuse (80%), and in all studies reporting on conduct disorders (n = 3), studies on social skills (n = 2), studies on depression (n = 2), studies on behavioral problems (n = 2), and study on school suspensions (n = 1). No effect was seen on 2 studies reporting on academic achievement, 1 study reporting on substance abuse, and 1 additional study reporting on psychological well-being.

**Conclusions and relevance:** A wide range of interventions were successful in improving self-regulation in children and adolescents. There was improvement in distal academic, health, and behavioral outcomes in most intervention groups compared with controls.

**Rhee TG, Marottoli RA, Van Ness PH et al. Patterns and Perceived Benefits of Utilizing Seven Major Complementary Health Approaches in U.S. Older Adults. *J Gerontol A Biol Sci Med Sci.* 2018 Apr 28. doi: 10.1093/gerona/gly099.**

**Abstract:**

**Objectives:** To examine patterns and perceived benefits of seven major complementary health approaches (CHA) among older adults in the U.S.

**Methods:** Data from the 2012 National Health Interview Survey (NHIS), which represents non-institutionalized adults ages 65 or older (n=7,116 unweighted), were

used. We elicited seven most common CHA used in older adults, which are: acupuncture, herbal therapies, chiropractic, massage, meditation, Tai Chi, and yoga. Survey participants were asked to self-report perceived benefits (e.g., maintaining health and stress reduction) in their CHA used. We estimated prevalence and perceived benefits of CHA use. We also investigated socio-demographic and clinical factors associated with the use of any of these seven CHA.

**Results:** Overall, 29.2% of older adults used any of seven CHA in the past year. Most commonly used CHA included herbal therapies (18.1%), chiropractic (8.4%), and massage (5.7%). More than 60% of older CHA users reported that CHA were important for maintaining health and well-being. Other perceived benefits included improving overall health and feeling better (52.3%), giving a better sense of control over health (27.4%), and making it easier to cope with health problems (24.7%). Older adults with higher education and income levels,  $\geq 2$  chronic conditions, and functional limitations had greater odds of using CHA ( $p < 0.01$ , respectively).

**Conclusion:** A substantial number of older CHA users reported CHA-related benefits. CHA may play a crucial role in improving health status among older adults. At the population level, further research on the effects of CHA use on bio-psycho-social outcomes is needed to promote healthy aging in older adults.

**Sarkissian M, Trent NL, Huchting K et al. Effects of a kundalini yoga program on elementary and middle school students' stress, affect, and resilience. J Dev Behav Pediatr. 2018 Apr;39(3):210-216.**

**Abstract:**

**Objective:** The Your Own Greatness Affirmed (YOGA) for Youth program delivers yoga to urban inner-city schools with the goal of providing practical benefits that support underserved children at high risk of behavioral and emotional problems. A 10-week YOGA for Youth program delivered 1 to 2 times per week was implemented in 3 schools in urban neighborhoods to examine the effect of the program on student stress, affect, and resilience.

**Methods:** Thirty children were administered the Perceived Stress Scale, the Positive and Negative Affect Schedule, and the Resilience Scale before and after the yoga program. After the program, informal qualitative interviews were conducted with school teachers, yoga teachers, and students to determine the overall impact of the yoga program.

**Results:** The quantitative results of this study indicated that the yoga program significantly improved students stress ( $p < 0.05$ ), positive affect ( $p < 0.05$ ), and resilience ( $p < 0.001$ ). The qualitative results indicated that students, school teachers, and yoga teachers all found the program to be beneficial for students' well-being.

**Conclusion:** Taken together, these data suggest that the YOGA for Youth program may provide students in low-income urban schools with behavioral skills that will protect against risk factors associated with the development of behavioral and emotional problems.

**Sevinc G, Holzel BK, Hashmi J et al. Common and dissociable neural activity following mindfulness-based stress reduction and relaxation response programs. Psychosom Med. 2018 Apr 10. doi: 0.1097/PSY.0000000000000590.**

**Abstract:**

**Objective:** We investigated common and dissociable neural and psychological correlates of two widely used meditation-based stress-reduction programs.

**Methods:** Participants were randomized to the Relaxation Response (RR; n=18; 56% female) or the Mindfulness-Based Stress Reduction (MBSR; n=16, 56% female) programs. Both programs utilize a 'bodyscan' meditation, however the RR program explicitly emphasizes physical relaxation during this practice, while the MBSR program emphasizes mindful awareness with no explicit relaxation instructions. Following the programs, neural activity during the respective meditation was investigated using fMRI.

**Results:** Both programs were associated with reduced stress (for RR, from  $14.1 \pm 6.6$  to  $11.3 \pm 5.5$ ; Cohen's  $d=0.50$ ; for MBSR, from  $17.7 \pm 5.7$  to  $11.9 \pm 5.0$ ; Cohen's  $d= 1.02$ ). Conjunction analyses revealed functional coupling between ventromedial prefrontal regions and supplementary motor areas ( $p < 0.001$ ). The disjunction analysis indicated that the RR bodyscan was associated with stronger functional connectivity of the right inferior frontal gyrus - an important hub of intentional inhibition and control- with supplementary motor areas ( $p < 0.001$ , FWE corrected). The MBSR program was uniquely associated with improvements in self-compassion and rumination and the within group analysis of MBSR bodyscan revealed significant functional connectivity of the right anterior insula - an important hub of sensory awareness and salience- with pregenual anterior cingulate during bodyscan meditation compared to rest ( $p=0.03$ , FWE corrected).

**Conclusions:** The bodyscan exercises in each program were associated with both overlapping and differential functional coupling patterns, which were consistent with each program's theoretical foundation. These results may have implications for the differential effects of these programs for the treatment of diverse conditions. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

**Sneed J, Hammer T. Phenomenological Inquiry into Phoenix Rising Yoga Therapy. *Int J Yoga Therap.* 2018 Apr 26. doi: 10.17761/2018-00002.**

**Abstract:**

There is growing recognition within psychology and other disciplines that body experience may be as important as cognitive and emotional experience. However, psychology has few psychotherapeutic interventions to support the integration of mind and body within therapy. Phoenix Rising Yoga Therapy (PRYT) is a form of mind-body therapy that uses yoga posture, touch, and psychotherapeutic dialogue to facilitate growth and healing. The current study explored the phenomenological experience of four women who each received five PRYT sessions. Research questions posed were: (1) What are the clients' experiences of the phenomena of PRYT? and (2) How does receiving PRYT sessions impact the clients' lives? The following themes emerged from the data as the essence of PRYT sessions: mindfulness, self-awareness, mind-body connection, in vivo experience of new behaviors, client-directed, empowerment, and life changes. These themes show significance in the mind-body connection and that it is important to consider alternative modalities such as PRYT

for clients. Each participant noted greater insight into mind-body connection. They noticed the effect of cognition and emotion on the body, observed how the body can be used to improve coping through movement and breathing, and experienced different thoughts and emotions associated with different areas of their bodies. Although these results are not necessarily generalizable, they offer interesting theoretical implications for embodied interventions.

**Thomas G. National Medical Commission - More of the same. Indian J Med Ethics. 2018 Apr 16;(-):1-2.**

**Abstract:**

The Cabinet chaired by the Prime Minister has accepted six amendments to the National Medical Commission Bill suggested by the Department-related Parliamentary Standing Committee (1). These amendments are: the proposed National Licentiate Examination has been replaced by a countrywide final MBBS examination called the National Exit Test (NEXT); the bridge course to train practitioners from AYUSH (Ayurveda, Unani, Siddha and Homeopathy) in modern medicine has been removed, and it has been left to individual states to take a decision about this; the percentage of seats in private medical training institutions under fee regulation has been increased from 40% to 50%; the number of nominees from the states and Union territories who are members of the Commission has been increased from three to six; the penalties for non-compliance with educational norms for colleges has been modified; and the punishment for practising modern medicine without qualification has been made imprisonment up to one year and a fine of Rs 5 lakh.

**Wu LL, Lin ZK, Weng HD, Qi QF et al. Effectiveness of meditative movement on COPD: a systematic review and meta-analysis. Int J Chron Obstruct Pulmon Dis. 2018 Apr 17;13:1239-1250**

**Abstract:**

**Background:** The effectiveness of meditative movement (tai chi, yoga, and qigong) on COPD remained unclear. We undertook a systematic review and meta-analysis to determine the effectiveness of meditative movement on COPD patients.

**Methods:** We searched PubMed, Web of Science, EMBASE, and the Cochrane Center Register of Controlled Trials for relevant studies. The methods of standard meta-analysis were utilized for identifying relevant researches (until August 2017), quality appraisal, and synthesis. The primary outcomes were the 6-minute walking distance (6MWD), lung function, and dyspnea levels.

**Results:** Sixteen studies involving 1,176 COPD patients were included. When comparing with the control group, the 6MWD was significantly enhanced in the treatment group (3 months: mean difference [MD]=25.40 m, 95% CI: 16.25 to 34.54; 6 months: MD=35.75 m, 95% CI: 22.23 to 49.27), as well as functions on forced expiratory volume in 1 s (FEV1) (3 months: MD=0.1L, 95% CI: 0.02 to 0.18; 6 months: MD=0.18L, 95% CI: 0.1 to 0.26), and FEV1 % predicted (3 months: 4L, 95% CI: 2.7 to 5.31; 6 months: MD=4.8L, 95% CI: 2.56 to 7.07). Quality of life for the group doing meditative movement was better than the control group based on the Chronic Respiratory Disease Questionnaire dyspnea score (MD=0.9 units, 95% CI: 0.51 to

1.29) and fatigue score (MD=0.75 units, 95% CI: 0.42 to 1.09) and the total score (MD=1.92 units, 95% CI: 0.54 to 3.31).

**Conclusion:** Meditative movement may have the potential to enhance lung function and physical activity in COPD patients. More large-scale, well-designed, multicenter, randomized controlled trials should be launched to evaluate the long-range effects of meditative movement.