

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.

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HOMOEOPATHY

Brustolin Aleixo CF, Ferraz FN, Massini PF et al. Beneficial immunomodulatory and neuro digestive effect in Trypanosoma cruzi infection after Lycopodium clavatum 13c treatment. *Microb Pathog.* 2017; pii: S0882-4010(17)30757-X. doi: 10.1016/j.micpath.2017.09.026.

Abstract:

Studies show that highly diluted medications demonstrate benefits in treating infections, constituting an alternative for their treatment. The present study evaluated the effects of Lycopodium clavatum, dynamization 13c, in Wistar rats infected with T. cruzi. In this study 42 male rats were intraperitoneally inoculated with T. cruzi - Y strain and allocated into groups: IC (infected control group) and Ly (treated with L. clavatum 13c). The cytokines dosage (IFN- γ , IL-12, IL-10, IL-4), quantification and morphometry of myenteric neurons were evaluated. The treatment with L. clavatum modifies the immune response, with increase of IFN- γ on day 10 a.i. and IL-12 on day 24 a.i., decrease of IL-10 concentration on day 10 a.i. and subsequent increase of this cytokine and IL-4 on day 24 a.i., affording a bigger number of myenteric neurons compared to IC group. Thus, L. clavatum 13c promoted on rats infected with T. cruzi a beneficial immunomodulatory action reducing the pathogenic progression of digestive Chagas disease.

Falkowski Temporini GJ, Lopes CR, Massini PF et al. Increased of the hepatocytes and splenocytes apoptosis accompanies clinical improvement and higher survival in mice infected with Trypanosoma cruzi and treated with highly diluted Lycopodium clavatum. *Microb Pathog.* 2017; 110:107-16p.

Abstract:

Recent evidence includes apoptosis as a defense against Trypanosoma cruzi infection, which promotes an immune response in the host induced by T cells, type 1, 2 and 17. Currently, there is no medicine completely preventing the progression of this disease. We investigated the immunological and apoptotic effects, morbidity and survival of mice infected with T. cruzi and treated with dynamized homeopathic compounds 13c: Kalium causticum (G_{Caus}), Conium maculatum, (G_{Con}), Lycopodium clavatum (G_{Ly}) and 7% alcohol solution (control, vehicle compounds, G_{CI}). There was significant difference in the increase of apoptosis in the treated groups, compared with G_{CI}, which might indicate action of the compounds in these cells. Infected animals treated with Lycopodium clavatum presented better performance compared with other groups. G_{Ly} showed a higher amount of hepatocytes and splenocytes

undergoing apoptosis, higher number of apoptotic bodies in the liver, predominance of Th1 response, increased TNF- α and decreased IL-6, higher survival, lower morbidity, higher water consumption, body temperature, tendency to higher feed intake and weight gain compared with GCI. *Conium maculatum* had worse results with increased Th2 response with increased IL-4, worsening of the infection with early mortality of the animals. Together, these data suggest that highly diluted medicines modulate the immune response and apoptosis, affecting the morbidity of animals infected with a highly virulent strain of *T. cruzi*, being able to minimize the course of infection, providing more alternative approaches in the treatment of Chagas disease.

Jocham A, Berberat PO, Schneider A et al. Why do students engage in elective courses on acupuncture and homeopathy at medical school a survey. *Complement Med Res.* 2017; Sep 21. doi: 10.1159/000468539.

Malapermal V, Botha I, Krishna SBN et al. Enhancing antidiabetic and antimicrobial performance of *Ocimum basilicum*, and *Ocimum sanctum* (L.) using silver nanoparticles. *Saudi J Biol Sci.* 2017; 24(6):1294-1305p.

Abstract:

The role of silver nanoparticles (AgNps) is an attractive proposition for advancing modern diabetes therapies and applied science. Stable AgNps with a size range of 3-25 nm were synthesized using aqueous leaf extracts from *Ocimum basilicum*, *Ocimum sanctum*, and in combination. The concentration of the extracts facilitated the reduction of silver nitrate that led to the rapid formation of AgNps at room temperature, indicating a higher reaction rate as opposed to harsh chemical methods, and high conversion energy usually involved in the synthesis. The size, shape and elemental analysis were carried out using UV-Visible spectroscopy, transmission electron microscopy (TEM), scanning electron microscopy with energy-dispersive X-ray spectroscopy (SEM-EDX), dynamic light scattering (DLS), and zeta potential whilst, Fourier transform infrared (FTIR) supported by gas chromatography mass spectroscopy (GC-MS) was used to identify the type of capping agents. Inhibition of α -amylase and α -glucosidase enzymes retards the rate of carbohydrate digestion, thereby provides an alternative and a less evasive strategy of reducing postprandial hyperglycaemia in diabetic patients. The AgNps derived from *O. sanctum* and *O. basilicum*, respectively displayed an inhibitory effect at $89.31 \pm 5.32\%$, and $79.74 \pm 9.51\%$, respectively, against *Bacillus stearothermophilus* α -glucosidase enzyme model, indicating an enhanced biocatalytic potential compared to their respective crude extracts and the control. Furthermore, the emerging rate of infections in diabetic patients validates the need for the discovery of dual diabetes therapies. As a result, the bioderived AgNps displayed antimicrobial activity against bacterial species *Staphylococcus*

aureus, Escherichiacoli, Pseudomonas aeruginosa, Bacillus subtilis, and Salmonella species.

Ostermann JK, Witt CM, Reinhold T. Retrospective cost-analysis of additional homeopathic treatment in Germany: Long-term economic outcomes. *PLoS One.* 2017; 12(9):e0182897. doi: 10.1371/journal.pone.0182897. eCollection 2017.

Abstract:

Objectives: This study aimed to provide a long-term cost comparison of patients using additional homeopathic treatment (homeopathy group) with patients using usual care (control group) over an observation period of 33 months.

Methods: Health claims data from a large statutory health insurance company were analysed from both the societal perspective (primary outcome) and from the statutory health insurance perspective (secondary outcome). To compare costs between patient groups, homeopathy and control patients were matched in a 1:1 ratio using propensity scores. Predictor variables for the propensity scores included health care costs and both medical and demographic variables. Health care costs were analysed using an analysis of covariance, adjusted for baseline costs, between groups both across diagnoses and for specific diagnoses over a period of 33 months. Specific diagnoses included depression, migraine, allergic rhinitis, asthma, atopic dermatitis, and headache.

Results: Data from 21,939 patients in the homeopathy group (67.4% females) and 21,861 patients in the control group (67.2% females) were analysed. Health care costs over the 33 months were 12,414 EUR [95% CI 12,022-12,805] in the homeopathy group and 10,428 EUR [95% CI 10,036-10,820] in the control group ($p < 0.0001$). The largest cost differences were attributed to productivity losses (homeopathy: EUR 6,289 [6,118-6,460]; control: EUR 5,498 [5,326-5,670], $p < 0.0001$) and outpatient costs (homeopathy: EUR 1,794 [1,770-1,818]; control: EUR 1,438 [1,414-1,462], $p < 0.0001$). Although the costs of the two groups converged over time, cost differences remained over the full 33 months. For all diagnoses, homeopathy patients generated higher costs than control patients.

Conclusion: The analysis showed that even when following-up over 33 months, there were still cost differences between groups, with higher costs in the homeopathy group.

Riemann D, Baglioni C, Bassetti C et al. European guideline for the diagnosis and treatment of insomnia. *J Sleep Res.* 2017; Sep 5. doi: 10.1111/jsr.12594.

Abstract:

This European guideline for the diagnosis and treatment of insomnia was developed by a task force of the European Sleep Research Society, with the aim of providing clinical recommendations for the management of adult patients with insomnia. The guideline is based on a systematic review of relevant meta-analyses published till June 2016. The target audience for this guideline includes all clinicians involved in the management of insomnia, and the target patient population includes adults with chronic insomnia disorder. The GRADE (Grading of Recommendations Assessment, Development and Evaluation) system was used to grade the evidence and guide recommendations. The diagnostic procedure for insomnia, and its co-morbidities, should include a clinical interview consisting of a sleep history (sleep habits, sleep environment, work schedules, circadian factors), the use of sleep questionnaires and sleep diaries, questions about somatic and mental health, a physical examination and additional measures if indicated (i.e. blood tests, electrocardiogram, electroencephalogram; strong recommendation, moderate- to high-quality evidence). Polysomnography can be used to evaluate other sleep disorders if suspected (i.e. periodic limb movement disorder, sleep-related breathing disorders), in treatment-resistant insomnia, for professional at-risk populations and when substantial sleep state misperception is suspected (strong recommendation, high-quality evidence). Cognitive behavioural therapy for insomnia is recommended as the first-line treatment for chronic insomnia in adults of any age (strong recommendation, high-quality evidence). A pharmacological intervention can be offered if cognitive behavioural therapy for insomnia is not sufficiently effective or not available. Benzodiazepines, benzodiazepine receptor agonists and some antidepressants are effective in the short-term treatment of insomnia (≤ 4 weeks; weak recommendation, moderate-quality evidence). Antihistamines, antipsychotics, melatonin and phytotherapeutics are not recommended for insomnia treatment (strong to weak recommendations, low- to very-low-quality evidence). Light therapy and exercise need to be further evaluated to judge their usefulness in the treatment of insomnia (weak recommendation, low-quality evidence). Complementary and alternative treatments (e.g. homeopathy, acupuncture) are not recommended for insomnia treatment (weak recommendation, very-low-quality evidence).

AYURVEDA

Ahmad S, Hassan A, Abbasi WM et al. Phytochemistry and pharmacological potential of Cassia absus: A review. *J Pharm Pharmacol.* 2017; Sep 5. doi: 10.1111/jphp.12816.

Abstract:

Objectives: Cassia absus is a plant of the family fabaceae with Ayurvedic ethnomedical records. It is used in traditional medicine for the treatment of bronchitis, asthma, cough, conjunctivitis, leucoderma, renal and hepatic diseases, constipation, tumors, venereal ulcer, headache, hemorrhoids and wound healing. Preliminary in vitro and in vivo studies have provided valuable scientific evidence for its use. This review aims to summarize reported pharmacognosy, traditional uses, phytochemistry and pharmacological potential of C. absus while identifying potential areas of further research of plant.

Key findings: The review comprises literature pertaining to the evidence base therapeutic potential, pharmacognosy and phytochemistry of C. absus spanning from 1935 to 2016 using published articles in peer-reviewed journals, ethno botanical text books, and worldwide accepted scientific databases via electronic search (Elsevier, Google Scholar, PubMed, Scopus, Springer, Web of Science, Wiley online library). Kew Botanical Garden databases and the Plant List were used to authenticate the scientific names. Different pharmacological experiments in many in-vitro and in-vivo models have proved the potential of C. absus with antihypertensive, antifertility, antifungal, anti-inflammatory, anti-hyperglycemic, anti-glycation, antibacterial activity, α - amylase inhibitory activity, antioxidant and reducing activity etc. chaksine, iso-chaksine, saturated and unsaturated fatty acids, chrysophanol, aloe-emodin and a wide range of chemical compounds have also been reported. Toxicity studies reveal the nontoxic nature of C. absus at a dose of 2000 mg/kg, however, plant possess reproductive toxicity and can be used as birth control or abortifacient.

Summary: Reported activities suggest that there is sufficient pharmacological potential for developing C. absus as a drug for hypertension, infections, diabetes and its complications. However, heterogeneity in study protocol and conflicting results mask the ability to replicate these studies. So, future studies should be replicated in line with best practices. More toxicological studies would aid the progress to clinical trial studies. Various ethno medical uses of C. absus have not been evaluated yet.

Arun A, Patel OPS, Saini D et al. Anti-colon cancer activity of *Murraya koenigii* leaves is due to constituent murrayazoline and O-methylmurrayamine A induced mTOR/AKT downregulation and

mitochondrial apoptosis. *Biomed Pharmacother.* 2017; 93:510-521p.

Abstract:

In recent years, many alkaloids of plant origin have attracted great attention due to their diverse range of biological properties including anti-hyperglycemic, anti-oxidant, anti-inflammatory, anti-diabetic and anti-tumor activity. Herein, the pyranocarbazole alkaloids were isolated from leaves of *Murraya koenigii* and their anti-cancer potential was investigated in different cancer cell lines. Among all tested compounds, murrayazoline and O-methylmurrayamine A demonstrated potent anti-cancer activity against DLD-1 colon cancer cells with the IC₅₀ values of 5.7µM and 17.9µM, respectively, without any non-specific cytotoxicity against non-cancer HEK-293 and HaCaT cells. Further, studies of pure compounds revealed that the anti-cancer activity of compounds corresponds with altered cellular morphology, cell cycle arrest in G2/M phase, reactive oxygen species level and mitochondrial membrane depolarization of colon cancer cells. In addition, these compounds activated caspase-3 protein and upregulated Bax/Bcl-2 protein expression ratio leading to induction of caspase-dependent apoptosis in DLD-1 cells. These event induced by carbazole alkaloids also coincides with downregulation of Akt/mTOR suggesting downstream targeting of cell survival pathway. Thus, our in vitro studies not only provided scientific basis of the use of *M. koenigii* leaves in the traditional Indian Ayurveda medicines, but also expands possibilities of medicinal uses of *M. koenigii* leaves against colon cancer. Particularly, these findings will help in further investigating murrayazoline and O-methylmurrayamine A or their improvised derivatives as new therapeutics for the treatment of colon cancer.

Arya R. Ancient Indian concepts about phenomenology, biology, and therapeutics of epilepsy. *J Hist Neurosci.* 2017; 1-16p.

Abstract:

This article discusses etiology, pathogenesis, symptoms, and treatment of epilepsy, as described in *Charaka Samhitā* (translation: *Charaka's Compendium*) and *Sushruta Samhitā*, the two core texts of Ayurveda, an ancient system of medicine. Ayurveda emphasized amnesia and loss of consciousness as core features of epileptic seizures (Sanskrit: *apasmar*; translation: *apa* negation, *smaran* memory) and recognized that seizures occur due to a disturbance in brain function or flow of "humors" to the brain. Semiology of various seizure types was well described. Epilepsy was attributed to both internal and multiple exogenous factors. Treatment of epilepsy with formulations of naturally occurring substances, their compounding and use, is described in remarkable detail. Lifestyle modifications to protect people with epilepsy are also documented. Cognitive comorbidities of epilepsy were recognized. Although none of the Ayurveda formulations have any empirical evidence supporting their safety or efficacy in the treatment of epilepsy, studies are needed to generate relevant evidence, to recognize their hazards, and to integrate traditional and complementary systems of medicine with modern

health care in an informed and safe manner.

Benil PB, Lekshmi R, Viswanathan N et al. Combined efficacy of *Vigna radiata* (L.) R. Wilczek and *Amorphophallus paeoniifolius* (Dennst.) Nicolson on serum lipids in albino rats. *Saudi J Biol Sci.* 2017; 24(6):1249-54p.

Abstract:

Coronary Artery Disease (CAD) is a major killer disease throughout the world. Dyslipidemia is a major contributor to the risk of CAD. Several dietary articles traditionally used in India and other South Asian countries reduced dyslipidemia. The present study was undertaken to evaluate the combined effect of Mung bean (*Vigna radiata*) and Elephant foot yam (*Amorphophallus paeoniifolius*) on serum lipids and atherogenic indices in albino rats and to compare it with a standard drug Cholestyramine. Thirty healthy albino rats of both sexes (150-200 g) were randomized to 5 groups of 6 animals each. The grouping were done based on the following criteria: Group I: Normal Control Group, Group II: (Standard Group): Cholestyramine resin 5 mg/kg bw, Group III: (Half Dose Group): Drug powder at 540 mg/kg bw, Group IV: (Effective Dose Group): Drug powder at 1080 mg/kg bw, and Group V: (Double Dose Group): Drug powder at 2160 mg/kg bw. Lipid profile was estimated at the beginning and after 30 days of treatment. The Effective and Double doses of the drug reduced Total cholesterol along with levels of Triglycerides, Low density lipoprotein and Very low density lipoprotein levels significantly ($p < 0.01$) along with a significant ($p < 0.01$) increase in high density lipoproteins (HDL) in rats. There was also significant ($p < 0.01$) improvement in atherogenic indices like Castelli Risk Index I, Non HDL C/HDL, Castelli risk Index II, TG/HDL, Atherogenic coefficient and Atherogenic Index of Plasma. The combination of powdered sprouted mung bean and yam powder have excellent lipid lowering potential.

Jain R, Venkatasubramanian P. Sugarcane molasses: A potential dietary supplement in the management of iron deficiency anemia. *J Diet Suppl.* 2017; 14(5):589-98p.

Abstract:

Iron deficiency anemia (IDA) is a serious public health problem that debilitates ~1.6 billion people globally every year, the majority being pregnant women and children from developing countries. In India, for example, in spite of several operational programs at the national level using iron-folic acid and other allopathic interventions, IDA is still prevalent. Traditional medicines, such as Ayurveda, prescribe herbal formulations containing sugarcane derivatives for the management of pandu, a condition similar to IDA. This article reviews molasses, a sugar industry by-product, as a potential raw material to develop nutraceutical products for IDA. Molasses contains iron and its absorption enhancers, such as sulfur, fructose, and copper, which make it a potential

dietary supplement for IDA. More research, product development, and evidence of safety and efficacy of molasses in IDA management can provide a tasty and cost-effective dietary supplement, particularly for children. However, there are challenges, such as competition for raw material from refined sugar manufacturers, quality control, etc., that need to be overcome.

Khatik GL, Datusalia AK, Ahsan W et al. Retrospect study on thiazole derivatives as the potential antidiabetic agents in drug discovery & amp; developments. *Curr Drug Discov Technol.* 2017; doi: 10.2174/1570163814666170915134018.

Abstract:

Background: Heterocycles containing thiazole, a moiety with sulfur and nitrogen is a core structure which found in a number of biologically active compounds. The thiazole ring is notable as a component of the certain natural products, such as vitamin B1 (thiamine) and penicillins. Thiazole is also known as wonder nucleus and has versatile in different biological fields. A number of new compounds contain heterocycle thiazole moieties, thus it is one of the important areas of research.

Methods: We searched the scientific database using relevant keywords. Among the searched literature only peer-reviewed papers were collected which addresses our questions. The retrieved quality research articles were screened and analyzed critically. The key findings of these studies were included along with their importance.

Results: The quality research articles included in this review, were selected for the life-threatening diseases i.e. diabetes, which is one of the serious issues all over the globe with an estimated worldwide prevalence in 2016 of 422 million people, which is expected to rise double by 2030. Since 1995, there has been an explosion of the introduction of new classes of pharmacological agents having thiazole moieties. However, most of the drugs can cause noncompliance, hypoglycemia, and obesity. Thus new antidiabetic drugs with thiazole moieties came up with improved compliance and reduced side effects such as pioglitazone (Actos), rosiglitazone (Avandia), netoglitazone, DRF-2189, PHT46, PMT13, DRF-2519. With such a great importance, research in thiazole is part of many academic and industrial laboratories worldwide.

Conclusion: The present review describes the importance of thiazole nucleus and its derivatives as antidiabetic agents with an emphasis on the past as well as recent developments.

Kuriakose J, Lal Raisa H, AV et al. Terminalia bellirica (Gaertn.) Roxb. fruit mitigates CCl4 induced oxidative stress and hepatotoxicity in rats. *Biomed Pharmacother.* 2017; 93:327-33p.

Abstract:

Terminalia bellirica (Gaertn.) Roxb. is a medicinal plant used for the treatment

of various ailments in the traditional system of medicine like Ayurveda where it has been prescribed as a rejuvenator and general health tonic. The fruit of the plant is one of the components of the age old ayurvedic formulation-'Triphala'. The present study evaluates curative effect of aqueous acetone extract of Terminalia bellirica fruits (AATB) against CCl₄ induced oxidative stress and liver damage in an animal model. Two doses of the fruit extract (200mg/kg body weight and 400mg/kg body weight) were investigated for the beneficial effects. At the end of the treatment, liver function markers (ALT, AST, ALP, GGT, LDH, total bilirubin, total protein, albumin, globulin, albumin-globulin ratio) as well as hepatic oxidative stress markers (SOD, CAT, GSH) were evaluated. Treatment with AATB significantly restored the parameters towards normal level as compared to the elevated biochemical markers in the CCl₄ treated animals. Reversal to normal tissue architecture was observed in histological evaluation. The results of AATB (400mg/kg) were found comparable with that of standard drug silymarin in all the parameters. The above findings suggest the therapeutic potential of the plant in alleviating hepatic oxidative stress and tissue damage, hence the traditional use of the plant in this regard stands justified.

Nasifah I, Soeharto S, Nooryanto M. Effects of anti-lipid peroxidation of Punica granatum fruit extract in endothelial cells induced by plasma of severe pre-eclamptic patients. *Ayurveda Integr Med.* 2017; pii: S0975-9476(16)30125-5. doi: 10.1016/j.jaim.2017.02.003.

Abstract:

Background: Preeclampsia is a pregnancy disorder characterized by hypertension and proteinuria. This disorder involves oxidative stress and changes in endothelial homeostasis.

Objective: This study was aimed to seek whether an ethanolic extract of Punica granatum fruit inhibits 8-iso-PGF α formation and modulates nitric oxide (NO) in endothelial cells induced by plasma from pre-eclamptic patients.

Material and methods: Endothelial cells were cultured from human umbilical vein endothelial cells. At confluence, endothelial cells were divided into five groups, which included endothelial cells exposed to 2% plasma from normal pregnancy (NP), endothelial cells exposed to 2% plasma from pre-eclamptic patients (PP), endothelial cells exposed to PP in the presence of ethanolic extract of P. granatum (PP+PG) at the following three doses: 14; 28; and 56 ppm. Analysis of 8-iso-PGF α was done by immunoassay technique. Analysis of NO level was done by colorimetric technique.

Results: Plasma from PP significantly increased 8-iso-PGF α level compared to cells treated by normal pregnancy plasma. This increase in 8-iso-PGF α was significantly ($p < 0.05$) attenuated by all doses treatments of P. granatum extract. The level of NO was insignificant ($p > 0.05$) between groups.

Conclusion: P. granatum fruit extract protects endothelial cells from oxidative

stress induced by plasma from pre-eclamptic patients.

Promsuban C, Limsuvan S, Akarasereenont P et al. Bacopa monnieri extract enhances learning-dependent hippocampal long-term synaptic potentiation. *Neuroreport*. 2017; Sep 6. doi: 10.1097/WNR.0000000000000862.

Abstract:

Bacopa monnieri has been used in Ayurvedic medicine as a memory enhancer for a long time; however, its direct effect on synaptic plasticity has not been investigated. To the best of our knowledge, this study is the first to report the effect of B. monnieri on long-term synaptic potentiation in acute hippocampal slices. Adult male Wistar rats were orally administered either sterile water or the ethanolic extract of B. monnieri for 60 days. The extracellular recording was performed to measure the field excitatory postsynaptic potential in the acute hippocampal slices of these rats. Our results showed that B. monnieri extract significantly increased long-term potentiation magnitude compared with the control group, whereas there was no change in basal synaptic transmission. The data support the beneficial mnemonic effect of B. monnieri, and suggest that this effect might be because of the increase of learning-associated synaptic machinery, resulting in the long-term potentiation enhancement and strengthening of hippocampal synapses, which plays a critical role in learning and memory formation.

Sanap A, Chandravanshi B, Shah T et al. Herbal pre-conditioning induces proliferation and delays senescence in Wharton's Jelly Mesenchymal Stem Cells. *Biomed Pharmacother*. 2017; 93:772-78p.

Abstract:

Background: Mesenchymal Stem Cells (MSCs) are multipotent stem cells which are being explored for various clinical applications. Isolation and in-vitro expansion of MSCs remain important in achieving desired cell number for the therapy. However, in-vitro proliferation of MSCs is often associated with senescence and early onset of apoptosis which limits its therapeutic ability and long term clinical use. *Tinospora cordifolia* and *Withania somnifera* are used widely in Ayurveda: the traditional Indian system of medicine and are reported to have rejuvenating and anti-aging potential. In the present study, we investigated the effect of *Tinospora cordifolia* and *Withania somnifera* on proliferation and senescence of wharton's jelly MSCs (WJMSCs) in-vitro.

Methods: WJMSCs were treated in culture medium with *Tinospora cordifolia* leaf and *Withania somnifera* root extracts to examine their effect on proliferation and senescence properties of WJMSCs. Proliferation of WJMSCs was assayed by cell count, MTT, BrdU incorporation assay, cell cycle analysis and Ki67 mRNA expression. Senescence was demonstrated using β -galactosidase senescence assay and associated mRNA markers.

Results: Culture medium supplemented with *Tinospora cordifolia* leaf and *Withania somnifera* root extracts exhibited significant increase in proliferation of WJMSCs as evidenced by cell count and MTT assay. Cell cycle analysis using propidium iodide showed increase in G2/M phase and decrease in apoptotic cells. BrdU incorporation and upregulation of proliferation marker ki67 by RT PCR showed increased DNA synthesis/proliferation in *Tinospora cordifolia* and *Withania somnifera* extract treated MSCs. Delayed senescence was confirmed by β -galactosidase senescence assay and down regulation of senescence marker p21.

Conclusion: Our results demonstrate for the first time that *Tinospora cordifolia* and *Withania somnifera* extracts support proliferation and inhibit senescence in WJMSCs making them suitable candidates as supplements for in-vitro expansion without affecting the cell viability indicating its non-toxic nature.

Srivastava A, Karthick T, Joshi BD et al. Spectroscopic (far or terahertz, mid-infrared and Raman) investigation, thermal analysis and biological activity of pipartine. *Spectrochim Acta A Mol Biomol Spectrosc* 2017; 184: 368-81p.

Abstract:

Research in the field of medicinal plants including *Piper* species like long pepper (*Piper longum* L.- Piperaceae) is increasing all over the world due to its use in traditional and Ayurvedic medicine. Pipartine (piperlongumine, 5,6-dihydro-1-[(2E)-1-oxo-3-(3,4,5-trimethoxyphenyl)-2-propenyl]-2(1H)-pyridinone), a biologically active alkaloid/amide was isolated from the phytochemical investigations of *Piper* species, as long pepper. This alkaloid has cytotoxic, anti-fungal, anti-diabetic, anti-platelet aggregation, anti-tumoral, anxiolytic, anti-depressant, anti-leishmanial, and genotoxic activities, but, its anticancer property is the most promising and has been widely explored. The main purpose of the work is to present a solid state characterization of PPTN using thermal analysis and vibrational spectroscopy. Quantum mechanical calculations based on the density functional theory was also applied to investigate the molecular conformation and vibrational spectrum, which was compared with experimental results obtained by Raman scattering, far (terahertz) and mid-infrared adsorption spectroscopy. NBO analysis has been performed which predict that most intensive interactions in PPTN are the hyperconjugative interactions between $n(1) N6$ and $\pi^*(O1C7)$ having delocalization energy of 50.53kcal/mol, Topological parameters have been analyzed using 'AIM' analysis which governs the three bond critical points (BCPs), one di-hydrogen, and four ring critical points (RCPs). MEP surface has been plotted which forecast that the most negative region is associated with the electronegative oxygen atoms (sites for nucleophilic activity). Theoretically, to confirm that the title compound has anti-cancer, anti-diabetic and anti-platelet aggregation activities, it was analyzed by molecular docking interactions with

the corresponding target receptors. The obtained values of H-bonding parameters and binding affinity prove that its anti-cancer activity is the more prominent than the other properties.

Tarai M, Kumar K, Divya O et al. Eigenvalue-eigenvector decomposition (EED) analysis of dissimilarity and covariance matrix obtained from total synchronous fluorescence spectral (TSFS) data sets of herbal preparations: Optimizing the classification approach. *Spectrochim Acta A Mol Biomol Spectrosc.* 2017; 184: 128-33p.

Abstract:

The present work compares the dissimilarity and covariance based unsupervised chemometric classification approaches by taking the total synchronous fluorescence spectroscopy data sets acquired for the cumin and non-cumin based herbal preparations. The conventional decomposition method involves eigenvalue-eigenvector analysis of the covariance of the data set and finds the factors that can explain the overall major sources of variation present in the data set. The conventional approach does this irrespective of the fact that the samples belong to intrinsically different groups and hence leads to poor class separation. The present work shows that classification of such samples can be optimized by performing the eigenvalue-eigenvector decomposition on the pair-wise dissimilarity matrix.

Zhang BB, Li WK, Hou WY et al. Zuotai and HgS differ from HgCl₂ and methyl mercury in Hg accumulation and toxicity in weanling and aged rats. *Toxicol Appl Pharmacol.* 2017; 331: 76-84p.

Abstract:

Mercury sulfides are used in Ayurvedic medicines, Tibetan medicines, and Chinese medicines for thousands of years and are still used today. Cinnabar (α -HgS) and metacinnabar (β -HgS) are different from mercury chloride (HgCl₂) and methylmercury (MeHg) in their disposition and toxicity. Whether such scenario applies to weanling and aged animals is not known. To address this question, weanling (21d) and aged (450d) rats were orally given Zuotai (54% β -HgS, 30mg/kg), HgS (α -HgS, 30mg/kg), HgCl₂ (34.6mg/kg), or MeHg (MeHgCl, 3.2mg/kg) for 7days. Accumulation of Hg in kidney and liver, and the toxicity-sensitive gene expressions were examined. Animal body weight gain was decreased by HgCl₂ and to a lesser extent by MeHg, but unaltered after Zuotai and HgS. HgCl₂ and MeHg produced dramatic tissue Hg accumulation, increased kidney (kim-1 and Ngal) and liver (Ho-1) injury-sensitive gene expressions, but such changes are absent or mild after Zuotai and HgS. Aged rats were more susceptible than weanling rats to Hg toxicity. To examine roles of transporters in Hg accumulation, transporter gene expressions were examined. The expression of renal uptake transporters Oat1, Oct2, and Oatp4c1 and hepatic Oatp2 was decreased, while the expression of renal efflux transporter Mrp2, Mrp4 and Mdr1b was increased following HgCl₂ and MeHg,

but unaffected by Zuotai and HgS. Thus, Zuotai and HgS differ from HgCl₂ and MeHg in producing tissue Hg accumulation and toxicity, and aged rats are more susceptible than weanling rats. Transporter expression could be adaptive means to reduce tissue Hg burden.

UNANI MEDICINE

Ahmed A, Akbar S, Shah WA. Chemical composition and pharmacological potential of aromatic water from *Salix caprea* inflorescence. *Chin J Integr Med.* 2017; doi: 10.1007/s11655-017-2781-5

Abstract:

Objective: To evaluate the chemical composition and pharmacological potential of hydro distillate from *Salix caprea* inflorescence.

Methods: Fresh flowers were subjected to conventional hydrodistillation. Antioxidant activity was assessed as free radical scavenging capacity (RSC) towards 2, 2-diphenyl-1-picrylhydrazil (DPPH) radicals. Anti inflammatory activity was examined by human red blood cell (HRBC) membrane stabilization method. Qualitative and Quantitative analysis of hexane extract of aromatic water was performed by gas chromatography (GC) and gas chromatography-mass spectrometric (GC-MS).

Results: A total of 19 constituents representing (99.2%) of the aromatic water were identified; Hexahydrofarnesylacetone (38.3%), 2-butyl-octanol (24.0%), 2-hexyl-1-octanol (8.6%) were the main components. Results suggest that the hydro distillate possess significant antioxidant and anti-inflammatory properties.

Conclusions: The aromatic water's composition and its pharmacological evaluations has been reported in our results for this unique and endemic species.

Khan SA, Nami SAA, Bhat SA et al. Synthesis, characterization and antimicrobial study of polymeric transition metal complexes of Mn(II), Co(II), Ni(II), Cu(II) and Zn(II). *Microb Pathog.* 2017; 110: 414-25p.

Abstract:

Salen ligands comprising of o-phenylenediamine (salop) and p-phenylenediamine (salpp) have been synthesized. The salen ligand, salop undergo Schiff base reaction with Formaldehyde and Barbituric acid to generate novel polymeric Schiff base, SBOPA in one instance while the second salen ligand, salpp on Schiff base reaction with formaldehyde and piperazine gives another novel polymeric Schiff base, SBPBA. These polymeric Schiff base ligands, SBOPA and SBPBA generates polymeric metal complexes in high yields on reaction with transition metal acetates, $M(\text{CH}_3\text{COO})_2 \cdot x\text{H}_2\text{O}$ where $M = \text{Mn(II)}, \text{Co(II)}, \text{Ni(II)}, \text{Cu(II)}$ and Zn(II) . The polymeric Schiff bases, SBOPA and SBPBA and their transition metal complexes were systematically characterized, using various spectroscopic techniques. The structure, composition and geometry of SBOPA and SBPBA and their metal complexes were confirmed by spectral techniques (FT-IR, and ^1H NMR), elemental analysis, and electronic spectra magnetic moment. On the basis of FT-

IR, ¹HNMR, electronic spectra and magnetic moment values Mn(II), Co(II) and Ni(II) ion were found to have octahedral geometry while Cu(II) and Zn(II) were found to be square-planar in nature. Thermogravimetric analysis (TGA) was used to evaluate their thermal behaviour and Cu(II)-SBOPA and Cu(II)-SBPBA were found to be thermally most stable. The polymeric Schiff base ligands, SBOPA and SBPBA and their metal complexes have also been screened for their plausible antimicrobial activity. Tetracyclin and Miconazole were used as standard drug to study the antibacterial and antifungal activity respectively. The Cu(II)-SBOPA and Cu(II)-SBPBA were found to be most potent antimicrobial agents.

YOGA

Bonakdar RA. Integrative pain management. *Med Clin North Am.* 2017; 101(5):987-1004p.

Abstract:

Chronic pain is one of the most common conditions seen in the clinic, and it is often one of the most frustrating for both clinicians and patients. This condition stems from common comorbidities, including depression, insomnia, fatigue, and physical deconditioning, which often create barriers to recovery. In addition, chronic pain has had divergent approaches for treatment, including an overemphasis on analgesia and curative treatments while underemphasizing the biopsychosocial needs of those in pain. This article attempts to provide an initial framework for approaching those in pain and initiating patient-centered options to support improvements in pain, function, and self-care.

Chaoul A, Milbury K, Spelman A et al. Randomized trial of Tibetan yoga in patients with breast cancer undergoing chemotherapy. *Cancer.* 2017; doi: 10.1002/cncr.30938.

Abstract:

Background: The current randomized trial examined the effects of a Tibetan yoga program (TYP) versus a stretching program (STP) and usual care (UC) on sleep and fatigue in women with breast cancer who were undergoing chemotherapy.

Methods: Women with stage (American Joint Committee on Cancer (AJCC) TNM) I to III breast cancer who were undergoing chemotherapy were randomized to TYP (74 women), STP (68 women), or UC (85 women). Participants in the TYP and STP groups participated in 4 sessions during chemotherapy, followed by 3 booster sessions over the subsequent 6 months, and were encouraged to practice at home. Self-report measures of sleep disturbances (Pittsburgh Sleep Quality Index), fatigue (Brief Fatigue Inventory), and actigraphy were collected at baseline; 1 week after treatment; and at 3, 6, and 12 months.

Results: There were no group differences noted in total sleep disturbances or fatigue levels over time. However, patients in the TYP group reported fewer daily disturbances 1 week after treatment compared with those in the STP (difference, -0.43; 95% confidence interval [95% CI], -0.82 to -0.04 [P = .03]) and UC (difference, -0.41; 95% CI, -0.77 to -0.05 [P = .02]) groups. Group differences at the other time points were maintained for TYP versus STP. Actigraphy data revealed greater minutes awake after sleep onset for patients

in the STP group 1 week after treatment versus those in the TYP (difference, 15.36; 95% CI, 7.25-23.48 [P = .0003]) and UC (difference, 14.48; 95% CI, 7.09-21.87 [P = .0002]) groups. Patients in the TYP group who practiced at least 2 times a week during follow-up reported better Pittsburgh Sleep Quality Index and actigraphy outcomes at 3 months and 6 months after treatment compared with those who did not and better outcomes compared with those in the UC group.

Conclusions: Participating in TYP during chemotherapy resulted in modest short-term benefits in sleep quality, with long-term benefits emerging over time for those who practiced TYP at least 2 times a week. Cancer 2017. © 2017 American Cancer Society.

Christensen JF, Gaigg SB, Calvo-Merino B. Can feel my heartbeat: Dancers have increased interoceptive accuracy. *Psychophysiology*. 2017; doi: 10.1111/psyp.13008.

Abstract:

Interoception is the process of perceiving afferent signals arising from within the body including heart rate (HR), gastric signals, etc., and has been described as a mechanism crucially involved in the creation of self-awareness and selfhood. The heartbeat perception task is a tool to measure individuals' interoceptive accuracy (IAcc). IAcc correlates positively with measures of self-awareness and with attributes including emotional sensitivity, empathy, prosocial behavior, and efficient decision making. IAcc is only moderate in the general population, and attempts to identify groups of people who might have higher IAcc due to their specific training (e.g., yoga, meditation) have not been successful. However, a recent study with musicians suggests that those trained in the arts might exhibit high IAcc. Here, we tested IAcc in 20 professional dancers and 20 female control participants on a heartbeat perception task. Dancers had a higher IAcc, and this effect was independent of their lower heart rates (a proxy measure of physical fitness), counting ability, and knowledge about HR. An additional between-groups analysis after a median split in the dancer group (based on years of dance experience) showed that junior dancers' IAcc differed from controls, and senior dancers' IAcc was higher than both junior dancers and controls. General art experience correlated positively with IAcc. No correlations were found between IAcc and questionnaire measures of empathy, emotional experience, and alexithymia. These findings are discussed in the context of current theories of interoception and emotion-highlighting the features of arts training that might be related to IAcc.

Cisse A, Giles C, Salloum IM. Yoga in the yard. *Psychiatr Serv*. 2017; 68(9): 980p.

Cook Cottone C, Talebkhah K, Guyker W et al. Controlled trial of a yoga-based prevention program targeting eating disorder risk factors among middle school females. *Eat Disord.* 2017; 1-14p. doi: 10.1080/10640266.2017.1365562.

Abstract:

This study investigates outcomes of a revised version of a yoga-based, eating disorder prevention program, targeting eating disorder risk factors, among fifth grade girls (i.e., Girls Growing in Wellness and Balance: Yoga and Life Skills to Empower [GGWB]). The program is designed to decrease eating disorder risk factors and bolster self-care and includes revisions not yet studied that extend the program to 14 weeks and enhance content addressing self-care. Efficacy was assessed using a controlled, repeated measures design. Results indicate that participation in the GGWB program significantly decreases drive for thinness and body dissatisfaction while significantly increasing self-care when compared to a control group. As expected, the program did not have significant effects on eating disordered behaviour likely due to low baseline rates among participants. Implications of findings as well as directions for future research on prevention are discussed.

Galliford M, Robinson S, Bridge P et al. Salute to the sun: A new dawn in yoga therapy for breast cancer. *J Med Radiat Sci.* 2017; 64(3): 232-38p.

Abstract:

Introduction: Interest in the application of yoga for health benefits in western medicine is growing rapidly, with a significant rise in publications. The purpose of this systematic review is to determine whether the inclusion of yoga therapy to the treatment of breast cancer can improve the patient's physical and psychosocial quality of life (QoL).

Methods: A search of peer reviewed journal articles published between January 2009 and July 2014 was conducted. Studies were included if they had more than 15 study participants, included interventions such as mindfulness-based stress reduction (MBSR) or yoga therapy with or without comparison groups and had stated physical or psychological outcomes.

Results: Screening identified 38 appropriate articles. The most reported psychosocial benefits of yoga therapy were anxiety, emotional and social functioning, stress, depression and global QoL. The most reported physical benefits of yoga therapy were improved salivary cortisol readings, sleep quality and lymphocyte apoptosis. Benefits in these areas were linked strongly with the yoga interventions, in addition to significant improvement in overall QoL.

Conclusion: The evidence supports the use of yoga therapy to improve the

physical and psychosocial QoL for breast cancer patients with a range of benefits relevant to radiation therapy. Future studies are recommended to confirm these benefits. Evidence-based recommendations for implementation of a yoga therapy programme have been derived and included within this review. Long-term follow-up is necessary with these programmes to assess the efficacy of the yoga intervention in terms of sustainability and patient outcomes.

Gregoire C, Bragard I, Jerusalem G et al. Group interventions to reduce emotional distress and fatigue in breast cancer patients: A 9-month follow-up pragmatic trial. *Br J Cancer*. 2017; doi: 10.1038/bjc.2017.326.

Abstract:

Background: Long-term effects of psychosocial interventions to reduce emotional distress, sleep difficulties, and fatigue of breast cancer patients are rarely examined. We aim to assess the effectiveness of three group interventions, based on cognitive behavioural therapy (CBT), yoga, and self-hypnosis, in comparison to a control group at a 9-month follow-up.

Methods: A total of 123 patients chose to participate in one of the interventions. A control group was set up for those who agreed not to participate. Emotional distress, fatigue, and sleep quality were assessed before (T0) and after interventions (T1), and at 3-month (T2) and 9-month follow-ups (T3).

Results: Nine months after interventions, there was a decrease of anxiety (P=0.000), depression (P=0.000), and fatigue (P=0.002) in the hypnosis group, and a decrease of anxiety (P=0.024) in the yoga group. There were no significant improvements for all the investigated variables in the CBT and control groups.

Conclusions: Our results showed that mind-body interventions seem to be an interesting psychological approach to improve the well-being of breast cancer patients. Further research is needed to improve the understanding of the mechanisms of action of such interventions and their long-term effects on quality of life. *British Journal of Cancer* advance online publication 19 September 2017; doi:10.1038/bjc.2017.326 www.bjcancer.com.

Handley MA, Quan J, Chao MT et al. Use of complementary health approaches among diverse primary care patients with type 2 diabetes and association with cardiometabolic outcomes: From the sf bay collaborative research network (sf bay crn). *J Am Board Fam Med*. 2017;30(5): 624-31p.

Abstract:

Purpose: To describe use of complementary health approaches (CHAs) among

patients with type 2 diabetes, and independent associations between CHA use and Hemoglobin A1c (A1C) and lower-density lipoprotein (LDL) cholesterol.

Methods: Participants were enrolled onto the SMARTSteps Program, a diabetes self-management support program conducted between 2009 and 2013 in San Francisco. At the 6-month interview, CHA use in the prior 30 days was estimated using a 12-item validated instrument. Demographic and diabetes-related measures A1C were assessed at baseline and 6-month followup. A1C and LDL values were ascertained from chart review over the study period. Medication adherence was measured using pharmacy claims data at 6 and 12 months.

Results: Patients (n = 278) completed 6-month interviews: 74% were women and 71.9% were non-English speaking. Any CHA use was reported by 51.4% overall. CHA modalities included vitamins/nutritional supplements (25.9%), spirituality/prayer (21.2%), natural remedies/herbs (24.5%), massage/acupressure (11.5%), and meditation/yoga/tai chi (10.4%). CHA costs per month were \$43.86 (SD = 118.08). Nearly one third reported CHA (30.0%) specifically for their type 2 diabetes. In regression models, elevated A1C (>8.0%) was not significantly associated with overall CHA use (odds ratio [OR] = 1.78; 95% confidence interval [CI], 0.7 to 4.52) whereas elevated LDL was (OR = 3.93; 95% CI, 1.57 to 9.81). With medication adherence added in exploratory analysis, these findings were not significant.

Conclusions: CHA use is common among patients with type 2 diabetes and may be associated with poor cardiometabolic control and medication adherence.

Highland KB, Schoomaker A, Rojas W et al. Benefits of the restorative exercise and strength training for operational resilience and excellence yoga program for chronic lower back pain in service members: A pilot randomized control trial. *Arch Phys Med Rehabil.* 2017; pii: S0003-9993(17)31082-1.

Abstract:

Objective: To examine the feasibility and preliminary effectiveness of an individualized yoga program.

Design: Pilot randomized control trial.

Setting: Military medical center.

Participants: Patients (N=68) with chronic LBP.

Interventions: Restorative Exercise and Strength Training for Operational

Resilience and Excellence (RESTORE) program (9-12 individual yoga sessions) or treatment-as-usual (control) for 8-week period.

Main outcome measures: The primary outcome was past 24-hour pain scores (Defense and Veterans Pain Rating Scale). Secondary outcomes included disability (Roland-Morris Disability Questionnaire), physical functioning, and symptom burden (Patient Reported Outcomes Measurement Information System-29 subscales). Assessment occurred at baseline, Week 4, Week 8, 3-month follow-up, and 6-month follow-up. Exploratory outcomes included the proportion of participants in each group reporting clinically meaningful changes at 3-month and 6-month follow-ups.

Results: Generalized linear mixed models with sequential Bonferroni-corrected pairwise significance tests and chi-square analyses examined longitudinal outcomes. Secondary outcome significance tests were Bonferroni-adjusted for multiple outcome tests. The RESTORE group reported improved pain, compared to the control group. Secondary outcomes did not retain significance after Bonferroni-adjustments for multiple outcomes. Though, a greater proportion RESTORE participants reported clinically-meaningfully changes in all outcome at 3-month follow-up and symptom burden at 6-month follow-up.

Conclusion: RESTORE may be a viable non-pharmacologic approach to LBP with minimal Side effects and research efforts are needed to compare effectiveness of RESTORE delivery formats (e.g., group versus individual) or to other treatment modalities.

Klinsophon T, Thaveeratitham P, Sitthipornvorakul E et al. Effect of exercise type on smoking cessation: A meta-analysis of randomized controlled trials. *BMC Res Notes*. 2017; 10(1): 442p.

Abstract:

Background: Exercise is one choice of additional treatment for smoking cessation by relieving nicotine withdrawal symptoms and smoking craving. The possible mechanism of the effect of exercise on relieving nicotine withdrawal symptoms and smoking craving is including affect, biological, and cognitive hypotheses. Evidence suggests that different types of exercise have different effects on these mechanisms. Therefore, type of exercise might have effect on smoking cessation. The purpose of this study is to systematically review randomized controlled trials to gain insight into which types of exercise are effective for smoking cessation.

Methods: Publications were systemically searched up to November 2016 in several databases (PubMed, ScienceDirect, PEDro, Web of Science, Scopus and Cochrane Library), using the following keywords: "physical activity", "exercise",

"smoking", "tobacco" and "cigarette". The methodological quality was assessed independently by two authors. Meta-analysis was conducted to examine the effectiveness of the type of exercise on smoking cessation. The quality of the evidence was assessed and rated according to the GRADE approach.

Results: 20 articles on 19 studies were judged to meet the selection criteria (seven low-risk of bias RCTs and 12 high-risk of bias RCTs). The findings revealed low quality evidence for the effectiveness of yoga for smoking cessation at the end of the treatment. The evidence found for no effect of aerobic exercise, resisted exercise, and a combined aerobic and resisted exercise program on smoking cessation was of low to moderate quality. Furthermore, very low to low quality evidence was found for no effect of physical activity on smoking cessation.

Conclusions: There was no effect of aerobic exercise, resisted exercise, physical activity and combined aerobic and resisted exercise on smoking cessation. There was a positive effect on smoking cessation at the end of treatment in the program where yoga plus cognitive-behavioral therapy (CBT) was used. However, which of the two work is still to be studied.

Layne EI, Roffey DM, Coyle MJ et al. Activities performed and treatments conducted prior to consultation with a spine surgeon: Are patients and clinicians following evidence-based clinical practice guidelines? *Spine J.* 2017; Sep 4. pii: S1529-9430(17)30976-2.

Abstract:

Background context: Clinical practice guidelines (CPGs) are designed to ensure that evidence-based treatment is easily put into action. Whether patients and clinicians follow these guidelines is equivocal.

Purpose: To examine how many patients complaining of low back pain (LBP) underwent evidence-based non-operative treatment in line with CPG recommendations prior to consultation with a spine surgeon, and to evaluate any associations between adherence to CPG recommendations and baseline factors.

Study design/setting: Cross-sectional cohort analysis at a tertiary care center.

Patient sample: Total of 229 patients referred for surgical consultation for an elective lumbar spinal condition.

Outcome measures: Number of CPG-recommended treatments undertaken by patients at or before the time of referral, validated pain score, EuroQol 5-D

(EQ-5D) health status, and Oswestry Disability Index (ODI) score.

Methods: Questionnaires assessing demographic and functional characteristics as well as overall health care utilization were sent to patients immediately after their referral was received by the surgeon's office. Funding for this study was provided via Innovation Funds from The Ottawa Hospital Academic Medical Organization (TOHAMO) (\$27,296). DMR reports receiving remuneration for consulting services provided to Palladian Health, LLC. and Pacira Pharmaceuticals, Inc. (\$20,000-\$30,000 annually), although neither relationship presents a potential conflict of interest with the submitted work. There are no conflict-of-interest associated biases.

Results: Medications were the most common modality prior to consultation (74.2% of patients), of which 46.3% received opioids. Number of medications taken was significantly related to higher ODI score ($R = 0.23$, $p = 0.0004$), higher pain score ($R = 0.15$, $p = 0.026$), and lower EQ-5D health status ($R = -0.15$, $p = 0.024$). In contrast, lower pain score (7.2 vs. 7.7, $p = 0.037$) and lower ODI score (26.6 vs. 29.9, $p = 0.0023$) were associated with performing adequate amounts of exercise. There was a significant association between lower number of treatments received and higher numerical pain rating scores ($R = -0.14$, $p = 0.035$). The majority (61.1%) of patients received two or less forms of treatment.

Conclusion: Evidence-based non-operative treatments for patients with LBP are not being taken advantage of prior to spine surgery consultation. If more patients were to undertake CPG-endorsed conservative modalities, it may result in fewer unnecessary referrals from primary care physicians, and patients might not deteriorate as much while lingering on long wait lists. Further studies incorporating knowledge translation or health systems pathway changes are necessary.

Lee J, Yoo HN, Lee BH. Effects of augmented reality-based Otago exercise on balance, gait, and physical factors in elderly women to prevent falls: A randomized controlled trial. *J Phys Ther Sci.* 2017; 29(9):1586-1589p.

Abstract:

[Purpose] To determine the effect of augmented reality (AR)-based otago exercise on muscle strength, balance, and physical factors in falls of elderly women. [Subjects and Methods] Thirty subjects were randomly assigned to AR group (AR, $n=10$), yoga group (yoga, $n=10$), and self-exercise group (self, $n=10$). For 12 weeks, these groups were given lessons related to AR-based otago exercise including strengthening, balance training, or yoga three times a week (60 minutes each time) and self-exercise using elastic band exercise program. [Results] Knee flexion and ankle dorsiflexion strength were significantly improved in all three groups (AR, yoga, and self-exercise groups). Regarding

balance, eye open center of pressure-x (EO CoP-x) was significantly decreased in AR group and yoga group. However, eye close CoP-x, eye open standard deviation-x (EO SD-x), and eye open height of ellipse (EO HoE) were only significantly decreased in AR group. AR group also showed meaningfully improved results in morse fall scale. [Conclusion] Augmented reality-based otago exercise can improve muscle strength, balance, and physical factors in elderly women to prevent falls.

Marshall RS, Mohapatra B. Integrative intervention: A new perspective and brief review in aphasia. *Disabil Rehabil.* 2017 ; 39(19): 1999-2009p.

Abstract:

Purpose: While integrative treatment practices have become a popular treatment in different areas of study, its use in the field of aphasiology is still limited. The following paper is an attempt to address the different alternative practices that could potentially be used to remediate aphasia.

Method: A narrative review was completed regarding integrative intervention that could potentially apply to aphasia population.

Results: Through this article we have explored various treatment options for integrative health care in aphasiology. Integrative treatments including brain specific antioxidants, progesterone and estradiol therapy, nutrition, synbiotic treatment, exercise, yoga, meditation and positive mood states have demonstrated positive changes in health and behavior in healthy aging or disorders such as stroke and aphasia. Offering integrative treatment for people with aphasia allows potential for high impact gains when combined with current speech language therapeutic practices.

Conclusion: This paper highlights the rehabilitation possibilities for aphasia therapy. Combining complementary and traditional treatment approaches could be viewed as one of the contemporary approaches to clinical practice and research for practitioners and health care systems. Implications for Rehabilitation There has been very little research that explores the potential of various types of integrative treatment for individuals with aphasia. An integrative approach to the treatment of aphasia has potential for future clinical application. Combining treatment approaches could be viewed as a viable approach to clinical practice and in the health care system.

Metin ZG, Ejem D, Dionne Odom JN et al. Mind-Body interventions for individuals with heart failure: A systematic review of randomized trials. *J Card Fail.* 2017; pii: S1071-9164(17)31213-7.

Abstract:

Background: The effects of mind-body interventions (MBIs) (e.g. Tai Chi, yoga, and meditation) for individuals with heart failure (HF) have not been systematically evaluated.

Methods and results: We performed a systematic review of randomized controlled trials (RCTs) examining the effects of MBIs in HF. We extracted participant characteristics, MBI procedure, outcomes assessed, and main results of English language RCTs before October 2016. We identified 24 RCTs (n=1314 participants) of nine MBI types: Tai Chi (n=7), yoga (n =4), relaxation (n =4), meditation (n=2), acupuncture (n=2), biofeedback (n=2), stress management (n=1), Pilates (n=1) and reflexology (n=1). Most (n=22, 95.8%) reported small-to-moderate improvements in quality of life (14/14 studies), exercise capacity (8/9 studies), depression (5/5 studies), anxiety and fatigue (4/4 studies), blood pressure (3/5 studies), heart rate (5/6 studies), heart rate variability (7/9 studies), and B-type natriuretic peptide (3/4 studies). Studies ranged from 4 minutes to 26 weeks and group sizes ranged from 8 to 65 patients per study arm.

Conclusions: Although wide variability exists in the types and delivery, RCTs of MBIs have demonstrated small-to-moderate positive effects on HF patients' objective and subjective outcomes. Future research should examine the mechanisms by which different MBIs exert their effects.

Miller S, Gaylord S, Buben A et al. Literature review of research on chronic pain and yoga in military populations. *Medicines (Basel)*. 2017; 4(3). pii: E64. doi: 10.3390/medicines4030064.

Abstract:

Background: Although yoga is increasingly being provided to active duty soldiers and veterans, studies with military populations are limited and effects on chronic pain are largely unknown. We reviewed the existing body of literature and provide recommendations for future research.

Methods: We conducted a literature review of electronic databases (PubMed, PsychINFO, Web of Science, Science Citation Index Expanded, Social Sciences Citation Index, Conference Proceedings Citation Index-Science, and Conference Proceedings Citation Index-Social Science & Humanities). The studies were reviewed for characteristics such as mean age of participants, sample size, yoga type, and study design. Only peer-reviewed studies were included in the review.

Results: The search yielded only six studies that examined pain as an outcome of yoga for military populations. With one exception, studies were with veteran populations. Only one study was conducted with Operation Enduring Freedom

(OEF) or Operation Iraqi Freedom (OIF) veterans. One study was a randomized controlled trial (RCT). Four of the five studies remaining used pre/post design, while the last study used a post-only design.

Conclusions: Studies on the use of yoga to treat chronic pain in military populations are in their infancy. Methodological weaknesses include small sample sizes, a lack of studies with key groups (active duty, OEF/IEF veterans), and use of single group uncontrolled designs (pre/post; post only) for all but one study. Future research is needed to address these methodological limitations and build on this small body of literature.

Mooventhan A, Nivethitha L. Evidence based effects of yoga in neurological disorders. *J Clin Neurosci.* 2017; 43: 61-67p.

Abstract:

Though yoga is one of the widely used mind-body medicine for health promotion, disease prevention and as a possible treatment modality for neurological disorders, there is a lack of evidence-based review. Hence, we performed a comprehensive search in the PubMed/Medline electronic database to review relevant articles in English, using keywords "yoga and neurological disorder, yoga and multiple sclerosis, yoga and stroke, yoga and epilepsy, yoga and Parkinson's disease, yoga and dementia, yoga and cerebrovascular disease, yoga and Alzheimer disease, yoga and neuropathy, yoga and myelopathy, and yoga and Guillain-Barre syndrome". A total of 700 articles published from 1963 to 14th December 2016 were available. Of 700 articles, 94 articles were included in this review. Based on the available literature, it could be concluded that yoga might be considered as an effective adjuvant for the patients with various neurological disorders.

Pickett AC, Cunningham GB. Creating inclusive physical activity spaces: The case of body-positive yoga. *Res Q Exerc Sport.* 2017; 88(3): 329-38p.

Abstract:

Purpose: Within the modern cultural climate, those in larger bodies face high levels of weight stigma, particularly in sport and physical activity spaces, which serves as a strong barrier to their participation. However, given the strong link between physical activity and general health and well-being for participants, it is important to explore strategies that encourage participation of these individuals. Thus, the current research examined strategies that physical activity instructors use to develop inclusive exercise spaces for all body sizes.

Method: This study employed a series of semistructured qualitative interviews (n = 9) with instructors of body-inclusive yoga classes to explore the ways in

which they encourage participation for those in larger bodies.

Results: Emergent themes from the current study suggested support for 6 factors for creating body-inclusive physical activity spaces: authentic leadership, a culture of inclusion, a focus on health, inclusive language, leader social activism, and a sense of community.

Conclusion: This study revealed that leaders must intentionally cultivate inclusion in their spaces to encourage those in nonconforming bodies to participate. These findings have important health and management implications for the sport and physical activity context and provide a basic outline of practical strategies that practitioners can use to foster inclusion in their spaces.

Rådmark L, Magnusson Hanson LL, Bojner Horwitz E et al. Prevalence of mind and body exercises (MBE) in relation to demographics, self-rated health, and purchases of prescribed psychotropic drugs and analgesics. *PLoS One.* 2017; 12(9): e0184635.

Abstract:

This study aims to identify any differences regarding gender, age, socioeconomic status (SES), self-rated health, perceived stress and the purchase of prescribed drugs among people who practice mind and body exercises (MBE) extensively compared to people who do not.

Methods: The study includes 3,913 men and 4,803 women aged 20-72 who participated in the Swedish Longitudinal Occupational Survey of Health (SLOSH). The respondents were divided into three groups depending on frequency of MBE practice (never/seldom/often). Measures regarding MBE practice, health behaviors, self-rated health, and illnesses were drawn from the SLOSH questionnaire, while more objective measures of socioeconomic status and education were derived from registry data. In addition, data on purchases of prescription drugs for all respondents were included in the study. These data were obtained from the Swedish Prescribed Drug Register, which contains information about prescription drugs dispensed at Swedish pharmacies. Separate analyses were performed for mental MBE (mindfulness, meditation, relaxation techniques) and physical MBE (yoga, Tai Chi, Qi Gong), respectively.

Results: A high intensity MBE practice is cross-sectionally related to poor self-assessed health (sleeping problems, pain, depressive symptoms, mental disorders), high levels of stress, and high levels of purchases of psychotropic drugs and analgesics. These cross-sectional relationships are generally stronger for mental MBE than for bodily-directed MBE. More women than men are practicing MBE on a regular basis, and physically active people participate

to a greater extent in MBE compared with the physically inactive.

Conclusion: Overall, the study shows that frequent participation in mind and body exercises is associated with high levels of purchases of psychotropic drugs and analgesics as well as with poor self-assessed health and high levels of stress. However, since this is a cross-sectional study, it is impossible to establish cause and effect, and to further investigate the associations found; longitudinal studies that can account for temporality between covariates and MBE use are needed.

Rico-Martín S, Santano-Mogena E, Cobos-Serrano JL et al. Comments on effects 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; 1474515117731403.

Sankaran K, Hankey A. Experience information as the basis of mind: Evidence from human decision making. *Prog Biophys Mol Biol.* 2017; pii: S0079-6107(17)30151-7. doi: 10.1016/j.pbiomolbio.2017.09.017.

Abstract:

Study of product diversity by companies and corporations led to the discovery of a new statistical distribution, the (1/f) distribution, assessed according to the Herfindahl-Hirschman index. Products of human creative thinking and decision-making seem to obey the index very widely or universally. This article explores examples of its applications in business and economics as evidence for a new scientific conjecture concerning the physiological basis of Mind: that mind functions from critical instabilities in the brain physiology. Instabilities result in (1/f) distributions of physiological responses, so the two sources of (1/f) distribution present interesting parallels. Without comprehensively reviewing all Herfindahl-Hirschman index applications, many similar examples of (1/f) distributions are considered: those in numbers of divisions and subdivisions within big corporations, and numbers of corporations in industrial sectors. Evidently, this kind of distribution derives from individual and collective creative work. The paper reasons that it reveals important evidence about the conjectured basis of mind and its creative capacities. A previous Special Issue paper showed that many of the mind's properties, including self-awareness, result from critical instabilities being the loci of control of biological systems. A consequence of such instability is that when faced by several identical stimuli, the physiology offers a (1/f) distribution of responses. Studies described here showing that creative thinking produces (1/f) distributions of results may thus be considered a first round of direct evidence for the mind functioning from critical instability. Physical systems producing (1/f) distributions do not have that implication. Other cybernetic systems may

behave differently.

Stefanopoulou E, Grunfeld EA. Mind-body interventions for vasomotor symptoms in healthy menopausal women and breast cancer survivors. A systematic review. *J Psychosom Obstet Gynaecol.* 2017; 38(3): 210-25p.

Abstract:

Mind-body therapies are commonly recommended to treat vasomotor symptoms, such as hot flushes and night sweats (HFNS). The purpose of this systematic review was to evaluate the available evidence to date for the efficacy of different mind-body therapies to alleviate HFNS in healthy menopausal women and breast cancer survivors. Randomized controlled trials (RCTs) were identified using seven electronic search engines, direct searches of specific journals and backwards searches through reference lists of related publications. Outcome measures included HFNS frequency and/or severity or self-reported problem rating at post-treatment. The methodological quality of all studies was systematically assessed using predefined criteria. Twenty-six RCTs met the inclusion criteria. Interventions included yoga (n = 5), hypnosis (n = 3), mindfulness (n = 2), relaxation (n = 7), paced breathing (n = 4), reflexology (n = 1) and cognitive behavioural therapy (CBT) (n = 4). Findings were consistent for the effectiveness of CBT and relaxation therapies for alleviating troublesome vasomotor symptoms. For the remaining interventions, although some trials indicated beneficial effects (within groups) at post-treatment and/or follow up, between group findings were mixed and overall, methodological differences across studies failed to provide convincing supporting evidence. Collectively, findings suggest that interventions that include breathing and relaxation techniques, as well as CBT, can be beneficial for alleviating vasomotor symptoms. Additional large, methodologically rigorous trials are needed to establish the efficacy of interventions on vasomotor symptoms, examine long-term outcomes and understand how they work.

Thind H, Lantini R, Balletto BL et al. Effects of yoga among adults with type 2 diabetes: A systematic review and meta-analysis. *Prev Med.* 2017; pii: S0091-7435(17)30304-3.

Abstract:

The purpose of this meta-analysis was to examine the effects of yoga for glycemic control among adults with type 2 diabetes (T2DM). Comprehensive electronic databases searches located 2559 unique studies with relevant key terms. Studies were included if they (1) evaluated a yoga intervention to promote T2DM management, (2) used a comparison group, (3) reported an objective measure of glycemic control at post-intervention, and (4) had follow-up length or post-test of at least 8 weeks from baseline. Independent raters

coded participant, design and methodological characteristics and intervention content. Summary effect sizes and 95% confidence intervals (CI) were calculated. Twenty-three studies with 2473 participants (mean age=53years; 43% women) met eligibility criteria. Compared with controls, yoga participants were successful in improving their HbA1c ($d+=0.36$, 95% CI=0.16, 0.56; $k=16$), FBG ($d+=0.58$, 95% CI=0.40, 0.76; $k=20$), and PPBG ($d+=0.40$, 95% CI=0.23, 0.56; $k=14$). Yoga was also associated with significant improvements in lipid profile, blood pressure, body mass index, waist/hip ratio and cortisol levels. Overall, studies satisfied an average of 41% of the methodological quality (MQ) criteria; MQ score was not associated with any outcome ($P_s > 0.05$). Yoga improved glycemic outcomes and other risk factors for complications in adults with T2DM relative to a control condition. Additional studies with longer follow-ups are needed to determine the long-term efficacy of yoga for adults with T2DM.

Uebelacker LA, Tremont G, Gillette LT et al. Adjunctive yoga v. health education for persistent major depression: A randomized controlled trial. *Psychol Med.* 2017; 47(12): 2130-42p.

Abstract:

Background: The objective of this study was to determine whether hatha yoga is an efficacious adjunctive intervention for individuals with continued depressive symptoms despite antidepressant treatment.

Method: We conducted a randomized controlled trial of weekly yoga classes ($n = 63$) v. health education classes (Healthy Living Workshop; HLW; $n = 59$) in individuals with elevated depression symptoms and antidepressant medication use. HLW served as an attention-control group. The intervention period was 10 weeks, with follow-up assessments 3 and 6 months afterwards. The primary outcome was depression symptom severity assessed by blind rater at 10 weeks. Secondary outcomes included depression symptoms over the entire intervention and follow-up periods, social and role functioning, general health perceptions, pain, and physical functioning.

Results: At 10 weeks, we did not find a statistically significant difference between groups in depression symptoms ($b = -0.82$, $s.e. = 0.88$, $p = 0.36$). However, over the entire intervention and follow-up period, when controlling for baseline, yoga participants showed lower levels of depression than HLW participants ($b = -1.38$, $s.e. = 0.57$, $p = 0.02$). At 6-month follow-up, 51% of yoga participants demonstrated a response ($\geq 50\%$ reduction in depression symptoms) compared with 31% of HLW participants (odds ratio = 2.31; $p = 0.04$). Yoga participants showed significantly better social and role functioning and general health perceptions over time.

Conclusions: Although we did not see a difference in depression symptoms at the end of the intervention period, yoga participants showed fewer depression symptoms over the entire follow-up period. Benefits of yoga may accumulate over time.

Wardle J, Frawley J, Adams J et al. Associations between complementary medicine utilization and influenza/pneumococcal vaccination: Results of a national cross-sectional survey of 9151 Australian women. *Prev Med.* 2017; pii: S0091-7435(17)30332-8.

Abstract:

Influenza and pneumococcal vaccination is recommended for all adults, with older adults considered a high-risk group for targeted intervention. As such it is important for factors affecting vaccine uptake in this group to be examined. Complementary medicine (CM) use has been suggested as a possible factor associated with lower vaccination uptake. To determine if associations exist between influenza and pneumococcal vaccine uptake in older Australian women and the use of CM, data from women aged 62-67 years surveyed as part of the Australian Longitudinal Study on Women's Health (ALSWH) were analyzed in 2013 regarding their health and health care utilization. Associations between the uptake of influenza and pneumococcal vaccinations and the use of CM were analyzed in 2016 using chi-squared tests and multiple logistic regression modelling. Of the 9151 women, 65.6% and 17.7% reported that they had influenza and pneumococcal vaccination within the past 3 years respectively. Regression analyses show that women who consulted naturopaths/herbalists (OR=0.64) and other CM practitioners (OR=0.64) were less likely to have vaccination (influenza only), as were women who used yoga (OR=0.77-0.80) and herbal medicines (OR=0.78-0.83) (influenza and pneumococcal). Conversely, women using vitamin supplements were more likely to receive either vaccination (OR=1.17-1.24) than those not using vitamin supplements. The interface between CM use and influenza and pneumococcal vaccination uptake in older women appears complex, multi-factorial and often highly individualized and there is a need for further research to provide a rich examination of the decision-making and motivations of stakeholders around this important public health topic.

Webb JB, Vinoski ER, Warren Findlow J et al. Downward dog becomes fit body, inc.: A content analysis of 40 years of female cover images of yoga journal. *Body Image.* 2017 ; 22: 129-35p.

Abstract:

The present analysis investigated temporal trends in physical appearance attributes and attire worn by female cover models of Yoga Journal magazine

between the years 1975-2015. Covers featuring a single female model (N=168) were coded for: pose activity, amount of body visibility, perceived body size, body shape, breast size, skin exposure, and revealing or form-fitting attire. When collapsed across all decades, the majority of cover models was actively posed with high body visibility, rated as at most low normal weight, possessed either a "thin/lean" or "skinny/boney" body shape, and were "flat-chested" or "small-breasted". Greater body visibility, pose activity, thinness/leanness, skin exposure, and form-fitting attire were featured on more recent years' covers. Findings suggest that the female "yoga body" conforms to the contemporary thin- and-toned media fitness ideal, particularly recently, which may promote objectified body competence, an unhealthy drive for leanness, and dissuade higher weight women from considering yoga practice.

Zhou ES, Gardiner P, Bertisch SM. Integrative medicine for insomnia. *Med Clin North Am.* 2017; 101(5): 865-79p.

Abstract:

Difficulty initiating and/or maintaining sleep is a common issue. Patients experiencing insomnia symptoms frequently self-treat their symptoms with sleep medications. However, there remains concern regarding the short- and long-term health impacts of sleep medications. This article discusses the evidence supporting integrative approaches to insomnia treatment, including cognitive-behavioral therapy and mind-body therapies (mindfulness meditation, yoga, tai chi), as well as emerging data for use of other less well supported approaches (dietary supplements, acupuncture).