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with $p < 0.05$, respectively. After adjusting for sex, age, education level, and GDS score, these EEG variables remained significant with the mean [confidence interval] of odds ratios of 0.379 [0.20, 0.67], 0.394 [0.21, 0.71], 0.447 [0.22, 0.83], and 1.976 [1.23, 3.46], respectively. The findings demonstrate that these prefrontal EEG markers can be reliably effective for the early detection of dementia.

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Silk fibroin promotes the regeneration of pancreatic β -cells in the C57BL/KsJ-Leprdb/db mouse



Jun Hong Park, Sueun Lee, Jin Mi Chun

*Herbal Medicine Resources Research Center, Korea
Institute of Oriental Medicine, Naju, Korea*

Diabetes mellitus (DM) is a kind of metabolic disease, and its prevalence has steadily increased worldwide in the last three decades. DM is a burden on the public health care system as it increases public medical expenditure, particularly in developing countries. In the past three decades, scientists around the world have made remarkable progress in understanding the T2DM pathology, diagnosis, and treatment. However, anti-diabetes drugs often cause side effects such as nausea, low glucose levels, weight gain, and bloating. Owing to its verified active ingredients and minimal side effects, a compound used in Oriental medicine has been suggested as alternative medicine in the treatment of T2DM. For example, the leaves, dried plants, roots, fruits, animal, and insect-derived products have been used for anti-diabetic remedies in Oriental medicine, especially silk-related materials including silkworm and cocoon extracts have been used for treating T2DM. Silk fibroin (SF) is a major component of silk, and SF is a core silk protein composed of 18 different kinds of natural amino acids. In our previous study, we reported that SF improved the survival of HIT-T15 cells under high glucose conditions and ameliorated diabetic dyslipidemia in a mouse model. However, the precise molecular mechanism is not clearly understood yet. Here, we showed that SF promotes the pancreatic β -cell proliferation and regeneration in the mouse model. SF induced the expression of proliferating cell nuclear antigen (PCNA) and reduced the apoptotic cell population in the pancreatic islets. Interestingly, SF treatment induced the expression of transcription factors involved in the pancreatic β -cell regeneration. In line with this, SF treatment generated insulin mRNA expressing cells around the pancreatic ducts. Therefore, our results suggest that SF treatment can increase the pancreatic β -cell regeneration, recovering the function of pancreatic islets in the C57BL/KsJ-Leprdb/db mice.

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Analysis of trends in patents on insect-derived medicinal materials for skin diseases



Ji Hye Lee, Joong Sun Kim, Byeong Cheol Moon, Hyeon Hwa Nam

*Herbal Medicine Resources Research Center, Korea
Institute of Oriental Medicine, Naju, Korea*

Background: In this study, we analyzed the trend of patents registered prior to October 4, 2019, to understand the industrial trends in insect-derived medicinal materials used for the treatment of skin diseases.

Methods: Using the WIPSON database, we collected information regarding the patents related to insect-derived materials for treating various skin diseases.

Results: The patents registered prior to October 4, 2019, from Korea, Japan, the USA, China, and the EU, along with those registered under PCT were selected. There were 195 patents related to the use of insect-derived medicinal materials in treating various skin diseases such as psoriasis, inflammatory skin diseases, eczema, pruritus, and atopic dermatitis. China is mostly superior in total number of registered patents compared with the other countries. Korea was the major patent technology-holder for atopic dermatitis, but China dominated in the remaining categories of skin diseases. Upon first patent registration in 1992, there had been a continual increase in the number of patents. Especially, patents related to eczema, psoriasis, inflammatory skin disease were markedly increased. Most frequently used insect-derived medicinal materials was Scolopendra, Cicadidae Periostracum, Scorpions, Cantharides, and Batryticatus Bombyx. The insect-derived medicinal materials were generally used as a combined preparation with other medicinal materials in patents.

Conclusion: This study could help to establish the basis for future research and development related treating skin diseases using insect-derived medicinal materials. In order to provide sufficient data, further study including analysis of rejected patents is needed.

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Describing Chinese herbal medicine telehealth care for symptoms related to infectious diseases such as COVID-19: a prospective, longitudinal, descriptive cohort study



Lisa Taylor-Swanson¹, Lee Hullender Rubin², Katherine Taromina³, Craig Mitchell³, Lisa Conboy⁴

¹ *College of Nursing, University of Utah, Salt Lake City, United States*

² *Osher Center for Integrative Medicine, University of California, San Francisco, United States*

³ *Seattle Institute of East Asian Medicine, Seattle, United States*

⁴ *New England School of Acupuncture at MCPHS, Worcester, United States*

Background: Given the seriousness of Coronavirus Disease (COVID-19) and potential for long-term sequelae, effective therapies are urgently needed. We are conducting an observational cohort study designed to describe Chinese herbal medicine (CHM) therapy, outcomes, and safety with patients experiencing symptoms possibly related to COVID-19.

Methods: In this ongoing prospective, longitudinal, descriptive cohort study at an acupuncture school clinical faculty practice, we will observe participants with symptoms related to COVID-19 who consent to participate in telehealth visits and receive individualized CHM. All participants are asked to obtain a COVID-19 test. Licensed practitioners with at least 20 years' CHM practice experience will determine the number of telehealth consultations necessary for each participant. All participants are recommended individualized CHM dispensed either as raw herbs to be decocted at home or granules. Follow up at 24- and 48-hours after each telehealth visit will provide clinicians with information to determine if an additional telehealth consultation is necessary. Additional follow-up is at 3, 6, and 12 months.

Results: The study is currently enrolling and registered at ClinicalTrials.gov NCT04380870. Twenty-two participants have enrolled to date, of which 14 (63%) were female and, 8 (36%) male. Median age is 51 (range 22–65). In total, 61 consultations were administered [median 3 (range 1–8)] per participant. In the acute phase of illness, the primary symptom reported was fever and/or chills (54%), fatigue (45%), and sore throat (23%). No adverse events occurred related to the intervention. One patient was referred to the emergency room out of caution when symptoms did not adequately improve after the initial consult for evaluation.

Conclusion: Describing individualized CHM treatment as a potential COVID-19 therapy will provide vital preliminary data on the methods, feasibility, acceptability, tolerability, effectiveness, and safety. Findings from our study will inform future controlled trials of individualized CHM therapy for symptoms related to COVID-19.

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Neuroprotective effect of water extracts from identified *Protaetia brevitarsis seulensis* larvae in trimethyltin-induced seizure and hippocampal neurodegeneration through antioxidative action



Sueun Lee¹, Young Hye Seo¹, Jun-Ho Song¹, Wook Jin Kim¹, Ji Hye Lee¹, Byeong Cheol Moon¹, Mary Jasmin Ang², Sung-Ho Kim², Changjong Moon², Jun Lee¹, Joong Sun Kim¹

¹ Herbal Medicine Resources Research Center, Korea Institute of Oriental Medicine, Naju, Korea

² Chonnam National University, Gwangju, Korea

The larvae of *Protaetia brevitarsis seulensis* (PB) have traditionally used to treat seizure symptoms in East Asia including China, Japan, and Korea. The aims of this study are to investigate whether the water extract of the identified PB larvae ameliorate Trimethyltin (TMT)-induced seizure and hippocampal neurodegeneration, and to analyze the chemical profiles from the PB larvae for the first time. The authenticity of PB larvae was identified by the morphological and genetic analysis methods. To investigate the neuroprotective effect of the water extract from the identified PB larvae in vitro, LDH assay was conducted in TMT-treated primary cultures of mouse hippocampal neurons. In TMT-treated adult mice, the behavioral and histopathological changes were evaluated by the seizure scoring and Fluoro-Jade C staining, respectively. The free radical scavenging capacity of PB larvae was assessed in DPPH assay, and the protein expression of Nrf2 in TMT-treated mouse hippocampus was confirmed by Western blotting. The chemical structures of the PB larvae water extract were analyzed by using NMR techniques. We confirmed the species of *Protaetia* larva as a *Protaetia brevitarsis seulensis* by morphological and genetic analysis. We confirmed that the pretreatment of PB larvae reduced the TMT-induced cytotoxicity by decreasing LDH release in vitro. Furthermore, the pretreatment of PB larvae alleviated the TMT-induced seizure and degenerating neurons in mouse hippocampus. We observed the antioxidant activity of PB larvae in dose-dependent manner, and that the pretreatment of PB larvae mitigated the TMT-induced Nrf2 stimulation. Meanwhile, we analyzed the major six secondary components of the PB larvae water extract for the first time. The identified PB larvae ameliorated the TMT toxicity on hippocampal neurons both in vitro and in vivo, and it could be through their antioxidative effect. Our findings might

be promising for pharmacotherapeutic use of the PB larvae in neurodegenerative diseases.

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The comparative analysis of trichosanthes chloroplast genomes and development of molecular markers, phylogenetic relationships



Inkyu Park, Jun-Ho Song, Sungyu Yang, Byeong Cheol Moon

Herbal Medicine Resources Research Center, Korea Institute of Oriental Medicine, Naju, Korea

Trichosanthes are valuable as herbaceous medicinal ingredients as the fruit, seeds, roots of *T. kirilowii* and *T. rosthornii* used in Korean traditional herbal medicines. However, *T. rosthornii* is only exhibited in China This study identified various morphological traits and surveyed genetic differences between *T. kirilowii* and *T. japonica*. Dried seeds and roots of *Trichosanthes* species, including *T. kirilowii* and *T. rosthornii*, are important in Korean traditional herbal medicine, but similar *Trichosanthes* species like *T. japonica* are morphologically similar and often used as adulterants. We compared chloroplast genome structures and gene orders among *Trichosanthes* species. The cp genomes were 156,790–157,155 bp in length and exhibited conserved quadripartite structures. In total, 113 genes were identified, including 79 protein-coding regions, 30 transfer RNA (tRNA) genes, and four ribosomal RNA (rRNA) genes. We identified highly divergent regions among *Trichosanthes* species, and established their position through phylogenetic analysis with previously studied *Trichosanthes* chloroplast genomes in family Cucurbitaceae. We successfully developed indel markers to discriminate *T. kirilowii* and *T. rosthornii* from other closely related *Trichosanthes* species. We uncovered high-resolution phylogenetic relationships among *Trichosanthes* species. Phylogenetic analysis of the five *Trichosanthes* species revealed that these species well clustered as Tribe Sicyoeae. In particular, *T. kirilowii* and *T. rosthornii* had monophyletically with *T. japonica* as a sister. We suggested *T. kirilowii* and *T. japonica* need to the reclassification of the taxon in this results. Our study makes a significant contribution to the literature because it is useful for developing tools to identify *Trichosanthes* species, which are necessary to control the quality of herbal medicines, among other things.

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Effects of laser and electro acupuncture treatment on inflammation change in osteoarthritic rat model



Mi-rae Kim, Dong-hee Choi, Yu-mi Lee, Seong-young Jo, Ki-yeol Paek, Chang-su Na

Dongshin University, Naju, Korea

Background: Degenerative arthritis is a disease that increases with age. It is expected that the prevalence rate will increase according to aging society. Clinical symptoms include pathological symptoms such as pain and inflammation. The main focus of the treatment of arthritis is to reduce the pain, to suppress the factors such as cartilage loss, joint deformation, and to restore functional recovery. In this study, we have investigated the effects of the eletropuncture and 650 nm laser acupuncture on the GB30 and GB34 acupoints