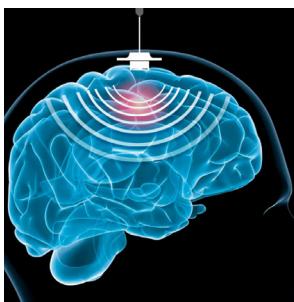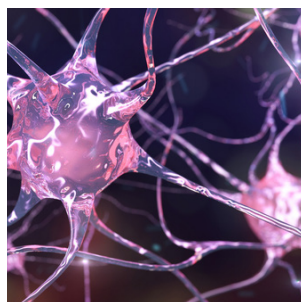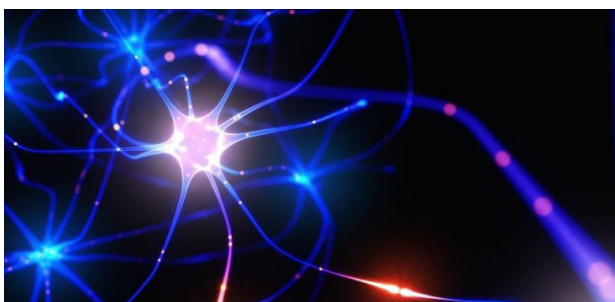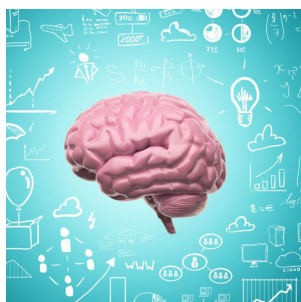# Scientific Tracks & Sessions
# September 27, 2021

## *Parkinson's 2021*

3rd International conference on
# Parkinson's, Huntington's and Movement Disorders

September 27, 2021 | Webinar

## Mesenchymal stem cells form umbilical cord for the treatment of Central Post Stroke pain syndrome

**Linka Matos**

Regenerative & Pain Medicine, USA

This is a 62 year old male with history of lumbar and cervical pain, with a laminectomy in 2014. The patient also has a history of hypertension and diabetes mellitus. After the stroke the patient had right side weakness which improved over time with physical therapy, but remained with cramps and pain in the upper and lower extremities. He also had poor sleep hygiene, difficulties writing and typing. He was diagnosed with Central Post Stroke Pain Syndrome as a sequela of his stroke. The pain symptoms have been refractory to multiple medications and was limiting his Activities of Daily Living for the past 3 years prior to therapy. Mesenchymal Stem Cells from Umbilical Cord (MSC UC) were used to treat his pain.Mesenchymal Stem Cells are multipotent cells that can differentiate in different types of tissue. They can both self-renew and differentiate into mature tissues such as heart, lung, liver, bone, nerve, muscle and cartilage, among others. They have the ability to migrate and target specific tissues, this is call homing. They also have a paracrine effect, releasing growth factors and proteins to communicate using exosomes and cytokines. An Intrathecal injection at C1-C2 was done with 5 Million MSC UC was done with also a 30 Million MSC UC in an Intravenous infusion. The patient was follow up for a year after the injection. He had complete resolution of his cervical and lumbar pain 2 months after the injection and 6 months after the procedure 80% of his Central Post Stroke Pain resolved. A year later the patient continues with the benefits of the MSC UC and his insulin requirements decreased by a 60%.

### Biography

Linka Matos earned her MD at the University of Puerto Rico Medical Science Campus. She is an Anesthesiologist and completed a fellowship in Interventional Pain Management at the University of Maryland Medical Science Campus in USA. She is licensed in Traditional Chinese Medicine and Herbal Medicine, and completed a JD at the University of Puerto Rico. She has been a pioneer in the field of Regenerative Medicine for the past 10 years for Pain Management and Cosmetic Medicine. Most of her therapies are directed to treat neurologic and musculoskeletal conditions.

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## Skin α-synuclein seeding activity as a biomarker of Parkinson's disease

**Wen-Quan Zou[1,5,8], Zerui Wang[1]\*, Katelyn Becker[2]\*, Vincenzo Donadio[3]\*, Jue Yuan[1], Alex Incensi[3], Christina D. Orrú[4], Curtis Tatsuoka[5], Rocco Liguori[3], Masih Rezaee[1], Brian Appleby[1,5] Steven A. Gunzler[5], Byron Caughey[4], Maria E. Jimenez-Capdeville[6], Li Cui[7], Shu G. Chen[1, 5]†, Jiyan Ma[2]†,**

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The pathological alpha-synuclein (αsynp) deposited in the brain is the hallmark of Parkinson's disease (PD). Currently, definitive PD diagnosis often requires the detection of αsynp-containing Lewy bodies in brain tissue. Using the highly sensitive real-time quaking-induced conversion (RT-quic) and protein misfolding cyclic amplification (PMCA) assays, we observed significantly higher seeding activity of αsynp in skin tissue obtained at autopsy or by biopsy from PD patients than those obtained from non-PD controls. With the neuropathologically-confirmed cases, RT-quic revealed that sensitivity was 90% in abdominal and 100% scalp skin samples while both types of tissues had 100% specificity; PMCA revealed 83% sensitivity and 100% specificity with abdominal tissues. With the posterior neck skin biopsy tissues from clinically-diagnosed PD and non-PD cases, RT-quic exhibited 93% sensitivity and 100% specificity, respectively. Our results provide proof-of-concept that the skin αsynp-seeding activity may be a useful biomarker for antemortem diagnoses of PD.

### Biography

Wen-Quan Zou received his medical degree from Jiangxi Medical College, his M.Sc. from Tongji Medical University, and his PhD. from Shanghai Medical University. He has practiced Internal Medicine and Nephrology for years in Nanchang and Shanghai, China, as both a physician and an attending physician, respectively. His post-doctoral work in neurodegenerative diseases, with a concentration in prion diseases, was done in the Department of Pathology at the Case Western Reserve University and at the Centre for Research in Neurodegenerative diseases at University of Toronto. Currently, Dr. Wen-Quan Zou is a Professor of Pathology with tenure and Associate Director of the National Prion Disease Pathology surveillance center at the Case Western Reserve University School of Medicine.

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# Intranasal delivery of L-Myc immortalized human neural stem cells as a potential therapy for experimental traumatic brain injury and other neurodegenerative diseases

**Margarita Gutova[1], Jeffrey P Cheng[2,3]**
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In prospective community studies from low-income countries, the association between child emotional and behavioral disorders (EBD) and educational outcomes has not been examined. An ongoing cohort of 2090 mother-child dyads was studied to see if there was a link between child EBD symptoms and educational outcomes. The Strength and Difficulties Questionnaire was used to assess child EBD when the average age of the children was 6.5 years, SD 0.04, (T0) and 8.4, SD 0.5 years (T1) (SDQ). When the children were 9.3 (SD 0.5) years old, mother reports (drop-out) were acquired at T1 and school records were obtained when the children were 9.3 (SD 0.5) years old (T2). After controlling for relevant confounders, child EBD symptoms at T1 were found to be substantially linked with school absence at T2: SDQ total score: 1.01 Risk Ratio (RR); 95 percent confidence interval (CI) 1.01, 1.02; SDQ high score (14); SDQ low score (9) RR 1.36; 95 percent CI 1.24, 1.48; emotional subscale RR 1.03; 95 percent CI 1.01, 1.04; hyperactivity subscale RR 1.03; 95 percent CI 1.02, 1.04; and peer difficulties subscale RR 1.03; 95 percent CI 1.02, 1.04; and peer problems subscale RR 1.03; 95 percent CI 1.02, 1.04 (RR 1.02; 95 percent CI 1.00, 1.04). The conduct difficulties sub-scale (= - 0.57; 95 percent CI: -1.02, -0.12) had a significant negative relationship with academic achievement (SDQ = -2.89; 95 percent CI: - 5.73, -0.06). There was no link found between EBD in children and school dropout. Child EBD symptoms were linked to higher school absenteeism and lower academic achievement in a prospective study, implying that child mental health should be considered in programs aimed at improving school attendance and academic achievement in low-income countries.

## Biography

Margarita Gutova, M.D. is assistant research professor and leading scientist investigating the novel utility of a well established human neural stem cell (NSC) line for tumor-selective delivery of therapeutic gene products in preclinical models of brain tumors. By circumventing the blood brain barrier, nscs can overcome a major obstacle to pharmacologic treatment of tumors of central nervous system. NSCs are modified to secrete an enzyme that activates the pro-drug to the active anticancer drug. This innovative NSC - mediated enzyme/prodrug approach will localize drug concentrations specifically to brain tumor foci and significantly improve clinical outcome, while minimizing the devastating side effects associated with toxicity to normal tissues. These studies paved the way towards the first-in-human clinical trial of these nscs to assess the safety of NSC-mediated CD/5-FC enzyme/prodrug therapy in patients with recurrent high-grade glioma.

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## An integrative PD and anti-viral care approach for Covid and beyond

**Elizabeth K Barber**
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**Background**: My previous study demonstrated the long-term therapeutic benefits of an early preventive strategy creating a positive and safe neurological environment for the Parkinson's (PD) patient with Alzheimer's (AD) Changes. People with Parkinson's and accompanying changes are frequently treated with mainly pharmacologic measures. A combination strategy of therapeutic art, design, structured meals, medication, supplements, exercise and reducing environmental toxins was integrated along with the pharmacologic program to develop a workable strategy for providers and families to best ameliorate stages of the disease. This systematic home-based approach is an effective strategy for treating any homebound patient, particularly during the Covid-19 pandemic and several of the supplements employed also have anti-viral and other health-enhancing properties.

**Methods**: Following a fall, hospitalization and rehabilitation, a stepwise program was developed and implemented in the home using the patient's preferences and research to allow for a smooth transition from rehabilitation into a neurologically therapeutic environment integrating safety, art and interior design. The environment was made safer, a system of medication and meal administration highlighting neurologic and intestinal health was implemented and a caregiver instruction system was established. Certain nutritional supplements were found to be helpful as was regular exercise. A team approach to care was emphasized, including family members and providers.

**Results**: The combination of therapeutic approaches and strategies was found to be particularly helpful and significantly increased the patient's lifespan as well as lowering the home stress level. The therapeutic strategies were put into a teaching tool, to teach new caregivers and family the existing regime.

**Conclusion**: The checklist of strategies aided and will aid providers, patients and their families in coping with and ameliorating the difficulties of illness and knowledge of the anti-viral supplements and hygienic practices will help to prevent and reduce infections.

### Biography

Elizabeth K Barber completed her PhD and Oxford in Biochemisty and Master's degree at Harvard in Biology. At Harvard she was the first author on an internationally recognized publication on the T-cell phosphorylation of p56lck in CD4, CD8 and CD3, cited with her other publications hundreds of times along with her work at Oxford on the leukemia and AD marker, CD33. She was the first to discover and implement resveratrol as a treatment for PD while developing her inhome care program. She serves as a PALF Advocate for the American Academy of Neurology (AAN) and received a 2021 grant to highlight the importance of the performing arts in stroke health while finishing another major healthy Victorian renovation, the second she has successfully nominated to the national register of historic places. She previously co-curated and co-presented an art exhibit on the healing powers of art, art therapy and interior design in Chicago.

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# A nationwide study self assessment of Insomnia among adolescents of Nepal during Covid-19 confinement

**Maginsh Dahal[1], Sudip Khanal[2], Kushalata Baral[2], Poonam Subedi[2], Pratikshya Gurung[3], Smriti Dhakal[2]**
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**Introduction**: The world responded to address the physical health burden of the public health emergency. Strict restrictions such as social distancing, quarantine, obligatory mask-wearing, and disinfection regimes were implemented to control its spread. However, the psychopathologies associated with COVID-19 such as stress, fear, anxiety, depression, and insomnia were not properly considered in the plans outlined by countries across the globe. As a result, COVID-19 and the restrictions imposed to control its spread took a great toll on the mental health of the general population. Considering this backdrop, this research will specifically focus on assessing the burden of insomnia among adolescents of Nepal during COVID-19 confinement.

**Methods**: A web-based nationwide cross-sectional survey was conducted among 2239 Nepalese undergraduate students. Convenient sampling was used as interested participants could select themselves for participation. Among 2487 individuals who accessed the survey, a total of 2239 participants gave consent and accomplished the online survey- a reply rate of 95.85%. The preparation, maturity, and reporting of the survey followed the Checklist for Reporting Results of Internet E-survey (CHERRIES) guidelines. The questionnaire was developed in Google forms. Call for involvement, were made available publicly. A structured questionnaire was developed by reviewing the relevant available literature, and the WHO's published resources on COVID-19.The online survey questionnaire was organized into four different sections: (1) socio-demographic information, (2) depression and (3) anxiety and (4) insomnia during COVID-19 confinement. Participants' responses from google forms were extracted and cleaned using Microsoft Excel. The final data was analyzed with the help of Rstudio (version 1.2.5033). Descriptive statistics such as frequency, percentage, mean, and standard deviation described participant's demographic characteristics. Analytical statistics such as bivariate and multivariate logistic regression analysis were computed between selected variables.

**Results**: Adolescents having age ≥ 22 years were 1.464 times (aor=1.464, 95% CI: 1.211-1.771) more likely to problem of insomnia and compare to age group < 22 years. Persons living in City/Town were 1.855 times (aor=1.855, 95% CI: 1.465-2.356) more likely to be the problem of insomnia as compared to living in village. Second stage of transmission were 1.436 times (aor=1.436, 95% CI: 1.153-1.789), third stage were 1.927 times (aor=1.927, 95% CI: 1.426-2.614) more likely as to first stage of transmission in the place of residence. However, fourth stage of transmission in the place of residence were 69.2 percent (aor=0.308, 95% CI:0.112-0.719) less likely to being problem of insomnia as compare to first stage of the transmission the place of residence of the adolescents. The present Covid-19 status were also determinant factor for the problem of insomnia, the adults who were stay at home with normal condition were 2.749 times (aor=2.749, 95% CI:1.190-6.989), person at hospital or isolation were 5.062 times (aor=5.062, 95% CI:1.891-17.746) and at quarantine were 2.614 times (aor=2.614, 95% CI:1.032-7.160) more likely to failing the problem of insomnia as compare to those who were tested and diagnosed positive.

**Conclusion**: Multiple factors associated with insomnia were identified through this study. Age was identified as an influencing factor where as residence in city areas were found to independently increase the likelihood of insomnia among adolescents during the lockdown. Further, living in areas with transmission in nearby community, community or within family/relatives was associated with negatively influencing mental health. Based on these identified risk factors, targeted interventions in provinces that were identified to be most severely affected through this study could be developed and emphasis should be given on integrating these mental-health interventions in national COVID-19 response plan, with an extra focus on vulnerable groups like adolescents.

## Biography

Maginsh Dahal is a PhD scholar in Epidemiology and Health Statistics from Nanjing Medical University and a young researcher. After completing his Master's degree in Public Health in 2013 he was working as an associate professor (Epidemiology) in Nepal. He also works as a sociologist after completing Master's degree in sociology. He is involved in many researches in youths and adolescents and has several articles in International journals. He mainly focuses on the population based studies and has good skill on analyzing big data. With special focus on mental health issues he has published many researches in scientific arena. He is awarded form chinese government scholarship for his phd studies in China.

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## Clinical and Demographic Features of Pseudotumor Cerebri Syndrome Diagnosed in a University Hospital

**Demet Arslan**

University of Dicle, Turkey

**Objective**: Pseudotumor cerebri syndrome (PTCS) is characterized by symptoms and signs of increased intracranial pressure without ventriculomegaly, intracranial tumor or mass. This study aimed to explore and analyze 34 patients with PTCS according to age, sex, symptoms of the disorder, cranial magnetic resonance images findings, etiology, and treatment. Materials and

**Methods**: A total of 34 patients who were diagnosed as having PTCS and followed up between January 2011 and August 2016 by Dicle University Medical School Neurology Department were included in this study. PTCS was diagnosed in accordance with the modified Dandy criteria.

**Results**: Thirty-four patients were identified as having PTCS. Twenty-one (91.2%) had headache, 19 (55.9%) had blurred vision, 6 (17.6%) had diplopia, 2 (5.9%) had vertigo, 1 (2.9%) had tinnitus, and 1 (2.9%) had numbness of the face. Twenty-seven patients were diagnosed as having idiopathic intracranial hypertension, 21 (61.8%) had no etiologic factors. Six (17.6%) patients were obese, one of whom had recently gained weight and another had polycystic ovary syndrome. Seven patients were thought to have secondary PTCS with the following etiologic factors: 2 (5.9%) patients had Hashimoto's thyroiditis, 1 (2.9%) had a history of all-trans retinoic acid intake due to a malignancy, 1 (2.9%) had choroid plexus granuloma, 2 (5.9%) had sinus venous thrombosis, and 1 (2.9%) had Familial Meditteranian Fever.

**Conclusion**: Although PTCS was described many years ago, its physiopathology and exact treatment procedures are not clearly understood. The most important target of its treatment is to prevent loss of vision and improve symptoms. With a better understanding of its pathophysiology, effective treatment protocols will be developed.

### Biography

Demet Arslan has completed her MD at the age of 23 years from 19 Mayis University, Turkey. She worked as a Assistant Professor of Dicle University between 2014-2017, She is working as a Neurologist at the private hospital. She has over 10 publications that have been cited over 188 times, and her publication H-index is 7.

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## BCI for studding the EEG abnormalities of patients with Parkinson's disease based on the spatiotemporal dynamics of the brain oscillations

**Anna Lekova**

Institute of Robotics, Bulgaria

Brain-Computer Interface (BCI) community is a multidisciplinary research field where neuroscientists, biomedical engineers and computer scientists need to work together. Very often this collaboration is impossible and researchers experience difficulties in developing a task-specific BCI system. We searched to close the gap between computer scientists and neuroscientists by proposing a general-purpose fuzzy software system shell for designing a real-time operating EEG based BCI system with ad-hoc brain state decoding by linguistic variables and fuzzy sets participating in interpretable fuzzy IF-THEN rules. The concept of the Internet of Things was used in the design, which makes the BCI system device and service independent. The decision-making response is based on the neurons involved in a particular neural activation in terms of the trend (derivatives) in the evoked or passive oscillatory rhythms and the temporal connection (coupling) of the neurons from different brain regions over time. Thus, the neuroscientists can test their hypothesis and perform initial experiments for evaluating multiple predictions with contradictions in assumptions simultaneously. Not a lot of skills in MATLAB programming and other software languages are required. Moreover, the data analysis is profiled for the neuroscientists with ready-to-use data and MATLAB scripts for post-hoc interpretation by ANOVA and multiple comparison statistics. The proposed BCI Fuzzy Shell (BCIFS) has been tailored to study the EEG abnormalities of patients with Parkinson's Disease (PD) and the potential enhancement in the EEG rhythms correlating with motor functions after improving the gut health. The increasing of the dopamine level and clearing a-synuclein aggregations in the patients with PD was naturally by B. subtilis probiotic strain PXN21. In a period of 70 days we studied and detected sequential changes in α, β and γ neural oscillations placed around the motor cortex. The used electrode positions were: F3, F4, FC5 and FC6. The published neuroscience findings for the abnormal β synchronization and phase-amplitude coupling between β and γ activities that had been identified in EEG recordings from the scalp of patients with PD, were digitally translated in interpretable IF-THEN fuzzy rules. The brain state decoding and feature extraction were also human interpretable in terms of burst in change of the neuronal synchronization at scalp-region level. After registered the EEG by EMOTIV EPOC+ headset and using BCIFS we generated and examined by post-hoc statistical analysis specific patterns that illustrated the significance of the bands bursting over the motor cortex and the coupling between bursts in patients with PD. Results: In line with the published neuroscience findings, we found exaggerated beta and gamma bursts in the motor area during the rest and voluntary motor tasks for the patients with PD or movement disorders. Consistent with our hypothesis, we found that the bursting in the low gamma were suppressed naturally by B. subtilis PXN21, however we didn't find significant suppression in beta bursting. We associated the lower neuronal activation in gamma band with improvement in movement initiation and control, i.e. less gamma bursting indicated less need of movement promotion. This is in line with the hypotheses of other neuroscientists that despite increased beta activity the ''prokinetic'' gamma may be increased as a compensatory mechanism during the repetitive fist movements. Furthermore, we also found significant decrease in the coupling between high beta and low gamma rate of changes, which had happened still in the middle of the test period.

### Biography

Anna Lekova PhD, professor and Head of the Interactive Robotics and control systems department at Institute of Robotics, Bulgarian Academy of Sciences. She received her MSc in Computer Science (1988) and her phd in CAD/CAE/CAM from the Technical University – Sofia (1995). Current H2020 Project cybspeed: integration of BCI with programmable robots as useful technologies for quantitative assessment of the progress in the rehabilitation for children with SEN. Priority Areas: Soft computing, BCI, Interactive Robotics, Social Robotics, Humanoid robots, Augmented reality, Motion-sensing technologies.

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## Role of WWOX and Parkin in Parkinson disease

**Nan-Shan Chang**

National Cheng Kung University, Taiwan

Tumor suppressor WWOX is a recently defined risk factor for Alzheimer's disease. Indeed, loss of WWOX in newborns leads to development of severe neural disease, metabolic disorders and early death. To determine the role of WWOX in Parkinson disease (PD), we showed that when rats were exposed to 1-methyl-4-phenylpyridinium (MPP+) neurotoxin. WWOX is upregulated and activated via phosphorylated at Tyr33. PD-associated protein, Parkin, physically binds WWOX, as determined by yeast two-hybrid system and Förster resonance energy transfer (FRET) analysis. By co-immunoprecipitation, endogenous WWOX physically binds Parkin. FRET analysis also showed that Y33R-WWOX mutant and dnWWOX for blocking Y33 phosphorylation abrogated WWOX interaction with Parkin. Functionally, transiently overexpressed WWOX and/or Parkin induced apoptosis in SK-N-SH neuroblastoma. To narrow down the specific region(s) that mediates apoptosis, transiently overexpressed WW domain and Parkin induce apoptosis in an additive manner. FRET analysis revealed that post treatment with MPP+ for 16 hr, there was an enhanced binding of WWOX with Parkin in SK-N-SH cells. Further, MPP+ significantly up-regulated Parkin, pY33-WWOX, and p-ERK, along with complex formation of WWOX and Parkin, in which 17b-estradiol (E2) dissociated WWOX from Parkin. Triple-protein signaling analysis revealed that MPP+ initiated the WWOX/Tau/Parkin signaling, which drove the cells to death in vitro. MPTP induced rapid dopaminergic neuron loss in substantia nigra in Wwox wild type, rather than in heterozygous mice. Together, the WWOX/Tau/Parkin signaling contributes to the pathogenesis of PD and E2 blocks the effect, suggesting that the neuroprotective effect of E2 in MPP+-induced neuronal death.

### Biography

Nan-Shan Chang is currently the Professor of the Molecular Medicine Institute, National Cheng Kung University (NCKU) in Taiwan. Dr. Chang is most noted for his discovery of tumor suppressor WWOX in 2000. Key Awards: Breast cancer and neurofibromatosis research awards from the Department of Defense, USA, in 2008 and 2010; Distinguished Professor Award 2010 to present from NCKU (4 times); Distinguished Scientist Award 2011 from the Society of Experimental Biology & Medicine, USA.

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## The role of antioxidants and natural compounds in treatment of Parkinson's disease

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Kurdistan University of Medical Sciences, Iran

Parkinson's disease (PD) is the second common neurodegenerative disease. Many biological processes are involved in the development and progression of PD, including oxidative stress, neuro-inflammation, and apoptosis. Accordingly, researchers have performed vast studies to prevent or treat PD via targeting these processes. In this study, we tried to summarize a series of these attempts by reviewing the studies focused on PD and antioxidants. We explained how certain compounds target various biological processes and cell signaling pathways, to prevent or treat PD. The mechanisms of the compounds are related to fighting oxidative stress, inhibiting inflammation, preventing apoptosis, boosting mitochondrial performance, and regulating autophagy. Collectively, the studies strongly stated that these compounds have an enormous potential for developing novel therapeutic medications.

### Biography

Arman Rahimmi is PhD of Molecular Medicine from Kurdistan University of Medical Sciences, Sanandaj, Iran. Arman does his researches exclusively in the field of neurodegenerative diseases, especially Parkinson's disease since 2012. He has performed several research projects about pathophysiology of PD, novel therapies, optimizing animal models of PD, etc. He is well-experienced in several cellular and molecular techniques, designing projects, and scientific writing. He is going to continue his scientific career as a postdoctoral researcher abroad.

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