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Poster Presentations

Valentin Bragin, J Alzheimers Dis Parkinsonism 2018, Volume 8
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Integrative rehabilitation maintains cognitive function in patients with Mild AD and MCI: Case studies

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Statement of the Problem: The pathogenesis of Alzheimer's disease (AD) remains unknown to this day. Over the past decade, clinical treatment of AD went far beyond amyloid and Tau protein theories. The most successful treatment model for AD is integrative. It combines all available modalities, including pharmacological and non-pharmacological. The purpose of this study is to demonstrate the results of rehabilitative treatment in patients with Mild AD and mild cognitive impairment (MCI) via utilization of a novel computerized program.

Methodology & Theoretical Orientation: The theory behind this treatment is the notion that increased cerebral blood flow is a highly modifiable factor as well as a crucial element in the treatment of people with dementia. Our computerized program consists of the motor speed (MS) and reaction time (RT) registration. Among the registration parameters there are simple and complex RT (SRT and CRT, accordingly) and working memory (i.e., numbers) RT (WMRT).

Findings: We present 4 people with duration of therapy ranging from 4 to 8 years. In this group, the MMSE score, clock drawing test, and verbal fluency (animals and letters) were stable for the whole period of treatment. The same stability was noted for MS, SRT, CRT, and WMRT. Performance and errors across all tested categories remained stable for SRT and CRT for the whole group, and for WMRT only in two patients.

Conclusion & Significance: Stabilization of cognitive functions in patients with AD and MCI was achieved as a result of utilization of the computerized program. Integrative rehabilitation is a feasible treatment option for dementia patients to improve their quality of life until new effective medications and other approaches become available.

Biography

Valentin Bragin, MD/PhD, has his clinical expertise in evaluation and treatment of people suffering from memory loss, dementia and depression. Based on his experimental and clinical experiences, he developed and implemented a rehabilitative protocol for patients with dementia. Results of this treatment protocol have been presented at different conferences starting in 2000. Simultaneously, a computerized program was designed to track treatment progression. The focus of his experimental work in Russia was ontogenetic changes in various types of muscle proteins (i.e., cardiac and skeletal muscle tissue). He also studied the effects of different types of hypoxia, including several types of physical trauma and ischemia of a lung lobe section. In the United States, he studied the induction of cortical β-APP in the brain of a rat as a result of subcortical innervation loss. His passion lies in improving the quality of life and preventing cognitive decline in people with dementia.

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The potential role of propolis on the therapeutic effectiveness of L-dopa during development of parkinsonism in rats

Azza A Ali
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Background: Parkinson's disease (PD) is a geriatric neurodegenerative disorder where neuroinflammation and oxidative stress play a prominent role in the mechanisms underlying dopaminergic neurons degeneration. The immediate dopamine precursor L-dopa was the first efficient drug for PD treatment and remains the mainstay one, however long-term use is associated with motor fluctuations and dyskinesias. Propolis is one of the most important resinous natural product with wide range of biological activities as antiinflammatory and antioxidant, it has been demonstrated for prevention of geriatric neurodegenerations.

Objective: To evaluate the efficacy of Propolis either alone or with L-dopa against rotenone-induced PD in rats and to investigate the possibility of using Propolis as an adjunct therapy for reducing L-dopa dosage without compromising its therapeutic outcome.

Methods: Six groups of rats were used for 19 days; one normal group and five Rotenone (2.5 mg/kg SC) groups. One of the RT groups served as control PD model while the others treated with each of the following: L-dopa (10 or 25 mg/kg PO), Propolis (300 mg/kg PO) or both Propolis and L-dopa (10 mg/kg PO). Catalepsy, open-field and Y-maze tests were used for assessment of motor and cognitive performances. Striatal monoamines, acetylcholinesterase (AChE) as well as mitochondrial complex-1 were measured. In addition, oxidative stress and neuroinflammatory markers as well as caspase-3 expression were also evaluated besides histopathological examinations of different brain regions.

Results: Treatment with Propolis and/or L-dopa ameliorated cognition and locomotor activity impairments induced by RT. Moreover, depletions in monoamines, mitochondrial complex-1 and elevations in AchE, caspase-3 expression oxidative as well as neuroinflammatory markers were also decreased. Histopathological examinations confirmed the pronounced effects obtained by combination of Propolis with low dose L-dopa than the higher used dose alone.

Conclusion: Propolis is efficient in protection from PD development and represents a suitable adjuvant therapy that can be translated to marked reduction of the long-term treatment side effects by the mainstay therapy L-dopa. Consequently, Propolis could be recommended as a disease-modifying therapy of PD as well as a promising adjuvant therapy with L-dopa especially when given early in the treatment course.

Biography

Azza A Ali has completed her PhD specialized in Pharmacology and Toxicology from Faculty of Pharmacy, Cairo University, Egypt. Her postdoctoral studies included different scientific aspects especially on neurodegenerative disorders; she also developed research line of behavioral pharmacology in Egypt. She is member of many scientific societies as (AAPS) and Alzheimer's Association (ISTAART). She is also Editorial Board Member of many international Journals as Brain Disorder & Therapy, Acta Psychopathologica, EC Pharmacology and Toxicology as well as Organizing Committee Member and Chairperson at many international Conferences as the International Conference on Brain Disorders & Dementia Care, Canada (2017) and International Conference on Parkinsons Disease & Movement Disorders, USA (2017). She published more than 60 papers in reputed journals, supervised and discussed more than 90 PhD and MSc thesis and actively participated by oral and posters presentations at many international conferences especially on Alzheimer's disease and Dementia as well as on Parkinsons disease as Dementia Conferences (2015, 2016), Alzheimer's Association International Conference (AAIC 2016, 2017) and Parkinsons Conference (2017). She has many appreciation certificates and certificate of best presentation award at 19th International Conference on Environmental Pollution and Pollution Control, London, UK (ICEPPC 2017). Now she is a Head of Pharmacology and Toxicology Department at Al-Azhar University, Egypt.

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Rock steady boxing and procedural memory: Can boxing improve learning in Parkinson's disease?

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Introduction: Defect in procedural memory has been observed in patients with Parkinson's Disease (PD), however there is little research into how this can be treated clinically. This pilot study aims to investigate if consistent participation in Rock Steady Boxing, a non-contact boxing program specifically tailored towards PD, can have a positive influence on procedural memory.

Methods: A modified Serial Reaction Time Task (SRTT) was used to assess procedural memory in 22 patients diagnosed with PD. This included seven blocks of ten stimuli with 30 seconds break between each block. After an initial block of random stimuli, subjects were repeatedly exposed to a set sequence over the course of four learning blocks. The sixth block presented a random set of stimuli, followed by the previously repeated sequence in the final block. A control group (n=11) of subjects not involved in Rock Steady Boxing was compared to an experimental group (n=11) including subjects who had been regularly attending classes for the last 6 months.

Findings: A two-way ANOVA with repeated measures revealed moderate effect of group over the four learning blocks (p=.18) indicating that subjects participating in Rock Steady Boxing tended to demonstrate faster reaction. Another two-way ANOVA with repeated measures analyzed changes between the fifth and sixth block. No statistical significance was observed; but it should be noted that when exposed to the random sequence control subjects showed on average an 80.86ms decrease in median reaction time, while subjects participating boxing showed an increase in median reaction time of 37.5ms.

Conclusion: Despite the lack of statistically significant data, this study indicates that exercise programs such as Rock Steady Boxing may help to improve procedural learning in patients with PD. Due to the lack of literature currently available, these results may prove clinically relevant to health care providers treating PD.

Biography

Christopher McLeod is a second-year medical student at the New York Institute of Technology College of Osteopathic Medicine. He is currently working with Dr. Adena Leder, faculty neurologist and movement disorder specialist, in studying the benefits of Rock Steady Boxing in patients with Parkinson's Disease. He also volunteers to help run the NYIT chapter of Rock Steady Boxing in Old Westbury, NY.

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Comparison between the efficacy of vinpocetine, pomegranate, vitamin b complex, vitamin e in providing protection against parkinsonian syndrome induced by manganese in rats

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Background: Parkinson's disease (PD) is the most common neurodegenerative movement disorder characterized by insufficient production of dopamine as well as motor and cognitive decline. Excessive exposure to Manganese (Mn) is associated with extrapyramidal motor disorder similar to PD. Vinpocetine (Vin) has a neuroprotective effect which claimed to enhance brain neurotransmitter concentration, glucose and oxygen consumption as well as cerebral metabolism and blood flow. Pomegranate (POM) has been extensively referenced in medical folklore due to its dopaminergic neuroprotective effect as well as the powerful antioxidant, anti-inflammatory and antiapoptotic activity. Vitamin B (Vit B) complex also has ability to improve brain blood circulation and promote neurotransmitters synthesis, while Vitamin E (Vit E) has a neuroprotective effect by scavenging free radicals and preventing neuronal damage

Objective: To compare between the impact of Vin, POM, Vit B complex, Vit E and their combinations against parkinsonian syndrome induced by Mn in rats.

Methods: Rats received daily for 4 weeks; Saline for normal group or MnCl2 (10mg/kg IP) either alone for control PD model or in combination with Vin (20mg/kg PO), POM (150mg/kg PO), Vit B Complex (8.5mg/kg PO), Vitamin E (100mg/kg PO) or their combinations. Behavioral tests as Grid, Bar, Swimming, Open-field and Y-maze were used. In addition to histopathological examinations, biochemical examinations for brain monoamines, AChE, BDNF, GSK-3, Glutamate, GABA, INOS, Cox2 as well as for neuroinflammatory, apoptotic and oxidative markers were also evaluated.

Results: All used treatments especially Vin and POM improved motor, memory and cognitive decline induced by Mn. However, combination of treatments showed more pronounced improvements as indicated by the increase in monoamines, BDNF and Glutamate together with the decrease in AChE, GSK-3, GABA, neuroinflammatory, apoptotic and oxidative stress markers (MDA, NO, INOS). These results were highly confirmed by histopathological examination.

Conclusion: Neuronal degeneration as well as behavioral changes induced by Mn was partially improved by each of Vin, POM, Vit B complex or Vit E with more advantages to Vin and POM but their combination showed more pronounced protection from Parkinsonian syndrome induced by Mn than the solo treatment.

Biography

Azza A Ali has completed her PhD specialized in Pharmacology and Toxicology from Faculty of Pharmacy, Cairo University, Egypt. Her postdoctoral studies included different scientific aspects especially on neurodegenerative disorders; she also developed research line of behavioral pharmacology in Egypt. She is member of many scientific societies as (AAPS) and Alzheimer's Association (ISTAART). She is also Editorial Board Member of many international Journals as Brain Disorder & Therapy, Acta Psychopathologica, EC Pharmacology and Toxicology as well as Organizing Committee Member and Chairperson at many international Conferences as the International Conference on Brain Disorders & Dementia Care, Canada (2017) and International Conference on Parkinsons Disease & Movement Disorders, USA (2017). She published more than 60 papers in reputed journals, supervised and discussed more than 90 PhD and MSc thesis and actively participated by oral and posters presentations at many international conferences especially on Alzheimer's disease and Dementia as well as on Parkinsons disease as Dementia Conferences (2015, 2016), Alzheimer's Association International Conference (AAIC 2016, 2017) and Parkinsons Conference (2017). She has many appreciation certificates and certificate of best presentation award at 19th International Conference on Environmental Pollution and Pollution Control, London, UK (ICEPPC 2017). Now she is a Head of Pharmacology and Toxicology Department at Al-Azhar University, Egypt.

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Genotype and phenotype analysis of two unrelated patients with Beta-Propeller protein-Associated Neurodegeneration (*BPAN*)

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Beta-propeller protein-associated neurodegeneration (*BPAN*) is a type of neurodegeneration with brain iron accumulation (NBIA) disorders. *BPAN* is characterized by developmental delay, intellectual disability, seizures, absent to limited expressive language, ataxia, Parkinsonism, dystonia and abnormal behaviors like autism spectrum disorder. Mutations of *WDR45* gene cause *BPAN*. This gene encodes a member of the WD-repeat protein family that plays an important role in autophagy. Two unrelated Iranian patients were diagnosed as *BPAN*. First, DNAs were extracted from peripheral blood leukocytes. Subsequently, thirteen exons and flanking intronic sequences of *WDR45* were amplified by PCR and sequenced. Variations were assessed by comparison with reference sequences available at NCBI. Patient-1 was a 24-year-old woman who presented with the progressive slowness of movements, episodes of generalized tonic-clonic seizures, developmental delay, the absence of expressive language, and severe psychomotor retardation. Neurologic examination revealed a coarse and masked face, hypokinesia and rigidity of limbs, mild dystonia of right foot and severe postural instability. Her brain MRI showed mild iron deposition in pallidum and significant in substantia-nigra with a hallo-sign on the T1-weighted sequence. Patient-2 was a 39-year-old woman who manifested mental problems and mild right hemiparesis since early childhood, progressive slowing of movements starting 6-7 years before, gait freezing, difficulty in arising from chair and depression. Neurologic examination revealed masked face, slow saccades, hypokinesia and rigidity of extremities, shuffling gait and decreased arm swings. Her brain MRI was similar to patient-1 except for normal globus pallidus and moderate frontotemporal atrophy. Results of the genetic analysis showed two different de novo heterozygous variations (a splice site and an insertion) in *WDR45* in both patients. It seems these variations affect interactions of the encoded proteins with autophagy proteins. Further analysis is needed to confirm the pathogenic effect of these variations.

Biography

Afagh Alavi has completed her MSc, and PhD studies at University of Tehran. She is an assistant professor in the University of Social Welfare and Rehabilitation Sciences currently. She has published more than 17 papers in reputed journals.

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Rutin mitigates MPP+ induced neurotoxicity through the regulation of signalling pathways

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Statement of the Problem: Accumulating evidence suggests that apoptosis, autophagy, and dysregulation of signaling pathways are common mechanisms involved in Parkinson's disease (PD) pathogenesis and that development of therapeutic agents targeting these mechanisms may be effective for the treatment of this disease. Rutin, a bioflavonoid, is reported to have pharmacological benefits such as antioxidant, anti-inflammatory, and antitumor activities, however, there are no reports on the activity of this compound in PD models using 1-methyl-4-phenylpyridinium (MPP+). Therefore, we investigated the effects of rutin on apoptosis, autophagy, and cell signaling markers in SH-SY5Y cells treated MPP+.

Methods: Human dopaminergic SH-SY5Y neuroblastoma cells were pretreated with rutin, exposed to MPP+ and then assays were conducted to evaluate cell viability. Western blot techniques were used to investigate apoptosis, autophagy and cell signaling activities. Also, transmission electron microscopy was utilized to examine ultrastructural changes in cells following treatment with rutin and then MPP+.

Findings: Our findings reveal that rutin prevented MPP+ induced changes in nuclear morphology as well as attenuated caspase 3/7 and 9 activities in cells treated with MPP+. Also, rutin effectively regulated cell signaling pathways to protect SH-SY5Y cells from the deleterious effects of apoptosis and autophagy. This was demonstrated by rutin's ability to significantly reduce protein expression levels of cleaved PARP, cytochrome c, LC3-II, and p62 as well as significantly increase protein expression level of full-length caspase 3 in SH-SY5Y cells treated with MPP+. In confirmation of our western blot findings on autophagy, transmission electron images revealed that rutin significantly reduced autophagosomes in SH-SY5Y cells treated with MPP+.

Conclusion and significance of study: Our findings provide experimental evidence highlighting rutin's ability to offer neuroprotection against MPP+-induced neurotoxicity in SH-SY5Y cells and may, therefore, be considered as a promising therapeutic agent for clinical trials in humans.

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Non-motor complication of Parkinson's disease

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This abstract explained the preamble of a non-motor complication of Parkinson's disease. By definition, Parkinson disease is a progressive chronic nervous system disease resulted to decrease in the amount of dopamine production in the substantia nigra. This is characterized by tremor at rest, abnormal gait pattern (Shuffling gait), bradykinesia and rigidity. There are symptoms of nonmotor complication of PD (Parkinson's disease) which include sensory difficulty, sleep, autonomic and cognitive disorder. The manifestation of the symptom affect the quality of life and this also results in depression and anxiety. Parkinson's disease has a negative influence on patients, caregiver and the society. However, thousands of people in our society are suffering from nonmotor complication of Parkinson disease which relatively linked relatively with another disease. One of the best management is to seek therapist intervention.

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The impact of Parkinson's disease and chronic stroke on simple multitasking abilities

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It is hypothesised that Parkinson's disease and Chronic strokes may interfere with patient's ability to multitask. Both diseases cause the inability to perform simple activities such as walking and mental mathematics simultaneously. In patients with chronic stroke or Parkinson's disease, special attention must be paid to these impairments as they significantly affect independent living. In a controlled sample of 15 patients of Indian origin with either Chronic stroke or Parkinson's disease it was observed that there was a significant deterioration in the ability to multitask (increase in time taken to multitask between Timed up and Go (TUG) and Dual Timed up and Go (Dual TUG) versus a normal control group). The study found that the average increase in time required to complete the tests was 49% (for Chronic Stroke patients) and 36% (for patients with Parkinson's disease) as compared to a normal baseline of less than 10%. This study effectively shows that TUG dual task scores are significantly higher than TUG scores in the Chronic Stroke and the Parkinson's disease population. This shows a definite involvement of attention to a supposedly automatic activity such as gait. Most people can walk and perform simple cognitive tasks at the same time such as talking, texting or performing simple calculations. However patients with chronic stroke or Parkinson's are not able to multi or even dual task. We may conclude from this that both Parkinson's disease and chronic stroke do significantly impair multitasking capabilities. Special care must be taken to improve the cortical attention of these patients given that this can significantly affect the ability to live independently.

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Antioxidant and inhibitory activity towards acetylcholinesterase and adenosine deaminase of essential oils from Nigeria ginger (*Zingiber officinale*) and turmeric (*Curcuma longa*) rhizomes

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Studies have shown that neuroinflammatory processes play an important role in the pathogenesis of neurological disorders. Therefore, plant foods with anti-inflammatory potential could be used to slow the progression of these diseases. Hence, the present study sought to investigate the effect of essential oils from Nigeria ginger and turmeric rhizomes on some inflammatory biomarkers (IL-6, IL-10, and TNF-Alpha) as well as acetylcholinesterase (AChE) and adenosine deaminase (ADA) activities (key enzymes associated with neurodegeneration) in cadmium-induced neuroinflammation in rats. The result revealed that essential oil from ginger and turmeric rhizomes exert an immunomodulatory effect by preventing alterations of some cytokines (IL-6, IL-10, and TNF-Alpha) levels in Cd-treated rats. In addition, the essential oils inhibited hippocampus and pre-frontal cortex AChE and ADA activities in Cd-treated rats. In conclusion, essential oil from ginger and turmeric rhizomes could be harness as anti-inflammatory drugs/supplements for the management/prevention of neurodegenerative diseases associated with inflammation.

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YogaReach Mindful Movement for PD

Char Grossman
YogaReach, USA

I am proud to introduce the YogaReach Mindful Movement for PD Professional Workshop. This adaptive and therapeutic yoga professional training program is built specifically for those serving clients with Parkinson's disease (PD). We will train workshop attendees to launch their very own classes for clients and carepartners living with effects of PD. In my hometown of Cleveland, OH, I have spent over three decades working with populations facing the effects of PD, stroke, and an array of other chronic ailments. I am an active therapeutic yoga instructor at InMotion, a wellness center that serves the growing population of adults living with PD. Since InMotion opened, my highly targeted YogaReach Mindful Movement therapeutic yoga classes for clients and their carepartners have been among the most popular programs offered at the center.In our work, we witness clients with PD reap multiple physical and emotional benefits. YogaReach Mindful Movement programs place a specific focus on helping clients with PD strengthen movements they need for "daily life," such as reaching for an object on a shelf or getting out of a car. Relearning these actions along with a deepening sense of the mind body connection can increase overall client well-being. The YogaReach Mindful Movement for PD Professional Workshop provides in-depth, quality programming that prepares attendees to teach classes which nurture useful skills and reinvigorate spirits.

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Optogenetics, functional imaging, and computational modeling to develop a diagnostic tool for Parkinson's disease

David Bernal Casas
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The diagnosis of Parkinson's disease (PD) is based on the observation of clinical symptoms and neurological examinations and significantly relies on the identification of classical motor symptoms. However, the severity of the symptoms varies from person to person, and misdiagnoses and confusion with other illnesses are frequent. To date, no laboratory biomarkers exist for this neurological condition, and findings on functional imaging are not remarkable. Thus, there is a critical need to develop diagnostic tools to assist medical doctors. Our long-term goal is to develop a reliable diagnostic tool for hospitals, a method that may assist physicians to determine the illness. In response to this need, we have designed and developed an interdisciplinary approach to achieve this ambitious goal. Our approach combines two experimental tools with a computational method and uses both animals and humans. The first experimental tool is optogenetics. Optogenetics modifies specific types of neurons so they can be switched on in response to light. Optogenetics now allows for precise spatial and temporal control of the experimental input enabling a broad array of applications to study the responses of neuronal systems. The second experimental tool is functional magnetic resonance imaging (fMRI), which measures blood flow in the brain. We associate increased blood flow with increased neuronal activity. Using optogenetics to switch on a specific type of neuron, and fMRI to map how other regions of the brain respond, we can use computational modeling to generate quantitative descriptions of specific brain networks with cell-type specificity, and also determine its function. Then, we can estimate the contribution of each specific brain network to the same networks estimated in the healthy and diseased human brain and develop a diagnostic tool. Testing our approach to rodents, we have targeted two different types of neurons known to be involved in PD. We found that upon stimulation of a specific type of neurons that has D1-dopamine receptors, we activated a pathway – the direct pathway - that called for greater motion while when stimulating the other type of neurons that has D2-dopamine receptors, we activated another pathway – the indirect pathway – that called for less motion. We then imaged animals while stimulating either type of neuron and showed how the different neuron types generate distinct whole-brain activation maps, maps with different behavioral outcomes. Finally, we designed a computational approach to draw circuit diagrams that underlie these neuron-specific brain circuit functions. For the first time, we published quantitative neural circuits with cell-type specificity. These findings may already help to improve treatments for PD. For instance, medical doctors are already using a technique called deep brain stimulation (DBS) to ameliorate Parkinson's tremors in their patients. In short, DBS delivers tiny electric jolts at high frequency to neurons that are thought to be responsible for the tremors. A better understanding of the how those neurons work to control movement could help guide more effective stimulation therapies. However, more broadly speaking, our approach – optogenetics and fMRI combined with computational modeling – may give scientists a novel way to reverse-engineer the functions of the many different types of neurons in the brain and the humongous diverse array of neural circuits formed to carry out various commands which are responsible for behavior

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Evolution of computational neuroscience

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Computational neuroscience is the field of research which studies mathematical approach to neural coding and brain dynamics. This field of science has come a long way from describing the activity of single nerve cell in a scientific way to understanding the mechanism of billions of nerve cells processing inputs from our senses to coordinate our body movements. The extensive information about neuroscience gained by the application of mathematical techniques combined with an equally advanced computer simulation of the process has helped to find causes for various dysfunctions of the brain. The fields of differential equations, linear algebra, graph theory, and statistics are the core of mathematics used to unravel the enigma of brain mechanisms. This paper intends to discuss the history of the development of computational neuroscience with the vital role of mathematical applications.

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The Persian version of the Penn Parkinson's daily activities questionnaire-15: Construct validity and reliability

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Background: Appropriate information on the functional capacity of Parkinson's disease (PD) patients to perform instrumental activities of daily living (IADL) plays an important role in assessment of their functional independence. The aim of this work was to describe the construct validity and reliability of the Persian version of the Penn Parkinson's Daily Activities Questionnaire-15 (PV-PDAQ-15).

Methods: Knowledgeable informants of Parkinson's disease participants (n = 165) completed the PV-PDAQ-15. Candidate Parkinson's disease participants were assigned a diagnosis of normal cognition, mild cognition impairment or dementia based on clinical dementia rating scale. To evaluate the reliability of the questionnaire, test-retest and internal consistency were examined. Construct validity was assessed by correlating questionnaire scores with Lawton IADL scale.

Results: Test-retest reliability (ICC= 0.99, $p < 0.001$) and internal consistency (Cronbach's $\alpha = 0.99$; item-total correlation coefficients ranged from 0.94 to 0.98) were high. There was strong correlation between the PV-PDAQ-15 and the Lawton IADL scale ($r = 0.95$, $p < 0.001$).

Conclusions: The PV-PDAQ-15 appeared to be a reliable and valid Parkinson's disease specific instrument that can be useful in clinical and research settings.

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Parkinson's disease: Root cause analysis and ways to handle the trauma

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Parkinson's disease (PD) is a non-curable (so far) disease that comes down as a trauma to the victim and his family and relatives. There is only one way to handle the traumatic situation that is through the discovery of the positive sides of the disease. At this event, we (self and wife) would like to discuss these ways to meet the situation with utmost mental courage and determination never to accept defeat. In this connection, we always keep the story of Robert Bruce in the forefront of our minds. Robert achieved success in the nineteenth time after seeing a spider falling off from the roof of a cave but climbing up again, reaching the rooftop but again sliding down but not giving up. He used his fine but strong spider web to achieve his goal and ultimately success. When we remember the story, we feel we have a much more strong web today in the form of medical science, so there is no cause for anxiety. We have to utilize it to the best. When all medicines for relief of the disease failed, we opted for expensive and risky Deep Brain Stimulation (DBS) of the Brain when two electrodes are placed at the most sensitive part of the brain called Sub Thalamus Nucleus (STN). This is shown in the MRI images taken in my wife's brain. Parkinson's disease is a highly destabilizing disease and comes down like a curse not only to the victim but to his or her family members and relatives. It is incurable and tends to destroy the quality of life. Therefore, the affected family and the victim should not surrender, instead should accept this as an opportunity to invent and practice new systems in their daily life that will overshadow the ill effects of the disease. Activities like regular get together of family members, friends, well-wishers, celebrating birthdays and anniversaries should be held regularly. Visits to nearby tourist spots, picnic etc will help to overcome the drudgery and infuse freshness in the mind of the victim.

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R-SMAD dependent TGFβ signalling mediates TGFβ induced effects on microglia

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Microglia are the resident immune cells of the central nervous system (CNS) which are exclusive conciliators of immune responses in CNS. Previously, it has been shown that TGFβ1 signalling is crucial in maintaining the resting state of microglia and that it also blocks LPS induced microglia activation. Microglia are also associated with ageing in which changes in microglia gene expression is also linked to ageing where they are reported to be performing immunosuppressive and immune tolerant functions. It is well established that TGFβ1 signaling requires formation of a complex between R-SMADs 2 and 3 and Co-SMAD4. However, our previous results suggested that microglia specific TGFβR2-/- results in impaired pSMAD2 mediated transcription but not in SMAD4-/- mouse model. To address this discrepancy, we performed subcellular fractionation and Co-immunoprecipitation analysis of BV-2 immortalized murine microglial cell line. Western blot analysis of protein fractions demonstrated the presence of pSMAD2 and SMAD2/3 in all the fractions. However, SMAD4 was undetectable in chromatin fraction despite the presence of SMAD2/3. The Co-IP results suggested a weak Smad 2/3 and Smad4 interaction irrespective of treatment. Non canonical pathway analysis was performed using PathScan Intracellular Signaling Array Kit. Surprisingly, no non-canonical pathway activation was detected in BV2 cells upon stimulation with TGFβ1. Taken together, our data suggests that SMAD2/3 and SMAD4 are not necessarily interacting with each other upon stimulation with TGFβ1 in microglia. Our initial results also suggested a lack of non-canonical pathway activation in BV2 cells.

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Evaluation of the neuroprotective effect of antioxidants against depression in mercuric chloride-treated Wistar rats

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Metal-borne pollution is one of the major risks in today's world. Mercury is also known to induce adverse effects on brain functions. The purpose of this work is to assess the antidepressant capabilities of the two antioxidant-rich medicinal plants in the face of mercuric chloride intoxication in Wistar rats. This is an experimental study conducted on 25 adult rats randomly divided into 5 groups each of 5 rats, the different groups of animals are treated by ginger extract and Nigel Oil one week before the administration of chloride Mercuric for three weeks. On the 24th day of experimentation The rats are placed individually in the aquarium of the test of forced swimming for 15 minutes, this phase is used to provoke a mental depression, 24 hours after (25th day) a second session 5 minutes was carried out, during which time of immobility, swimming and climbing are measured. The results obtained showed that the administration of mercuric chloride significantly increased the time of immobility and decreased the time of travel compared to the control group, while the groups pretreated by the ginger extract and Nigel Oil can reduce the degree of depression. Ginger extract and Nigel Oil improve antidepressant behaviour in Wistar rats exposed to mercuric chloride and open an interesting research pathway to study the mechanisms of action of these antioxidants on Neurobehavioral effects of this metal.

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