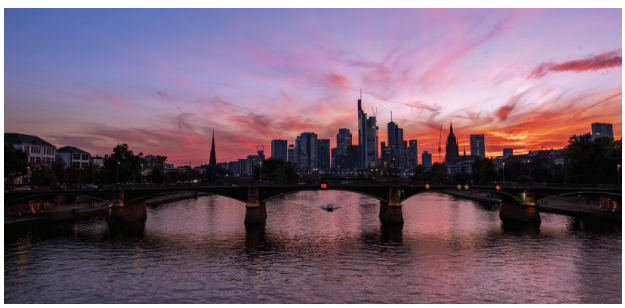
Accepted Abstracts

Alzheimers 2019


13th International Conference on

Alzheimers Disease and Dementia

November 25-26, 2019 | Frankfurt, Germany

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Mitochondrial energy from omega-3 protects immunity and cognition of mild Cognitive Impairment patients beyond Cholinesterase inhibitors

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Background: The innate immune system clears amyloid-β (Aβ) by phagocytosis but fails in Mild cognitive impairment patients (MCI) (reversibly) and in Alzheimer disease patients (AD) (irreversibly). Omega-3 fatty acids (omega-3), vitamin 1,25D3, and curcuminoids repair AD patients' phagocytic and transcriptional defects.

Objectives: Immune and cognitive effects of supplementation by a fish-derived lipid emulsion with omega-3 protected against oxidation.

Method: We measured Aβ phagocytosis by the flow cytometric Aβ blood test. We investigated the effects of omega-3 on mitochondrial respiration and glycolysis in immune cells using the Seahorse XF96 Extracellular Flux Analyzer (Agilent). We performed RNA-seq of macrophages using Illumina HiSeq 4000, aligned reads to the UCSC hg19 reference genome and obtained read counts using HT-Seq.

Result: Omega-3-supplemented MCI patients (MMSE >19) maintained cognitive status close to baseline 1.7 to 5.1 years beyond cholinesterase inhibitors. Omega-3 had no significant effects in patients with established Alzheimer – type dementia (MMSE < 19) or Lewy body disease. Omega-3 treatment of macrophages in vitro increased transcription of enzymes for glycolytic and ox-phos energies. Omega-3 increased basal oxygen consumption rate (OCR), ATP-linked OCR, and OCAR/ECAR ratio in peripheral blood mononuclear cells (PBMC's). In omega-3 supplemented subjects, Aβ phagocytosis was active even when glycolysis was inhibited by iodoacetate.

Conclusion: In a pilot study, cell signaling and increased energy from a fish-derived emulsion of omega-3 recovered the immune functions of MCI through increased mitochondrial energy and unfolded protein response. As the changes in immune and cognitive functions in MCI patients were correlated (r=0.77), the immune system may have a disease-modifying role in some MCI patients.

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A novel apolipoprotein E antagonist functionally blocks apolipoprotein E Interaction with N-terminal Amyloid precursor protein, Reduces β-Amyloid-Associated Pathology and improves cognition

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The E4 isoform of apolipoprotein E (apoE4) is a major genetic risk factor for the development of sporadic Alzheimer's disease (AD) and its modification has been an intense focus for treatment of AD in recent years. We investigated the binding of apoE, a peptide corresponding to its low density lipoprotein receptor (LDRL) binding domain (aa 133-152, ApoEp) and modified ApoEp to amyloid precursor protein (APP) and their effects on Aβ production in cultured cells. Having discovered a peptide which blocks the interaction of apoE with N-terminal APP, we investigated the effects of this peptide and ApoEp on AD-like pathology and behavioral impairment in 3XTg and 5XFAD transgenic mice. ApoE and ApoEp, but not truncated apoE lacking the LDLR binding domain, physically interacted with N-terminal APP and thereby mediated Aβ production. Interestingly, the addition of six lysine residues to the N-terminal ApoEp (6KApoEp) directly inhibited apoE binding to N-terminal APP and markedly limited apoE- and ApoEp-mediated Aβ generation, presumably through decreasing APP cellular membrane trafficking and p44/42 mitogen-activated protein kinase phosphorylation. Moreover, while promoting apoE interaction with APP by ApoEp exacerbated Aβ and tau brain pathologies in 3XTg-AD mice, disrupting this interaction by 6KApoEp ameliorated cerebral Aβ and tau pathologies, neuronal apoptosis, synaptic loss, and hippocampal-dependent learning and memory impairment in 5XFAD mice without altering cholesterol, LDLR, and apoE expression levels. These data suggest that disrupting apoE interaction with N-terminal APP may be a novel disease-modifying therapeutic strategy for AD.

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The combination treatments of Acupunture and traditional Chinese medicine to Alzheimer's disease in central Taiwan

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Alzheimer‘s disease mainly cause the cerebrum nerve cell incessancy to degenerate. It is estimated that approximately 3~5% of the 65-year-old above population, or 300000 senior citizens around Taiwan suffer from this sickness. It has become a public health problem for the society.

This research is conducted in Fong Yuan hospital located in central Taiwan. The patients with slight to moderate level of Alzheimer’s disease were diagnosed by neuron doctors and were given the experiment by us. All of these patients were conformed to the dementia diagnosis (DSM IV MMSE 10~24). In accordance with the acceptance, patients had been divided into three groups: the experimental group I (acupuncture and western medicine Aricept), the experimental group II (acupuncture adds traditional Chinese medicine and western medicine Aricept), and the control group (only uses western medicine Aricept). There were 90 patients with three groups and the each of the patients is at least 50 years old.

The three groups were examined with MMSE, CASI C-20, ADAS to evaluate the effectiveness of Acupuncture and TCM for Alzheimer's patients. The above methods and ADAS-NON evaluate the degree of improvement of the patient’s condition. The first treatment and the second treatment course were evaluated after 12 weeks, and 26 weeks. The main research mainly focuses on effectiveness of Acupuncture and TCM PSUNHT1 for Alzheimer's patients.

The above research employed the binomial examination. After the process of Acupuncture and Chinese medicine treatment, the experimental group of Alzheimer patient CASI and the ADASN were evaluated and given score regarding the progress. The result could support our research goal: the combination treatment of acupuncture and TCM PSUNHT1 can improve Alzheimer illness. Moreover, the statistical results indicated that the average score the experimental groups receive progressiveness after treatment in ADAS1 and the ADAS2 were from 25.42 scores to 22.9 scores. On the other hand, by receiving the average score of 15, the group of DAS3 treatment sees progressiveness after the treatment. Comparing to in the control groups in ADAS1 and the ADAS2 with average score of 27.11, experimental groups' progressive scope surpasses the control groups with score of 26.03. Also, among the experimental groups, ADASN received an average score of 5.46 before treatment, and saw progresses to 3.00 scores after the treatment. The progressive scope indicates that the experimental groups surpass the control groups.

Conducted by using statistical method and analysis, the result of the research indicates that a combination treatment of acupuncture and TCM PSUNHT1 can significantly improve the Alzheimer’s illness. We expect that the acupuncture and TCM PSUNHT1 will become useful methods to improve blood circulation and heal functional brain. In conclusion, we prove that the combination of traditional Chinese medicine PSUNHT1 and acupuncture can be very helpful and effective in treating the Alzheimer’s illness.

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Dementia knowledge among healthcare professionals: A descriptive study

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Introduction: Dementia is a health condition results from neurodegenerative processes and occurs in later stages of life. The quality of life for people with dementia is affected by the quality of care provided by healthcare professionals. The knowledge of dementia among healthcare professionals is important to help them engage in clear decision making and providing an appropriate ongoing treatment plan about dementia. Level of knowledge on dementia in Kuwait is Limited. This research investigated the level of knowledge of health care professionals about dementia.

Methods: This descriptive study included various health care professionals (physicians, nurses, occupational therapists, physical therapists, and pharmacists) from Seven governmental hospitals. Dementia Knowledge Assessment Scale (DKAS) was used to measure participants' knowledge. It includes four subscales: causes and characteristics, communication and behavior, care consideration, and risks and health promotion. In addition, demographic data sheet covering age, gender, education, level of experience were included. Two Questions were added to the demographic sheet: Data was analyzed using SPSS version 25 and descriptive statistics was used for analyzing mean and SD. Kuskal-Wallis ANOVA test was used to compare between more than two independent groups.

Results: 1005 subjects from different professions participated in this study: 120 physicians, 657 nurses, 107 physical therapists, 31 occupational therapists, and 90 pharmacists. The final score of DKAS scale showed a low level of dementia knowledge among the healthcare professionals (18.98 / 50). There was a significant difference between all groups in DKAS final score and four subscales ($P<0.01$). The descriptive statistics showed that OTs have better knowledge about dementia than other professions. The two additional questions showed that 89.6% of the participants did not attended course/s about dementia and 75% of the participants would like to attend a presentation or workshop about dementia.

Discussion: This study showed that there is a low level of knowledge about dementia among healthcare professionals, which is due to the low number of people who attended training courses. Occupational therapists, nurses, and physicians have more knowledge than other professions. Yet, they still do not have sufficient knowledge about dementia. The majority of the participants expressed their interest to attend a presentation or workshop about dementia. This poor knowledge among health care professionals requires immediate attention. This study added value to the Middle Eastern research of dementia. It highlights that further dementia training and education is still needed.

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A randomized double-blind clinical trial of Greek high phenolic early harvest extra virgin olive oil of Chalkidiki variety in mild Cognitive Impairment: The MICOIL study

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A double-blind randomized trial examined the effect of Greek High phenolic Early Harvest extra virgin olive oil (HP-EHVOO) and extra virgin olive oil with moderate phenolic content (MP-EVOO) versus Mediterranean Diet in 60 participants with Mild Cognitive Impairment (MCI) for 12 months. An extensive neuropsychological battery including global cognition, verbal fluency, Activities of Daily Living (ADL), mood, attention, visuo-spatial ability and memory was used for the assessment of the subjects at baseline and after 12 months follow-up. Each participant was randomized and allocated in one of three groups i) the Group 1 received the HP-EVOO (50 mL/day), ii) the Group 2 received the MP-EVOO (50 mL/day), and iii) the Group 3 received only the Mediterranean Diet instructions which followed also the other two groups. We found better post-trial cognitive performance versus control in almost all cognitive domains and significantly better performance in ADAS-Cog, verbal fluency and memory tasks for participants allocated to the Group 1. Also, participants assigned to Group 2 showed improvement compared to control Group 3, whereas Group 3 exhibited worse performance in almost every neuropsychological test. These findings suggest that a long-term intervention with HP-EVOO or MP-EVOO was associated with improvement in cognitive functions, and this improvement was found compared with the Mediterranean Diet group.

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Environmental Noise Impact on aging hearing health and Sensorineural Speech Processing

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This presentation outlines hearing health damage and sensorineural speech processing deficits in aging populations caused by environmental noise exceeding public health limits internationally. Irreversible sensory (cochlear) and neural (auditory nerve) damage includes hidden hearing loss, tinnitus, speech-to-noise ratio loss, noise-induced hearing impairment, and accelerated age-related hearing loss (presbycusis). Sensorineural speech processing abilities differ greatly between late-onset sensory presbycusis in people with no hazardous exposure and early-onset neural presbycusis in people with a history of high environmental noise exposure. Widespread untreated hearing impairment increases risk of cognitive decline and dementia. Environmental noise levels causing speech interference impact vulnerable populations including people with aging hearing health, sensorineural speech processing deficits, and/or cognitive declines. Quieter noise levels meeting public health limits are urgently needed to protect hearing health and improve access in public spaces for aging populations with quiet communication needs.

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