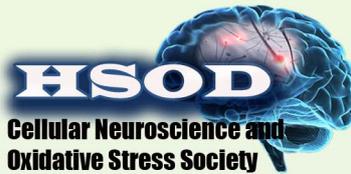


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Stress

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Journal of Cellular Neuroscience and Oxidative Stress is an online journal that publishes original research articles, reviews and short reviews on the molecular basis of biophysical, physiological and pharmacological processes that regulate cellular function, and the control or alteration of these processes by the action of receptors, neurotransmitters, second messengers, cation, anions, drugs or disease.

Areas of particular interest are four topics. They are;

A- Ion Channels (Na⁺- K⁺ Channels, Cl⁻ channels, Ca²⁺ channels, ADP-Ribose and metabolism of NAD⁺, Patch-Clamp applications)

B- Oxidative Stress (Antioxidant vitamins, antioxidant enzymes, metabolism of nitric oxide, oxidative stress, biophysics, biochemistry and physiology of free oxygen radicals)

C- Interaction Between Oxidative Stress and Ion Channels in Neuroscience

(Effects of the oxidative stress on the activation of the voltage sensitive cation channels, effect of ADP-Ribose and NAD⁺ on activation of the cation channels which are sensitive to voltage, effect of the oxidative stress on activation of the TRP channels in neurodegenerative diseases such Parkinson's and Alzheimer's diseases)

D- Gene and Oxidative Stress

(Gene abnormalities. Interaction between gene and free radicals. Gene anomalies and iron. Role of radiation and cancer on gene polymorphism)

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Keywords

Ion channels, cell biochemistry, biophysics, calcium signaling, cellular function, cellular physiology, metabolism, apoptosis, lipid peroxidation, nitric oxide, ageing, antioxidants, neuropathy, traumatic brain injury, pain, spinal cord injury, Alzheimer's Disease, Parkinson's Disease.

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 **Speak No. 4**

Intravenous NAD⁺ effectively increased the NAD metabolome, reduced oxidative stress and inflammation, and increased expression of longevity genes safely in elderly humans

Nady BRAIDY¹, James CLEMENT², John STURGES³, Yue LIU¹, Anne POLJAK^{1,4,5}, Perminder SACHDEV^{1,6}

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Nicotinamide adenine dinucleotide (NAD⁺) serves important roles in hydrogen transfer and as the cosubstrate for poly(ADP-ribose) polymerase (PARPs), the sirtuin (SIRT1-7) family of enzymes, and CD38 glycohydrolases. Recently, intravenous (IV) NAD⁺ therapy has been used as a holistic approach to treat withdrawal from addiction, overcome anxiety and depression, and improve overall quality of life with minimal symptoms between 3-7 days of treatment.

We evaluated repeat dose IV NAD⁺ (1000 mg) for 6 days in a population of 8 healthy adults between the ages of 70 and 80 years.

Our data is the first to show that IV NAD⁺ increases the blood NAD⁺ metabolome in elderly humans. We found increased concentrations of glutathione peroxidase -3 and paraoxonase-1, and decreased concentrations of 8-iso-prostaglandin F2 α , advanced oxidative protein products, protein carbonyl, C-reactive protein and interleukin 6. We report significant increases in mRNA expression and activity of SIRT1, and Forkhead box O1, and reduced acetylated p53 in peripheral blood mononuclear cells isolated from these subjects. No major adverse effects were reported

in this study.

The study shows that repeat IV dose of NAD⁺ is a safe and efficient way to slow down age-related decline in NAD⁺.

Keywords; Nicotinamide adenine dinucleotide; Oxidative stress: Inflammation: Longevity genes; Elderly humans.

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