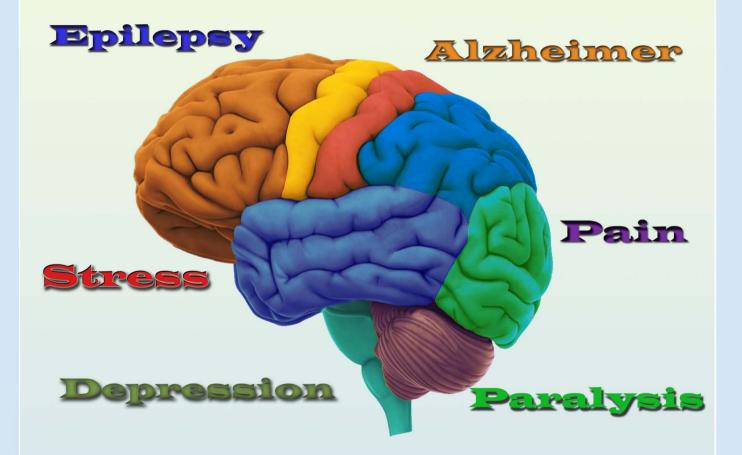
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Journal of Cellular Neuroscience and Oxidative Stress is an online journal that publishes original research articles, reviews and short reviews on the molecular basis of biophysical, physiological and pharmacological processes that regulate cellular 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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Oral Presentations

Oral Presentation 1

Using fluorescent calcium indicators in neuronal ion channel studies

Bilal ÇiĞ

Department of Biophysics, Faculty of Medicine, Suleyman Demirel University, Isparta, Turkey

Calcium ion (Ca²⁺) is the most prominent secondary messenger of physiological cellular signals and ion channels research (Moeder et al. 2019). Neurotransmission, muscle contraction and fertilization are only a few of the physiological properties that make calcium ion important in most eukaryotic cells (Pharris et al. 2018). The extracellular calcium concentration is 1-3 mM whereas the intracellular concentration is around 80-100 nM. This tremendous difference is tightly controlled by dozens of different ion channels embedded in the membrane (Van Hook et al. 2019). Activation of these channels causes calcium ions to entry into the cell with density gradient. This produce the calcium signal. It is very important to control that prolonged elevation of intracellular calcium concentration due to channelopathies in ion channels due to various nervous system diseases because it activates caspase cascades leading to permanent damage and apoptosis. In this respect, the calcium indicators are unrivaled in terms of taking clear results by photographing all the points in these steps from the stage they were developed to the final stages. The use of these indicators to address the roles of these ion channels in terms of their contribution to the pathogenesis of neurological diseases has been an indispensible method of molecular analysis in recent years (Xu and Dong, 2019). In this presentation, we will discuss the chemical structures of calcium indicators, their contribution to the examination of cellular signaling pathways, their advantages and disadvantages in the investigation of ion channels in neurological diseases.

Key words; Calcium ion indicators;

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