

2nd International Symposium: Frontiers in Anatomy and Physiology Research and Education

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ABSTRACT

The aim of the special issue is to expand knowledge on the recent achievements in Anatomy, Physiology and related basic, preclinical, and clinical sciences of the participants of the 2nd International Symposium: Frontiers in Anatomy and Physiology Research and Education, conducted by the Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak, in collaboration with the international partners on December 13-14, 2023, to strengthen international collaboration between Malaysian and overseas universities and to help all the readers of the journal to identify their own niche in research and international partnership. It is also aimed at motivation of young researchers to participate in the research competitions and win, to upgrade their own research and participate in the scientific networking. The scope of the publications in the Special Issue covers but is not limited to the scientific data obtained from research in clinical anatomy, histology, embryology, systemic physiology and pathophysiology, molecular medicine, physiology of cell membrane and single cells, histophysiology, animal studies, drug discovery, immunology and infectious diseases, inflammation and cancer, neurosciences and medical education. The keynote and the invited speakers are world-renowned scientists and physicians known for cutting-edge research and clinical practice. The papers and abstracts were peer-reviewed and selected for publication by the scientific committee of the Symposium formed by Malaysian and international researchers.

Keywords: *Anatomy; physiology; education; research and conference*

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ABSTRACTS

All presented abstracts are listed from Page 4 to 89.

Zonulin increases blood-brain barrier permeability and induces neuroinflammation in the substantia nigra of highly anxious rats

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Abstract

Increased permeability of the interstitial epithelial barrier (IEB) and blood-brain barrier (BBB) leading to neuroinflammation, precede the onset of Parkinson disease. Stress may influence processes linking IEB disruption and neuroinflammation. Zonulin is a protein produced by the small intestine epithelial cells that enhances intestinal permeability. It is uncertain whether zonulin has a similar effect on the BBB and whether this is dependent on the individual's level of anxiety. This study examines the effect of zonulin on increasing BBB permeability and resulting neuroinflammation in the substantia nigra (SN) of rats exhibiting various anxiety-like behaviours (ALB). Zonulin was administered intraperitoneally to animals with low and high levels of ALB, as measured by the elevated plus maze test. Another group of animals received zonulin and Evans blue. Brains were removed for immunohistochemical (GFAP, CD-11 β , TNF- α) and spectrophotometric analysis of Evans blue in the SN. Zonulin administration resulted in extravasation of Evans Blue from the circulation into the SN due to disruption of the BBB and pro-inflammatory activation of micro- and astroglia in the SN of rats with high ALB levels.

Keywords: Zonulin; blood-brain barrier; neuroinflammation; astroglia and microglia

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