INVESTIGATION OF THE PROTECTIVE EFFECT OF NESFATIN-1 PEPTIDE IN NEURON DEATH CAUSED BY HYPEROXIA İN NEWBORN RAT BRAIN

Kıymet Zülal HALK

ORCID 0000-0002-8226-221X

BURSA ULUDAG UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCEINCES
Histology and EmbryologyDEPARTMENT
PhD PROGRAM

GRADUATION DATE: 11.01.2024

SUPERVISOR

Prof. Dr. Fatma Zehra MİNBAY
ORCID 0000-0001-8135-5468
BURSA ULUDAG UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCIENCES
Histology and Embryology DEPARTMENT
BURSA – TÜRKİYE

KEY WORDS

- ✓ Apoptosis
- ✓ Autophagy
- ✓ Hyperoxia
- ✓ Nesfatin-1
- ✓ Neuron protection

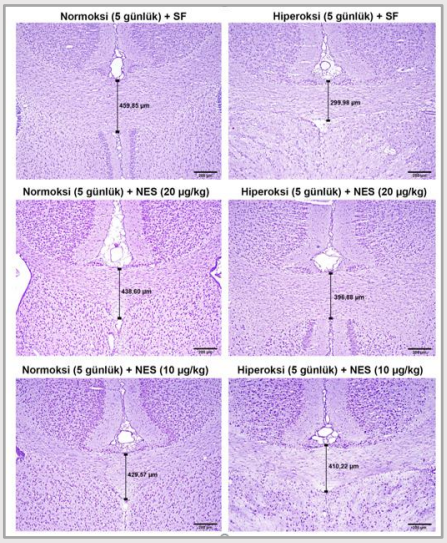
CONTACT

E-MAIL:
zulaluygul@gmail.com

THESIS SUPERVISOR

TELEPHONE:
0224-295-4064

E-MAIL:
zminbay@uludag.edu.tr



THESIS ABSTRACT

In this thesis study, it was aimed to show whether nesfatin-1 peptide has an effect on brain damage caused by hyperoxia in the developing rat brain and through what mechanisms it exerts this effect. According to our findings, it was observed that nesfatin-1 significantly increased the number of neurons that decreased due to hyperoxia and corrected hypomyelination.While nesfatin-1 applied during two days of hyperoxia significantly reduced the levels of autophagy markers such as beclin-1, ATG5 and LC3A-B, which increased due to hyperoxia, and the expressions of BAX and IL-18; It was found that neurotrophins such as BDNF and GDNF, whose expressions decreased with the effect of 5-day hyperoxia, and SOD and GSH-Px antioxidant enzyme levels significantly increased. As a result, it has been shown that nesfatin-1 peptide reduces brain damage caused by hyperoxia and has a protective effect on impaired cellular and molecular mechanisms.

APPLICATION AREAS OF THE THESIS RESULTS

The thesis study shows that nesfatin-1 peptide can be a neuroprotective agent for the prevention and/or treatment of hyperoxic damage that may occur in premature newborns in neonatal intensive care units and provides new information to the literature.

ACADEMIC ACTIVITIES

Halk K.Z., Yanar B., Aydin B., Gören B., Eyigör Ö., Minbay Z. (2023). Protective Effect of Nesfatin-1 Peptide Against Hyperoxia-Induced Neuron Death in the Neonatal Rat Brain. 21st National Neuroscience Congress, pp. 210. Bolu, Türkiye.

Halk K.Z., Kahveci Z., Çavuşoğlu İ., Sırmalı Ş.A. (2020). Effect of Resveratrol and Diallyl Disulfide on Cadmium-Induced Acute Damage in Rat Testis, Medical Journal of Süleyman Demirel University, 2020:27(3):273-282, doi: 10.17343/sdutfd.55403

TÜBİTAK 1001- 116S748. 2017-2019. KUAP (T)-2015/45, TGA-2022-1173 and HDP(T)-2020/26 Bursa Uludağ University BAP