www.TurkJBiochem.com

TÜRK BİYOKİMYA DERGİSİ

Turkish Journal of Biochemistry

TBD ULUSLARARASI BİYOKİMYA KONGRESİ 2021
32. ULUSAL BİYOKİMYA KONGRESİ
27-30 Ekim 2021, Gaziantep, Türkiye

TBS INTERNATIONAL BIOCHEMISTRY CONGRESS 2021
32ND NATIONAL BIOCHEMISTRY CONGRESS
27-30 October 2021, Gaziantep, Turkey

Türk Biyokimya Derneği'nin yayın organıdır.
[Published by the Turkish Biochemical Society]

2021

Cilt [Volume] 46

Ek Sayı [Supplement] 2

YER ALDIĞI İNDEKSLER [INDEXED BY]

SCI Expanded, Journal Citation Reports/Science Edition, Chemical Abstracts, Index Copernicus, Embase, Scopus, Ulakbim Türk Tıp Dizini, Ulrich's Periodical Directory, EBSCO, Türkiye Atıf Dizini

S-100
INVESTIGATION OF PROTECTIVE EFFICACY OF A NOS-2 INHIBITOR IN PRILOCAINE-INDUCED HUMAN RETINAL EPITHELIAL CELL TOXICITY

Aleyna Oztuzun, Tugce Ceker, Cagatay Yilmaz, Mutay Aslan
Department of Medical Biochemistry, Akdeniz University Faculty of Medicine, Antalya, Turkey

BACKGROUND AND AIM: Prilocaine (PRL) is one of the most commonly used local anesthetics for regional anesthesia. Toxic effects of intravitreal administration of local anesthetics on the retina have been reported in vivo. The aim of this study was to examine the protective effects of asperglaucide, a NOS-2 inhibitor, in prilocaine-induced human retinal epithelial cell (RPE) toxicity. METHODS: ARPE-19 cell line was used in our study. Prilocaine (Priloc 2%) was applied at 1,21, 2,43, 4,87 mM concentrations to RPE cell groups. Toxicity analysis (MTT test) was performed to determine the toxic dose and administration time. The protective efficacy of the NOS-2 inhibitor, dissolved in DMSO, was examined at a concentration range of 0.78-3.125 for 12-24 hours. RESULTS: Cell viability was significantly reduced in cells treated with PRL. Treatment of NOS-2 inhibitor following administration of prilocaine significantly increased cell viability compared to administration of PRL alone. Morphological changes such as shrinkage, separation and rounding were observed in cells treated with 2.43 mM PRL for 18 hours. Application of 3.125 µM NOS-2 inhibitor for 12 hours reduced the morphological changes observed in PRL-treated cells. CONCLUSIONS: This study investigated the protective efficacy of asperglaucide, a NOS-2 inhibitor, in RPE cells exposed to PRL toxicity.
Keywords: Human retinal pigment epithelial cell, NOS-2 inhibitor, prilocaine,

S-101
ENZALUTAMIDE, AN ANDROGEN RECEPTOR ANTAGONIST, OVERCOMES CHEMORESISTANCE BY SENSITIZING TRIPLE-NEGATIVE BREAST CANCER CELLS TO APOPTOSIS

Laila Sawalha[1], Mamoun Ahram[2], Ozlem Dalmizrak[1]
[1]Department of Medical Biochemistry, Faculty of Medicine, Near East University, Nicosia, TRNC
[2]Department of Physiology and Biochemistry, School of Medicine, The University of Jordan, Amman, Jordan

BACKGROUND AND AIM: Triple-negative breast cancer (TNBC) is challenging to treat due to its heterogeneity and lack of therapeutic targets. Hence, systemic chemotherapy is still the mainstay in the treatment. Unfortunately, patients commonly develop chemoresistance. Androgen signaling through its receptor (AR) is an essential player in breast cancer where it has been shown to confer chemoresistance to TNBC cells. Hence, inhibition of the androgen signaling pathway via enzalutamide, for example, provides an intriguing therapeutic strategy. Therefore, we aim to elucidate the mechanistic effects of enzalutamide in sensitizing TNBC cells to doxorubicin. METHODS: The MDA-MB-231 and MDA-MB-453 cells were used as model systems of TNBC. Cell viability and apoptosis were investigated upon treatment of cells with doxorubicin in the absence/presence of dihydrotestosterone (DHT) and enzalutamide. Apoptosis-related genes (*mcl1* and *bcl2*) were assayed by qRT-PCR for the detection of alteration in the gene expression. Caspase 3/7 and TUNEL assays were performed to investigate the molecular mechanism of enzalutamide action. RESULTS: Enzalutamide decreased the viability of MDA-MB-231 and MDA-MB 453 cells and reduced DHT-induced chemoresistance in both cell lines. It also increased the chemosensitivity towards doxorubicin in MDA-MB-231 cells only. Increasing DNA degradation and caspase 3/7 activity were concomitant with these outcomes. Moreover, enzalutamide down- regulated the anti-apoptosis genes, *mcl1* and *bcl2* in MDA-MB-231. DHT, on the other hand, upregulated the expression of the same anti-apoptosis genes in both cell lines. CONCLUSIONS: Enzalutamide is effective in both TNBC cell lines in reducing the DHT-induced chemoresistance by stimulating apoptosis through down-regulation of two anti-apoptosis genes and inducing the activity of the caspase enzymes. These data suggest that enzalutamide may be a potential therapeutic approach for targeting cell-specific TNBC.
Keywords: Triple-negative breast cancer, androgen receptor, dihydrotestosterone, enzalutamide, apoptosis

S-102
TUNICAMYCIN INDUCED SPHINGOLIPID AND POLYUNSATURATED FATTY ACID CHANGES IN HUMAN KIDNEY EPITHELIAL CELLS

Tugce Ceker[1], Cagatay Yilmaz[1], Esma Kirimlioglu[2], Mutay Aslan[1]
[1]Department of Medical Biochemistry, Akdeniz University, Antalya, Turkey
[2]Department of Histology, Akdeniz University Faculty of Medicine, Antalya, Turkey

BACKGROUND AND AIM: This study aimed to determine tunicamycin (TM)-related sphingolipid and polyunsaturated fatty acid (PUFA) changes in human kidney cells (HEK-293) and their effects on inflammatory and apoptotic pathways. Tunicamycin was employed to induce endoplasmic reticulum (ER) stress in HEK-293 cells and an ER stress inhibitor, tauroursodeoxycholic acid (TUDCA), was given to minimize cytotoxicity. METHODS: Cell viability was determined by MTT assay. Sphingomyelin (SM), ceramide (CER) and PUFA levels were measured by liquid chromatography-tandem mass spectrometry (LC-MS/MS). Glucose-regulated protein 78-kd (GRP78), cleaved caspase-3 and cyclooxygenase-1 (COX-1) protein levels were assessed by immunofluorescence. Cytosolic phospholipase A2 (cPLA2), total COX and prostaglandin E2 (PGE2) were measured to evaluate changes in enzyme activity. RESULTS: Decreased cell viability was observed in TM treated cells. Administration of TUDCA following TM treatment significantly increased cell viability compared to TM treatment alone. Tunicamycin-induced ER stress was confirmed by significantly increased protein levels of GRP78. A significant increase was observed in C18-C24 CERs and caspase-3 activity, while a significant decrease occurred in sphingosine-1-phosphate (S1P) and cPLA2 activity in cells treated with µg/ml versus controls. The decrease in cPLA2 activity was accompanied by significantly increased PUFA levels in TM treated cells. Tauroursodeoxycholic acid treatment in conjunction with TM significantly decreased ER stress, C18-C24 CERs, caspase 3 activity and increased S1P levels. CONCLUSIONS: Results show the build-up of long chain CERs and PUFAs in HEK-293 cells undergoing ER stress alongside increased apoptotic activity. Tauroursodeoxycholic acid administration, along with TM treatment alleviated the build-up of CERs and TM-induced apoptotic activity in kidney epithelial cells.
Keywords: Ceramide, Kidney, PUFA, Sphingolipid, Tunicamycin

S-103
ASSESSMENT OF PROTEOLYTIC DIGESTION PRODUCTS FOR TARGETED PROTEOMICS STUDIES

Pelin Yildiz, Sureyya Ozcan
METU, Department of Chemistry, Ankara, Turkey

BACKGROUND AND AIM: Targeted proteomics is a powerful tool for hypothesis testing in clinical research. Mass spectrometry (MS) based protein quantification offers high sensitivity, quantitative precision, and repeatability even in complex biological samples. The peptide-centric technique focuses on identifying and/or quantifying precisely the protein's unique peptide(s) using MS in bottom-up proteomics. METHODS: Alpha-2-macroglobulin (A2MG), clinically important protein linked to liver, lung, neurological, and prostate cancer, was selected as a reference protein. Two commonly used proteases, trypsin and a trypsin/lys-c mixture were used to evaluate digestion products. Unique peptides representing A2MG were monitored using triple quadrupole (QQQ) MS operated in multiple reaction monitoring (MRM) mode. RESULTS: Protein-peptide correlation, digestion efficiency, matrix, and concentration-effect were examined using statistical approaches. The preliminary results suggest that the selection of the unique peptide is the most critical step in targeted proteomics as each peptide behaves differently depending on the digestion conditions. CONCLUSIONS: The outcomes of this research will provide insights into peptide-protein relationship for quantitative proteomics.
Keywords: mass spectrometry, targeted proteomics, A2MG, peptide-protein relationship

S-104
EVALUATION OF RELAXIN AND SEROTONIN LEVELS IN LABOUR IN WATER AND LABOUR WITH EPIDURAL ANESTHESIA

Nezaket Kadioglu[1], Tuba Candar[2], Umit Yasemin Sert[3], Ozlem Uzunlar[3]
[1]Ankara Liv Hospital, Department of Obstetrics and Gynecology, Ankara, Turkey
[2]Ufuk University Faculty of Medicine, Department of Medical Biochemistry, Ankara, Turkey
[3]University of Health Science, Ankara City Hospital, Department of Obstetrics and Gynecology, Ankara, Turkey

BACKGROUND AND AIM: This study aimed to compare the pain perception by biochemical parameters, relaxin and serotonin, in pregnant women who had labour in water or labour with epidural anesthesia. METHODS: Seventy three pregnant women between the ages of 22-31 were included in the study in three different groups; labour in water (n=23), labour with epidural anesthesia (n=25) and spontaneous vaginal birth group (control) (n=25). Relaxin and serotonin levels of women were measured after birth in each group. Measurements were made by MRC brand UT6100 ELISA reader using Human RLN1 (Prorelaxin H1) and Human SERT (Serotonin Transporter) ELISA kits (Fine Test/Wuhan Fine Biotech Co., Ltd), respectively. The statistical analysis of the data was made by IBM SPSS version 17.0. RESULTS: There was not any statistically significant difference between groups in terms of age, body mass index, gravidity, parity and neonatal birth weights. Although relaxin levels were not statistically significantly different between groups ($p>0.05$) serotonin levels were statistically significantly different between groups ($p<0.05$).