The 2nd International Symposium on Drug Discovery

July 2nd – 3rd, 2024 | Taipei, Taiwan

Speaker information

General Information

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Affiliation	Taipei Medical University	
Education Background	Ph.D. in Pharmaceutical Sciences, Rutgers University	
Professional Appointment	Associate Professor at the Department of Clinical Pharmacy, School of Pharmacy	
Research Interest	Pharmacogenomics, Pharmacovigilance	
Website (if any)		

Recent Publications (up to 10)

1. Tangeretin and 4'-demethyltangeretin prevent damage to mouse hepatocytes from oxidative stress by activating the Nrf2-related antioxidant pathway via an epigenetic mechanism. Su ZY, Chien JC, Tung YC, **Wu TY**, Liao JA, Wei GJ. Chem Biol Interact. 2023 Sep 1;382:110650. doi: 10.1016/j.cbi.2023.110650. Epub 2023 Jul 28. PMID: 37517432

2. Influence of antipsychotic medications on hyperlipidemia risk in patients with schizophrenia: evidence from a population-based cohort study and in vitro hepatic lipid homeostasis gene expression. **Wu TY**, Tien N, Lin CL, Cheah YC, Hsu CY, Tsai FJ, Fang YJ, Lim YP. Front Med (Lausanne). 2023 Jun 22;10:1137977. doi: 10.3389/fmed.2023.1137977. eCollection 2023. PMID: 37425327 Free PMC article.

3. Pharmacokinetic Herb-Drug Interactions of Xiang-Sha-Liu-Jun-Zi-Tang and Paclitaxel in Male Sprague Dawley Rats and Its Influence on Enzyme Kinetics in Human Liver Microsomes. Kapelemera AM, Uang YS, Wang LH, **Wu TY**, Lee FY, Tai L, Wang CC, Lee CJ. Front Pharmacol. 2022 Apr 5;13:858007. doi: 10.3389/fphar.2022.858007. eCollection 2022. PMID: 35450043 Free PMC article.

4. Cost-effectiveness and clinical outcomes of intermittent/continuous proton pump inhibitors infusion in high bleeding risk of ulcers: A retrospective observational cohort study. Hsieh HH, **Wu TY**, Chen CH, Hour MJ.

Medicine (Baltimore). 2021 Dec 10;100(49):e28064. doi: 10.1097/MD.0000000000028064. PMID: 34889253 Free PMC article.

5. Diterpenoid anthraquinones as chemopreventive agents altered microRNA and transcriptome expressions in cancer cells. Su YS, Kuo MZ, Kuo YT, Huang SW, Lee CJ, Su ZY, Ni YH, Li DK, **Wu TY**. Biomed Pharmacother. 2021 Apr;136:111260. doi: 10.1016/j.biopha.2021.111260. Epub 2021 Jan 19. PMID: 33465676

6. Effects of Urate-Lowering Therapy on Risk of Hyperlipidemia in Gout by a Population-Based Cohort Study and on In Vitro Hepatic Lipogenesis-Related Gene Expression. Fang YJ, **Wu TY**, Lin CL, Su CY, Li JR, Chung YL, Tien N, Lim YP. Mediators Inflamm. 2020 Nov 14;2020:8890300. doi: 10.1155/2020/8890300. eCollection 2020. PMID: 33273891 Free PMC article.

7. Real-world prevalence of hepatitis B virus reactivation in cancer patients in Taiwan. Chen CH, Hsieh HH, **Wu TY**. J Oncol Pharm Pract. 2021 Jan;27(1):63-70. doi: 10.1177/1078155220913095. Epub 2020 Apr 7. PMID: 32264743

8. 2,3,4',5-Tetrahydroxystilbene-2-O-β-D-Glucoside (THSG) Activates the Nrf2 Antioxidant Pathway and Attenuates Oxidative Stress-Induced Cell Death in Mouse Cochlear UB/OC-2 Cells. **Wu TY**, Lin JN, Luo ZY, Hsu CJ, Wang JS, Wu HP. Biomolecules. 2020 Mar 18;10(3):465. doi: 10.3390/biom10030465. PMID: 32197448 Free PMC article.

9. Pharmacokinetics and pharmacodynamics of 3,3'-diindolylmethane (DIM) in regulating gene expression of phase II drug metabolizing enzymes. **Wu TY**, Huang Y, Zhang C, Su ZY, Boyanapalli S, Khor TO, Wang H, Lin H, Gounder M, Kagan L, Androulakis IP, Kong AN. J Pharmacokinet Pharmacodyn. 2015 Aug;42(4):401-8. doi: 10.1007/s10928-015-9421-5. Epub 2015 Jul 3. PMID: 26138223

Speaker information

Speech Topic and Abstract

Title:

Pharmacogenomic and network analysis of THSG effects on the Oxaliplatin induced cardiac cell damage

Abstract:

Background:

Oxaliplatin, a third-generation platinum-based drug, is increasingly associated with adverse reactions that may cause cardiomyocyte damage, possibly linked to mitochondrial injury. Previous research has indicated the protective effect of THSG on mitochondria. Therefore, mitochondrial stress testing was employed to assess mitochondrial function and explore its potential to ameliorate mitochondrial damage. Additionally, network pharmacology and biological pathway analysis were utilized to identify relevant pathway mechanisms.

Methods:

AC16 cardiomyocytes were treated with Oxaliplatin (0.5uM and 1.0uM) and THSG (10uM and 20uM) for 48 and 72 hours. Mitochondrial stress testing was performed to evaluate mitochondrial function. Subsequently, Next-Generation Sequencing (NGS) and Ingenuity Pathway Analysis (IPA) were used to identify genomic expression changes between Oxaliplatin and THSG-treated AC16 cardiomyocytes and analyze potential associated pathways.

Preliminary Results:

Under Oxaliplatin and THSG treatment for 48 and 72 hours, mitochondrial stress testing of AC16 cells revealed a decrease in oxygen consumption and metabolic function with increasing Oxaliplatin concentration. Co-treatment with Oxaliplatin and THSG was found to reduce Oxaliplatin-induced mitochondrial damage to AC16 cells. Network pharmacology and IPA pathway analysis identified associations with mitochondrial function, such as mitochondrial biogenesis and mitochondrial dysfunction, following Oxaliplatin and THSG treatment.

Discussion:

We suggest that Oxaliplatin induces some level of damage to cardiomyocytes, particularly affecting mitochondrial function. However, THSG treatment appears to mitigate the damage caused by Oxaliplatin to cardiomyocytes.

Keywords: Oxaliplatin, cardiotoxicity, mitochondria, gene expression, 2,3,4',5-tetrahydroxystilbene-2-O-β-D-glucoside (THSG)