

BIOGRAPHICAL SKETCH

NAME: CHANG, William Chih-Wei (Chinese name: 張值維)

POSITION TITLE: Assistant Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
National Cheng Kung University, TW	Postdoctoral	02/2021	Analytical Science
Kaohsiung Medical University, TW	PhD	06/2019	Pharmaceutical Science
King's College London, UK (WADA-Accredited Lab)	Visiting PhD	03/2019	Analytical Science
Kaohsiung Medical University, TW	MSc	06/2013	Sports Medicine
Chia Nan University of Pharmacy & Science, TW	BSc	06/2009	Pharmacy

A. Personal Statement

As a full-time assistant professor at KMU, I hold a PhD in Pharmaceutical Science and an IOC Certificate in Drugs in Sport. My experience includes working as a postdoctoral researcher specialising in LC-MS-based metabolomics and serving as a visiting researcher at London's WADA-accredited lab. Additionally, I attended PCC2019 as a Travel Grant Recipient and participated in PCC2023 virtually.

Over the past several years at KMU, I have established a research lab focusing on drug testing and pharmacy in sports, currently supervising four PhD students. My research interest includes studying the use of alternative specimens in anti-doping testing and unintentional doping scenarios, exemplified by the following:

- Analyses of anabolic steroids in dried blood spot, diuretics in hair, and nootropics in oral fluid, as well as strategies for wastewater analysis.
- Administration studies investigating the potential risk of inadvertent doping from Chinese herbs, foodstuffs, supplements, and cosmetics.

In addition, I have delivered over 50 off-campus lectures to coaches, athletes, and pharmacists. My involvement includes developing a mobile app for checking all medicines licensed in Taiwan (integrated with Global DRO) and launching the Sports Pharmacist training and accreditation program. By creating useful digital educational materials, I have also won several teaching awards.

In summary, I am a PI specialising in sports drug testing and a passionate anti-doping educator. Ongoing and recently completed research projects that I would like to highlight include:

NSYSU-KMU joint research project

CHANG (PI)

01/23-12/24

Assessing anti-doping knowledge among Taiwanese pharmacists and physicians

National Science and Technology Council

CHANG (PI)

08/21-07/24

Sports drug testing using hair specimen and high-resolution mass spectrometry

Chinese Taipei Anti-Doping Agency

CHANG (PI)

02/22-12/23

Analysis of chlorphenesin content in cosmetics and post-application urinary metabolites in humans

B. Positions, Scientific Appointments, and Honours

Positions and Scientific Appointments

2021 – Present	Full-time Assistant Professor, School of Pharmacy, Kaohsiung Medical University
2024 – Present	Secretary General, Taiwan Anti-Doping Association
2023 – 2024	Director of Science & Medical, Chinese Taipei Anti-Doping Agency
2020 – Present	Member, Taiwan Society for Mass Spectrometry

Honours

2023	Excellent Teaching Materials (Digital) Award, Kaohsiung Medical University
2022	Excellent Teaching Materials (Digital) Award, Kaohsiung Medical University
2022	University-Level Excellent Teacher Award, Kaohsiung Medical University
2022	Emerging Young Scholars, NSTC 2030 Cross-Generation Young Scholars Program (top 25 annually across all fields) National Science and Technology Council

C. Selected Publications

1. Lu, I.W., Hsu, M.C., Wu, Y.T., **Chang, W.C.W.*** (2024). Comparison of urinary excretion patterns among exposures to cosmetic preservative, herbicide, and nootropic stimulant in anti-doping analysis. *SSRN* (preprint) <http://dx.doi.org/10.2139/ssrn.4895503>
2. Salum, K.A., Hung, S.H., Hsieh, M.T., **Chang, W.C.W.*** (2024). Doping in Esports: A review of nootropics and analytical methods for their detection. *Physical Education*, Accepted.
3. Chen, C.C., Hsu, M.C., Wu, Y.T., Chen, C.H., Lin, T.Y., Ho, W., **Chang, W.C.W.*** (2024). Trends in exposure to drugs and prohibited substances among sports: A nationwide analysis of 2008–2022 inquiry records. *Drug Testing and Analysis*, Early View.
4. Hung, S.H., Kan, H.L., Tung, C.W., Lin, Y.C., Chen, T.T., Tian, C., **Chang, W.C.W.*** (2024). Probing the hair detectability of prohibited substances in sports: an in vivo-in silico-clinical approach and analytical implications compared with plasma, urine, and faeces. *Archives of Toxicology*, 98, 779–790.
5. **Chang, W.C.W.**, Wu, Y.T., Lin, C.E., Lin, F.L., Chen, F.A.* (2024). Determination of synephrine and caffeine in Citrus species herbal medicines and weight-loss supplements from Taiwan by high-performance liquid chromatography (HPLC). *Analytical Letters*, Early View.
6. Lu, Y.W., Chan, K.H., Wu, Y.T., **Chang, W.C.W.*** (2024). Determination of chlorphenesin in cosmetics, a preservative that can affect anti-doping test result interpretations. *Drug Testing and Analysis*, 16(5), 532–536
7. Lee, Y.C., Chen, C.Y., Cheng, Y.Y., Hsu, M.C., Chen, T.T., **Chang, W.C.W.*** (2023). Assessing anti-doping knowledge among Taiwanese pharmacists. *BMC Medical Education*, 23, 808.
8. **Chang, W.C.W.**, Hsu, M.C., Liao, P.C.* (2023). Detection of emerging patterns of drug misuse in sports via wastewater monitoring: A mini-review and potential strategies. *Environmental Pollution*, 333, 122087.
9. **Chang, W.C.W.***, Hung, S.H., Wu, Y.T., Hsu, M.C. (2022). Embracing a new chapter of anti-doping testing in sports: Finger-prick dried blood spot. [Article in Chinese] *Sports Research Review*, 160, 41–50.
10. Hsu, J.F., **Chang, W.C.W.(co-1st)**, Ho, W.Y., Liao, P.C.* (2022). Exploration of long-term exposure markers for phthalate esters in human hair using liquid chromatography-tandem mass spectrometry. *Analytica Chimica Acta*, 1200, 339610.
11. **Chang, W.C.W.**, Yen, C.C., Liu, W.Y., Hsieh, Y.S., Hsu, M.C., Wu, Y.T.* (2021). Blood-to-muscle distribution and urinary excretion of higenamine in rats. *Drug Testing and Analysis*, 13(10), 1776-1782.
12. **Chang, W.C.W.**, Wang, C.Y., Liu, W.Y., Wu, Y.T.*, Hsu, M.C.* (2021). Chinese herbal medicine significantly impacts the haematological variables of the Athlete Biological Passport. *International Journal of Environmental Research and Public Health*, 18(18), 9533.
13. **Chang, W.C.W.**, Wu, H.Y., Kan, H.L., Lin, Y.C., Tsai, P.J., Chen, Y.C., Pan, Y.Y., Liao, P.C.* (2021). Discovery of spoilage markers for chicken eggs using liquid chromatography-high resolution mass spectrometry-based untargeted and targeted foodomics. *Journal of Agricultural and Food Chemistry*, 69, 4331–4341.

14. **Chang, W.C.W.**, Wang, P.H., Chang, C.W., Chen, Y.C., Liao, P.C.* (2021). Extraction strategies for tackling complete hair metabolome using LC-HRMS-based analysis. *Talanta*, 223, 121708.
15. **Chang, W.C.W.**, Chen, Y.T., Chen, H.J.*, Hsieh, C.W., Liao, P.C.* (2020). Comparative UHPLC-Q-Orbitrap HRMS-based metabolomics unveils biochemical changes of black garlic during aging process. *Journal of Agricultural and Food Chemistry*, 68, 14049–14058.
16. **Chang, W.C.W.***, Cowan, D.A., Walker, C.J., Wojek, N., Brailsford, A.D. (2020). Determination of anabolic steroids in dried blood using microsampling and gas chromatography-tandem mass spectrometry: Application to a testosterone gel administration study. *Journal of Chromatography A*, 628, 461445.
17. **Chang, W.C.W.**, Wu, H.Y., Yeh, Y., Liao, P.C.* (2020). Untargeted foodomics strategy using high-resolution mass spectrometry reveals potential indicators for fish freshness. *Analytica Chimica Acta*, 1127, 98–105.
18. **Chang, W.C.W.**, Yen, C.C., Cheng, C.P., Wu, Y.T., Hsu, M.C.* (2020). Chinese herbal decoction (Danggui Buxue Tang) supplementation augments physical performance and facilitates physiological adaptations in swimming rats. *Pharmaceutical Biology*, 58(1), 545–552.
19. **Chang, C.W.**, Chen, C.Y., Yen, C.C., Wu, Y.T., Hsu, M.C.* (2018). Repressed exercise-induced hepcidin levels after Danggui Buxue Tang supplementation in male recreational runners. *Nutrients*, 10(9), 1318.
20. **Chang, C.W.**, Hu, S.Y., Huang, G.Q., Hsu, M.C.* (2018). Ephedra alkaloid content of Chinese herbal formulae sold in Taiwan. *Drug Testing and Analysis*, 10(2), 350–356.
21. **Chang, C.W.**, Hsu, M.C.* (2017). Doping control: The use of glucocorticosteroids. [Article in Chinese] *Formosan Journal of Medicine*, 2017, 21, 297–301.
22. **Chang, C.W.**, Yen, C.C., Wu, M.T., Hsu, M.C., Wu, Y.T.* (2017). Microwave-assisted extraction of cannabinoids in hemp nut using response surface methodology: Optimization and comparative study. *Molecules*, 22(11), 1894.
23. **Chang, C.W.**, Yeh, Y.Y., Chang, L.C., Hsu, M.C., Wu, Y.T.* (2017). Rapid determination of oxindole alkaloids in Cat's claw by HPLC using ionic liquid-based microwave-assisted extraction and silica monolithic column. *Biomedical Chromatography*, 31(8), e3925.
24. **Chang, C.W.**, Tung, C.W., Tsai, C.C., Wu, Y.T.*, Hsu, M.C.* (2017). Determination of cannabinoids in hemp nut products in Taiwan by HPLC-MS/MS coupled with chemometric analysis: Quality evaluation and a pilot human study. *Drug Testing and Analysis*, 9(6), 888–897.
25. **Chang, C.W.**, Wong, C.Y., Wu, Y.T.*, Hsu, M.C.* (2017). Development of a solid dispersion system for improving the oral bioavailability of resveratrol in rats. *European Journal of Drug Metabolism and Pharmacokinetics*, 42(2), 239–249.
26. **Chang, C.W.**, Hsu, M.C.* (2016). Telmisartan in the doping monitoring program. [Article in Chinese] *Journal of Exercise Physiology and Fitness*, 23, 13–22.
27. **Chang, C.W.**, Chen, C.Y., Hsu, M.C.* (2016). Maria Sharapova and meldonium doping. [Article in Chinese] *Sports Coaching Science*, 42, 121–130.
28. **Chang, C.W.**, Chen, Y.M., Hsu, Y.J., Huang, C.C., Wu, Y.T.*, Hsu, M.C.* (2016). Protective effects of the roots of *Angelica sinensis* on strenuous exercise-induced sports anemia in rats. *Journal of Ethnopharmacology*, 193, 169–178.
29. **Chang, C.W.**, Wang, C.Y., Wu, Y.T.*, Hsu, M.C.* (2016). Enhanced solubility, dissolution, and absorption of lycopene by a solid dispersion technique: The dripping pill delivery system. *Powder Technology*, 301, 641–648.
30. **Chang, C.W.**, Huang, T.Z., Chang, W.H., Tseng, Y.C., Wu, Y.T.*, Hsu, M.C.* (2016). Acute *Garcinia mangostana* (mangosteen) supplementation does not alleviate physical fatigue during exercise: A randomized, double-blind, placebo-controlled, crossover trial. *Journal of the International Society of Sports Nutrition*, 13, 20.
31. **Chang, C.W.**, Hsu, Y.J., Chen, Y.M., Huang, W.C., Huang, C.C., Hsu, M.C.* (2015). Effects of combined extract of cocoa, coffee, green tea and garcinia on lipid profiles, glycaemic markers and inflammatory responses in hamsters. *BMC Complementary and Alternative Medicine*, 15, 269.
32. **Chang, C.W.**, Huang, T.Y., Tseng, Y.C., Chang-Chien, G.P., Lin, S.F., Hsu, M.C.* (2014). Positive doping results caused by the single-dose local injection of triamcinolone acetonide. *Forensic Science International*, 244, 1–6.

*Corresponding author

D. Conference Presentations

1. Invited Talk (Jun 2024). 20th Taiwan Society for Mass Spectrometry Annual Conference. Tainan.
2. Oral (Mar 2024). 18th Asian Federation of Sports Medicine Congress. Sabah, Malaysia.
3. Poster (Sep 2020). 17th Taiwan Society for Mass Spectrometry annual conference. Chiayi.
4. Oral (Jul 2019). 24th Annual Congress of the European College of Sport Science. Prague, Czech Republic.
5. Oral (Jul 2018). 23rd Annual Congress of the European College of Sport Science. Dublin, Ireland.
6. Oral (Jun 2018). Taiwan Scientific Symposium in Cambridge. Cambridge, UK.
7. Poster (Dec 2017). 2017 Annual Conference of PE & Sport Academic Societies in Taiwan. Chiayi.
8. Oral (Jul 2017). 22nd Annual Congress of the European College of Sport Science. Essen, Germany.
9. Oral (Jul 2016). 21st Annual Congress of the European College of Sport Science. Vienna, Austria.
10. Poster (Mar 2016). Traditional Chinese Medicine International Forum. Kaohsiung.
11. Oral (Oct 2015). 2015 International Conference of Nutrition Aids for Athlete Performance. Taipei.
12. Poster (May 2015). 12th Asian Congress of Nutrition. Yokohama, Japan.
13. Poster (May 2014). 61st Annual Meeting of the American College of Sports Medicine. Orlando, Florida, US.

For more information, visit the following websites:

My Lab Website

<https://williamchanglab.weebly.com/>

My Google Scholar

<https://scholar.google.com/citations?user=7V9pWo4AAAAJ&hl=en>

My Affiliation (KMU) Website

<https://pharm.kmu.edu.tw/index.php/zh-tw/>