

제69회 한국분석과학회 추계 학술대회

The 69th Biannual Conference of The Korean Society of Analytical Sciences

2022년 11월 17일(목) ~ 18일(금)
제주 매종글래드 호텔



주관 **K** 대한한국분석과학회
THE KOREAN SOCIETY OF ANALYTICAL SCIENCES

후원 **KCIST** JEJU CYB
한국기초과학기술연구원
한국제주특별자치도
한국화학융합재단

첨자

KBSI 한국기초과학기술연구원
KOREA BASIC SCIENCE INSTITUTE

KTR 한국화학융합재단
한국화학융합재단

RIST KLET
한국세력부설리서치센터
한국세력부설리서치센터

World Top 실용화 전문연구기관
RIST

LECO
Leco Corporation

ODLAB
ODLAB

SHIMADZU
SHIMADZU CORPORATION
Excellence in Science

(주)유로사이언스 SCIEX
EuroScience Co., Ltd.

ThermoFisher
SCIENTIFIC
ThermoFisher Scientific Corp.

BKSCIENTIFIC
BKS

KRIS
한국환경과학회
한국환경과학회

Agilent
Agilent Technologies

JEOL
JEOL

PerkinElmer
PerkinElmer

제69회 한국분석과학회 추계 학술대회



A홀(컨벤션)

08:30-09:00 Early Bird Seminar

08:30-09:00 화학 분석 및 개발에서 농축의 중요성
유내근(유카리아 응용자원팀)

09:00-09:10 SYM 10 (설과학)

09:10-10:50 SYM 11 (환경)

09:10-09:35 DNA로 그리는 범인의 얼굴, 범유전학의 기까운 미래
임시근(성균관대학교)

09:35-10:00 사후 시료에서 천연독 감정 사례
박미정(부산과학수사연구소)

10:00-10:25 개인식별 및 시기특성을 위한 법과학 증거 채취 및 분석
유승진(경찰대학교)

10:25-10:50 화재 잔류물의 GC-MS 데이터로부터 인화성 물질 자동 검출
및 분석을 위한 기계학습 및 인공신경망의
박지현(대전과학수사연구소)

10:50-11:50 포스터 발표(PF / 2층 크리스탈)

첨炼 세미나

11:50-12:20

11:50-12:20 Agilent's Brilliant Lipidomics Solutions: Sample Preparation, Discovery and Targeted Approaches
최진녕(애질린트)

12:30-14:10 SYM 13 (산업 II) 에너지 소재 분야의 최신 분석기술 동향

12:30-12:50 Solid State NMR Research in Materials for Battery and Green Chemical Process
이영주(한국기초과학지원연구원)

12:50-13:10 The current status of international standardization on energy nanomaterials
이해정(전주대학교)

13:10-13:30 소재 개발 성공을 위한 분석기술 개발
김정희(삼성전자 종합기술원)

13:30-13:50 Evolution of Sensitization-based Photovoltaic Cells for Diverse Applications
이재준(동국대학교)

13:50-14:10 세라믹 3D 프린팅 재료의 특성평가 방법 및 표준 개발 현황
조기인(한국세라믹기술원)

14:10-14:30 경품 추첨 및 폐회

C홀(2층 크리스탈)

Coffee Break

SYM 12 (원자력/에너지)

09:10-09:35 화상: 현근탁(제주도 보건환경연구원)
이생동물 질병 감시를 위한 특성분석 현황과 향후 전망
박재성(국립야생동물질병관리원)

09:35-10:00 제주도 한정오염 사례
송영철(제주도 보건환경연구원)

10:00-10:25 전류성오염물질의 분석 중 트러블슈팅 해설방안
전이우식(한국환경공단)

10:25-10:50 Prediction of uncertainties in denoising of Scanning Electron Microscope (SEM) images with a Cycle-Consistent Adversarial Networks
신설은(한국표준과학연구원)

포스터 발표(PF / 2층 크리스탈)

SYM 13 (식품)

12:30-12:55 Discrimination of Geographical Origin of Shiitake (*Lentinus edodes*) using Stable Isotope Ratios
김충현(건국대학교)

12:55-13:20 Case of monitoring data using for Combiabants support system R&D
이동현(국방기술심흥연구소)

13:20-13:45 Mass spectrometric methods for analysis of monosaccharides and oligosaccharides in fermented soybean products
이혜영(동의대학교)

13:50-14:10 Leco 쟈은 분석과학자상 수상강연
Determination of picrogram-level zolpidem and its main metabolites in hair by LC-MS/MS and GC-MS/MS
김선영(대경찰청)

69th Annual Conference of the Korean Society of Analytical Sciences

Date and time: November 17th (Thu) - November 18th (Fri) 2022

Location: Jeju Maison Glad Hotel 1st and 2nd floor

Oral presentation

Development of analytical methods for TB-500 and its metabolites by LC-MS/MS

Khandoker Asiqur Rahaman^{1,3}, Anca Raluca Muresan^{1,3}, Junghyun Son¹, Min-Jung Kang^{1,3},
and Oh-Seung Kwon^{1,2,*}

¹Doping Control Center, Korea Institute of Science and Technology, Seoul, 02792, Korea,

²Division of Bio-Medical Science & Technology, KIST School, Korea University of Science and Technology, Seoul 02792, Korea.

³Molecular Recognition Research Center, Korea Institute of Science and Technology, Seoul 02792, Republic of Korea

* Corresponding author: oskwon@kist.re.kr

Abstract

Ac-LKKTETQ (TB-500) is a small peptide processed from the active site of thymosin β 4. Like parent thymosin β 4, TB-500 has tissue regeneration, anti-inflammation, and fast repair capabilities. TB-500 misuse was found in equine sports and was reported to be used illegally by athletes. Therefore, this study aimed to discover metabolites of TB-500 peptides in in-vivo (rats) and in various in-vitro systems to detect in-vivo time kinetic in urine and to develop a SPE quantitative method for TB-500 and its metabolites. In in-vitro, we found 4 metabolites which were Ac-LKKTE (m/z 330), Ac-LKK (m/z 215), Ac-LK (m/z 302), and Ac-L (m/z 174). In rats, we found 5 metabolites which are Ac-LKKTET (m/z 381), Ac-LKKTE (m/z 330), Ac- LKK (m/z 215), and Ac-LK (m/z 302), Ac-L (m/z 174). Parent and 6 metabolites were synthesized commercially and identified for their structure. All metabolite structures were confirmed. Later we quantitatively measured metabolites in urine in a time kinetic manner (0~96 hr). We observed that Ac-LK is the highest concentration in urine, and the metabolite Ac-LKK in urine samples was detected until 72 hours. In this study, we developed an analytical method to quantify TB-500 and its metabolites generated by in-vitro and in-vivo systems.