

2019 Annual Symposium of Society for Meridian and Acupoint

2019 경락경혈학회 학술대회

일시: 2019.8.24

장소: 경희대학교 한의과대학 2층 강의실 (263호)

주최: 경락경혈학회

주관: 경희대학교 침구경락융합연구센터

후원: 이우과학교역, 싸이텍코리아, 동방메디컬, 한의플래닛

인 사 말

안녕하십니까.

여러 회원님들과 함께 경락경혈학회 주관 2019년 경락경혈학회 하계학술대회를 서울 경희대학교 한의과대학에서 개최하게 된 것을 진심으로 축하합니다.

경락경혈학회는 한의학의 가장 독창적인 분야인 경락경혈을 체계적으로 연구 및 교육하고 있는 학회입니다. 최근들어 학문적으로 융합 발전하고 있는 추세에서 경락경혈은 주변 학문에서도 빈번하게 사용하여 일반화된 용어로 받아들여지고 있습니다. 경락경혈이라는 명칭의 학회가 한의학계와 주변 학문분야에서 다수 설립되어 운영되고 있는 상황에서, 우리 학회는 경락경혈과 관련된 타학회와 연계를 활성화하고 계승 발전의 중심적 역할을 수행하고 있습니다.

우리 학회에서는 경락경혈 중심의 침구분야 전문학술지인 “Korean Journal of Acupuncture”를 년 4회 발간하고 있으며, 한국연구재단 등재학술지로서 학술지의 질 제고를 위해 노력하고 있습니다. 학술적인 토론의 장이 더욱 활성화되기를 기대하며, 학문적 기반과 역할을 위해 관련 분야와의 상호 협력 등에 대해서도 지속적인 노력을 기울이고자 합니다.

경락경혈학은 한의학의 학문 분야에서 그 중요성이 날로 높아져 가고 있는 시점에서 양질의 교육, 실습 및 연구가 시행될 수 있도록 할 것이며, 역량중심의 교육으로 나아가기 위해 목표 및 방안에 대해서도 준비하여 시행하고자 합니다.

이번 학술대회를 위해 준비해주신 회원 및 임원 여러분들께 감사드리고, 연구발표를 맡아주신 경희대학교 백유상, 정혁상 교수님, 한국한의학연구원 이상훈 박사님께 감사드립니다. 그리고 해외연자이신 대만 중의학약대학의 Yi-Hung Chen 교수님께도 감사드립니다.

한의학의 발전과 학회의 성장을 위하여 지속적인 관심과 애정을 부탁드립니다. 내내 건강하시고 소망하는 모든 일들이 이루어지길 기원드립니다.

2019년 8월

경락경혈학회 회장 김이화

인 사 말

안녕하십니까. 경희대학교 침구경락융합연구센터 소장 박히준입니다. 한의학 분야에서 기초-임상연구 연계에 가장 주도적인 역할을 하고 있는 경락경혈학회와 함께 학술대회를 주관하게 됨을 매우 기쁘게 생각합니다.

저희 침구경락과학연구센터는 한의학의 핵심이라 할 수 있는 침구경락분야의 과학적 학문기반을 마련하여 차세대 의료산업에 일조할 수 있는 새로운 의료수요를 창출하기 위해, 2005년 국가지정우수연구센터로 시작되었으며, 최근에는 미래형 융합연구센터로서의 새로운 비상을 준비하고 있습니다.

앞으로 다가올 미래의학에서는 인간 중심의 한의학이 더욱 중요한 역할을 하게 될 것입니다. 미래학을 위해서는 한의학의 풍부한 임상 경험과 함께 누구도 이의를 제기하지 못할 만큼 충분한 과학적 데이터와 임상 근거마련이 반드시 필요할 것입니다. 이를 위해서는 한의학 전공자뿐 아니라, 다양한 연구 분야의 연구자들이 함께 손잡고 융합연구를 발전시켜 나가는 것이 매우 중요할 것입니다.

본 학술대회는 다양한 융합연구자들이 함께 모여 기초연구가 임상에 적용되고, 임상의 궁금증을 연구를 통해 해결하는 선순환 발전 가능성을 제시하고 있습니다. 침구경락학적인 임상적 가치와 과학적 연구성과는 국민건강 향상을 주도하는 한의학으로 거듭나게 할 토대가 될 수 있음을 확신합니다.

이번 학술대회를 준비하느라 고생하신 경락경혈학회 회장님 이하 임원진 교수님들께 감사드리며, 연구발표를 맡아주신 국내외 교수님들과 창의적인 연구로 새로운 가능성을 발표해주실 신진연구자 여러분께도 함께 감사를 전합니다.

아울러 더운 날씨에도 불구하고 학문의 열정을 품고 참석하여 주신 모든 분들께서도 소망하시는 모든 일들이 이루어지시길 기원합니다.

2019년 8월

경희대학교 침구경락융합연구센터장 박히준

2019 경락경혈학회 하계학술대회

(Annual Symposium of Society for Meridian and Acupoint)

- 일시: 2019년 8월 24일 (토)
- 장소: 서울 경희대학교 한의과대학 (263호 외)

일 시		발 표 및 내 용	비 고
8/24(토) 제 1 부 13:00~ 15:00	12:20~12:50	등록	
	12:50~13:00	개회사, 축사	사회자 (채윤병 총무이사)
	제1부 다양한 접근으로 경혈 특성의 이해		
	13:00~13:40	발표주제 : 오수혈의 경락경혈학적 특성 발표자 : 백유상 교수(경희대학교 한의과대학)	좌장 (김재효/ 박희준 교수)
13:40~14:20	발표주제 : 음곡과 곡천 혈위에 대한 현대해부학적 고찰 발표자 : 정혁상 교수(경희대학교 한의과대학)		
14:20~15:00	발표주제 : 침 시술에서의 초음파의 활용 (2D 경혈학에서 3D경혈학으로) 발표자 : 이상훈 박사(한국한의학연구원)		
15:00~ 15:40	포스터 발표 (Coffee Break) 1층 로비		
제 2 부 15:40~ 16:20	제2부 기초강연		
	15:40~16:20	초청 강연: A novel non-opioid CNS mechanism for electroacupuncture analgesia 발표자: Yi-Hung Chen (China Medical University, Taiwan)	좌장 (김희영 교수)
제 3 부 16:20~ 17:50	제3부 구연발표		
	16:20~16:35	사암침법을 통해 본 동아시아의학 변화의 구조 (김태우, 경희대학교)	좌장 (김승태 교수) (이향숙 교수)
	16:35~16:50	동의보감, 사암도인침법, 침구경험방의 선혈 경향 비교분석 (장동엽, 가천대학교)	
	16:50~17:05	Distribution of monetary incentives in health insurance scheme influences acupuncture treatment choices: An experimental study (Ye-Seul Lee, Gachon University)	
	17:05~17:20	Reduced tactile acuity in back pain is linked to somatosensory plasticity and altered by acupuncture (Hyungjun Kim, Korea Institute of Oriental Medicine)	
	17:20~17:35	Involvement of the cuneate nucleus in the acupuncture inhibition of drug-seeking behaviors (Suchan Chang, Daegu Haany University)	
17:35~17:50	Acupuncture Improves Chronic Pain and Comorbid Conditions by Modulating DNA Methylation in the Prefrontal Cortex of Neuropathic Pain Mice (Jae-Hwan Jang, Kyung Hee University)		
17:50~ 18:00	우수 논문 시상식 & 폐회식		

○ 주제강연 [Special Lecture]: 다양한 접근으로 경혈 특성의 이해

- [S1] 오수혈의 경락경혈학적 특성 (백유상, 경희대학교)
- [S2] 음곡과 곡천 혈위에 대한 현대해부학적 고찰 (정혁상, 경희대학교)
- [S3] 침 시술에서의 초음파의 활용: 2D 경혈학에서 3D 경혈학으로 (이상훈, 한국한의학연구원)

○ 기조강연 [Invited Talk]

- A Novel non-opioid CNS mechanism for electroacupuncture analgesia
(Chen, Yi-Hung, China Medical University, Taiwan)

○ 구연발표 [Oral presentations] 16:20-17:50

- [O1] 사암침법을 통해 본 동아시아의학 변화의 구조 (김태우, 경희대학교)
- [O2] 동의보감, 사암도인침법, 침구경험방의 선혈 경향 비교분석 (장동엽, 가천대학교)
- [O3] Distribution of monetary incentives in health insurance scheme influences acupuncture treatment choices: An experimental study (Ye-Seul Lee, Gachon University)
- [O4] Reduced tactile acuity in back pain is linked to somatosensory plasticity and altered by acupuncture (Hyungjun Kim, Korea Institute of Oriental Medicine)
- [O5] Involvement of the cuneate nucleus in the acupuncture inhibition of drug-seeking behaviors (Suchan Chang, Daegu Haany University)
- [O6] Acupuncture Improves Chronic Pain and Comorbid Conditions by Modulating DNA Methylation in the Prefrontal Cortex of Neuropathic Pain Mice (Jae-Hwan Jang, Kyung Hee University)

○ 포스터발표 [Poster Presentations] 15:00-15:40

- [P1] Cognitive and emotional aspects of cupping therapy (Minyoung Hong, Kyung Hee University)
- [P2] Exploring acupoint selection patterns for pain control: Data mining of randomised controlled clinical trials (Ye-Chae Hwang, Kyung Hee University)
- [P3] The role of substance P in acupuncture signal transduction and effects (Yu Fan, Daegu Hanny University)
- [P4] Augmented Mechanical Forces of the Surface-Modified Nanoporous Acupuncture Needles Elicit Enhanced Analgesic Effects (Sun-Jeong Bae, Kyung Hee University)
- [P5] Analgesic Effect of Melittin at Acupoint ST36 on Oxaliplatin-Induced Peripheral Neuropathy in Rats (Seunghwan Choi, Kyung Hee University)
- [P6] Combined treatment with acupuncture and Chunggan formula improves abnormal symptoms in a mouse model of Parkinson's disease (Tae-Yeon Hwang, Kyung Hee University)
- [P7] Mica pharmacopuncture mitigate neuropathic pain by modulating neuroglial activation and the inflammatory response in the spinal cord (Ju-Young Oh, Kyung Hee University)
- [P8] Locating acupuncture point using Laser-device (Dha-Hyun Choi, Kyung Hee University)
- [P9] Effects of Laser and Electro Acupuncture Treatment with GB30 • GB34 on Inflammation change in Collagenase-Induced Osteoarthritic Rat Model (Mi-rae Kim, Dong Shin University)
- [P10] The Effects of Placenta Pharm Acupuncture on Stress and Sleep-related Substance of Rats induced by Chronic Mild Stress (Sung-young Cho, Dong Shin University)
- [P11] Effect of Resina Dendropanax morbifera Pharm Acupuncture on Stress and Sleep Hormone in Chronic Mild Stress-Induced Rats (Soo-jung Choi, Dong Shin University)
- [P12] Development of the Electronic Smokeless Moxibustion to Treat Arthritis (Jimin Yu, Raontech Co., LTD.)
- [P13] Contemporary Application of Roller Needle and Stamp Needle: a patent review (Seung-yeon Jeong, Gachon University)
- [P14] Effect of acupuncture on scopolamine-induced impairment of spatial memory in rats (Bombi Lee, Kyung Hee University)
- [P15] A mechanical acupuncture instrument mitigates the endoplasmic reticulum stress and oxidative stress of ovariectomized rats (SuYeon Seo, Korea Institute of Oriental Medicine)
- [P16] Biological Safety of Electroacupuncture with STS316 Needles (Kwang-Ho Choi, Korea Institute of Oriental Medicine)
- [P17] Neuroprotective effect of Korean medicinal herbs in vitro Parkinson's disease model (Hee-Young Kim, Pusan National University)
- [P18] Korea Red Ginseng extract Regulate PINK1 mediated mitochondrial dysfunction and mitophagy induced by MPP⁺ in SH-SY5Y cells (Hyongiun Jeon, Pusan National University)
- [P19] Herbal medicine for inflammatory bowel diseases: a development of a pattern identification algorithm based on the best case series (Jiyoon Won, Kyung Hee University)
- [P20] Component analysis of four part extracts from *Chamaecyparis obtusa* Endl. by supercritical fluid extraction and anti-inflammatory effect on RAW 264.7cells (Byeong-Mun Kwak, Semyung University)
- [P21] Fatty acid analysis of extracts from seed of *Pinus koraiensis* by supercritical fluid extraction and antioxidant effect (Byeong-Mun Kwak, Semyung University)

- 주제강연 [Special Lecture]: 다양한 접근으로 경혈 특성의 이해
 - [S1] 오수혈의 경락경혈학적 특성 (백유상, 경희대학교)
 - [S2] 음곡과 곡천 혈위에 대한 현대해부학적 고찰 (정혁상, 경희대학교)
 - [S3] 침 시술에서의 초음파의 활용: 2D 경혈학에서 3D 경혈학으로 (이상훈, 한국한의학연구원)

[S1]

[제목]: A Study on the Properties of five-shu-points in the Perspective of Meridian and Acupoint

[발표자명/저자명]: *Yousang Baik*¹

[소속기관명]:

¹*Dept. of Korean Medical Classics, College of Korean Medicine, Kyung Hee University, Seoul, South Korea*

[Background and Purpose/서론]: On the perspective of the efficacy of the five-shu-points which is widely used in acupuncture treatment of Korean medicine, it is usually operated according to the principle of interinhibition and intergeneration of the Five Phases. Despite this situation, an approach of meridian and acupoints to the unique efficacy of each the five-shu-points is needed.

[Methods/방법]: The frequency and efficacy of the five-shu-points in Huangdineijing were investigated. The analysis was based on the properties of the five-shu-points in the perspective of Meridian and Acupoints. This study also refer to the efficacy of the five-shu-points mentioned in various major acupuncture books since Huangdineijing.

[Results/결과]: There are many differences in the frequency of the use of each five-shu-points although the five-shu-points are usually operated with the properties of Five Phases in each meridian. In addition, specific five-shu-points were often used for certain diseases with unique efficacy.

[Conclusion/결론]: In the current Korean medicine, the five-shu-points are usually applied to the clinical treatment by the principle of interinhibition and intergeneration of the Five Phases, but they have been used according to the efficacy of meridian and acupoints which has been practiced since Huangdineijing. Among the methodology of using the five-shu-points according to the interinhibition and intergeneration of the Five Phases, it is considered that the methodologies used frequently are related to the unique properties of the five-shu-points.

[Acknowledgment/사사]: Currently, there are several methodologies that are applied frequently to the clinical treatment according to the principle of interinhibition and intergeneration of the Five Phases. It is possible to interpret the reason for the high frequency of use on the basis of the properties of each five-shu-points. In addition, this interpretation can be used as a reference for the development of acupuncture treatment using the five-shu-points.

[S2]

[제목]: A Study on the Location of Yingu[KI10] and Ququan[LR8] in the Perspective of Anatomy

[발표자명/저자명]: Hyuk-sang Jung¹

[소속기관명]:

¹*Dept. of Anatomy, College of Korean Medicine, Kyung Hee University, Seoul, South Korea*

[Background and Purpose/서론]: There are controversies about the anatomical location of Yingu [KI10] and Ququan [LR8] in various literatures. In this study, it is tried to clarify the location of those two acupoints according to literature review and anatomical investigation.

[Methods/방법]: First, the location of Yingu [KI10] and Ququan [LR8] in the traditional literature of Korean Medicine, and the contents expressed in the contemporary acupuncture literature since the introduction of anatomy, are reviewed. The location of the acupoints in documents is discussed in detail according to the anatomical structure.

[Results/결과]: In the case of Yingu [KI10], the tendon of the gracilis muscle corresponds to the large muscle, and the semitendinous muscle corresponds to the small muscle. The tendon of semimembranosus is palpated between the large and small muscles. Yingu [KI10] is located between the gracilis muscle and semitendinous muscle, and it is possible to apply acupuncture on both side of the semimembranosus. The location of Ququan [LR8] is in concave of inner tip of the popliteal crease with the knee bent, above the tendon of the gracilis muscle and located on the tendon of semimembranosus.

[Conclusion/결론]: The exact location of both Yingu [KI10] and Ququan [LR8] can be confirmed only when knee is flexed. In addition, the large and small muscles should be accurately described according to the anatomical structure because those are expressed in the literatures not as proper noun but as common noun according to the relative size of the tendon. The present representation of the location of Yingu [KI10] and Ququan [LR8] in the WHO standard and the textbook of Meridianology needs to be described more accurately.

[Acknowledgment/사사]: No competing financial interests exist.

[S3]

[제목]: Ultrasound imaging device for safe and accurate acupuncture

[발표자명/저자명]: Sanghun Lee¹, Yeongju Jeon¹, Daehyuk Kim¹, Soyong Kim¹, Minho Jeon¹, Jihye Kim¹, Jiho Soh¹

[소속기관명]:

¹Future Medicine Division, Korea Institute of Oriental Medicine, Daejeon, Republic of Korea

[Background and Purpose/서론]: The Acupuncture treatment is one of the invasive procedures. Therefore, it should be careful not to damage anatomical structures during the procedure. Ultrasound imaging device is used as a needle guide in western medicine for biopsy, intravenous injection, dryneedling. But because the thickness of the needle is too thin and the procedure is different, typical ultrasound guided needle injection methods are not appropriate for acupuncture treatment.

[Methods/방법]: Magnetic field induced location prediction technique is adopted to predict the position of the needle that can not be detected by the image. Preset value according to typical acupuncture point characteristics are developed. We also developed an image guide program that can easily follow typical ultrasound-guided acupuncture. In addition to this, special needles capable of magnetization, needle packing materials for accurate magnetic field mapping, and magnetizing devices have been developed.

[Results/결과]: We have developed an ultrasonic device for Korean medicine doctor. We have passed electro-mechanical safety test and electromagnetic safety test also, and are working on paperwork for licensing items within the year.

[Conclusion/결론]: Acupuncture is not a simple skin stimulation technique but a stimulation technique for specific anatomical structures in the body. Acupuncture ultrasound can be used not only as an aid to safe procedures using images for these acupuncture procedures but also as a tool for studying acupuncture effects according to the site of operation in the future.

[Acknowledgment/사사]: This research was supported by the “Development and commercialization of magnetic induction acupuncture guide ultrasound system” project (KSN1713500) funded by the Korea Institute of Oriental Medicine.

○ 기조강연 [Invited Talk]

- A Novel non-opioid CNS mechanism for electroacupuncture analgesia
(Chen, Yi-Hung, China Medical University, Taiwan)

[Invited Lecture]

A novel non-opioid CNS mechanism for electroacupuncture analgesia

Yi-Hung Chen, Professor, China Medical University

Although electroacupuncture has been used to relieve pain for thousands of years, its mechanisms remain an interesting topic for studies. The most well-recognized analgesic mechanism of acupuncture is the “endorphin theory”. However, the release of opioids does not completely account for acupuncture-induced analgesia, because some reports indicate that the pain-relieving effects of acupuncture in patients are naloxone-resistant. We have found a novel opioid-independent analgesic mechanism for electroacupuncture. In our study, electroacupuncture at PC6 activates the median nerve and then hypothalamic orexin neurons, releasing orexins that induce analgesia through an endocannabinoid CB1 receptor-dependent cascade in the ventrolateral periaqueductal gray. Opioid-independent characteristics of electroacupuncture-PC6-induced analgesia may provide a strategy for pain management in opioid-tolerant patients.

○ 구연발표 [Oral presentations]

- [01] 사암침법을 통해 본 동아시아의학 변화의 구조 (김태우, 경희대학교)
- [02] 동의보감, 사암도인침법, 침구경험방의 선혈 경향 비교분석 (장동엽, 가천대학교)
- [03] **Distribution of monetary incentives in health insurance scheme influences acupuncture treatment choices: An experimental study** (Ye-Seul Lee, Gachon University)

- [04] **Reduced tactile acuity in back pain is linked to somatosensory plasticity and altered by acupuncture** (Hyungjun Kim, Korea Institute of Oriental Medicine)
- [05] **Involvement of the cuneate nucleus in the acupuncture inhibition of drug-seeking behaviors** (Suchan Chang, Daegu Haany University)
- [06] **Acupuncture Improves Chronic Pain and Comorbid Conditions by Modulating DNA Methylation in the Prefrontal Cortex of Neuropathic Pain Mice** (Jae-Hwan Jang, Kyung Hee University)

[O1]

[제목]: 사암침법을 통해 본 동아시아의학 변화의 구조

[발표자명/저자명]: 김태우

[소속기관명]: 경희대학교 한의과대학 의사학교실

[Background and Purpose/서론]: 동아시아의학에 대한 역사적, 인류학적 연구들은 동아시아의학의 변화를 분명하게 보여주고 있다. 전통의학의 카테고리 안에 속해 있지만 동아시아의학은 정체되어 있거나, 기존의 원형을 답습하는 것이 아니고, 각 시대의 생물학적, 사회적 요구에 따라 변화한다는 것을 이들 연구들은 밝혀왔다. 그렇다면, 동아시아의학은 어떻게 변화하는가?

[Methods/방법]: 본 연구는 역사적, 인류학적 방법론을 통해 동아시아의학 변화를 논하고자 한다. 주 연구대상은, 한국의 대표적 침법이라고 할 수 있는 사암침법이다. 역사적 문헌자료와 인류학적 현지조사 자료를 통해 사암침법의 변화를 조사하였다.

[Results/결과]: 사암침법은 사암침법들이라고 불려야 할 정도의 내부 다양성이 존재한다. 역사의 시간 축 위, 그리고 한국사회의 공간 축 위, 이들 사암침법들의 다양성은 동아시아의학 변화의 구조를 연구하는데 있어 이상적인 현장을 제공한다. 동아시아의학은, 과학의 변화처럼 패러다임의 전환(paradigm shift)을 통해 변화하지 않는다. 동아시아의학은 과거의 지식과 실천이 새로운 지식 실천과 공존하는 특징을 보인다. 새로운 치료법은 원리를 정교하게하고, 새롭게 해석하는 방식을 통해 드러난다.

[Conclusion/결론]: 동아시아의학은 전통의학이기 때문에, 곧잘 근대/전통의 이분법에 의해 재단되어 왔다. 발전하는 근대적인 것에 비해 정체되어 있는 전통적인 것으로 치부되곤 하였다. 본 연구는 이러한 이분법이 동아시아의학에 적용되지 않는다는 것을 변화의 구조를 통해 보여준다. 동아시아의학은 정체되어 있지 않고 변화한다. 하지만, 그 변화의 방식은 과학의 그것과 다르다. 본 연구의 결과는 동아시아의학 역동의 면면을 드러내 보인다.

[Acknowledgment/사사]

[O2]

[제목]: 동의보감, 사암도인침법, 침구경험방의 선혈 경향 비교분석

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[Background and Purpose/서론]: 조선중기에 간행된 동의보감(1613), 침구경험방(1644), 사암도인침구요결(17C 추정)과 같은 침구학 서적은 한국의 독자적인 침구 이론 및 기술이 발전할 수 있는 토대를 마련하였다. 따라서 본 연구는 3가지 서적에 사용된 경혈을 분석하여 조선시대 침구 이론의 특징을 알아보고, 나아가 서적간의 비교를 통해 동시대에 독창적이고 다양한 침구 이론이 존재하였는지 알아보고자 하였다.

[Methods/방법]: 동의보감, 사암도인침법, 침구경험방 각각의 구토문, 해수문, 적취문 총 9개의 문서에 대한 선혈(選穴)을 조사하였다. 선혈의 서적 특이성을 파악하기 위해, 세 서적에서 각 질환에 대한 선혈 횟수를 집계한 뒤 TF를 시각화하여 경혈 선택 패턴을 확인하였다. 선혈 특이성이 구체적으로 어떤 차이로 발생하는지 파악하기 위해, 여러 혈성을 기준으로 문서 별 교차표를 작성하였다. 이를 cluster heatmap으로 계층적으로 그룹화하여 문서간의 유사도 및 그룹화의 기준을 파악하고, 문서간의 유사도를 MDS로 시각화하였다. 이 차이를 통계적으로 검정하기 위해 각 질환별로 피셔정확검정을 시행하고 p값을 제시하였다.

[Results/결과]: TF 분석 결과 같은 질환에 대해 서적에 따라 다른 경혈을 사용함을 확인하였다. 교차표 클러스터링 분석, MDS 분석 결과 같은 질환에 대해 서적에 따라 경혈의 위치, 음경/양경, 14경맥, 오수혈 사용의 패턴에서 차이가 있었으며, 이러한 패턴은 질환 특이적이기보다 서적 특이적임을 확인하였다. 이에 대한 통계 검정 결과 유의미한 차이가 있었다.

[Conclusion/결론]: 어떤 이론을 통해 선혈이 이루어졌는지 알 수 없으나, 적어도 내경의 시동소생병이 아닌 다른 원칙을 통해 선혈이 이루어지고 있음을 알 수 있었다. 또한 침구경험방은 허임이 기존 저술에 의존하지 않고 본인 임상 경험을 바탕으로 저술하였다고 밝혀놓았는데, 위의 분석 결과를 통해 동일한 시대임에도 불구하고 서로 다른 변증과 선혈이 이루어졌던 것으로 판단된다. 사암도인침법의 경우 다른 서적에 비해 선혈의 패턴이 다름을 확인하였다. 이를 종합하였을 때 조선중기 침구의학이 발전함에 따라 독창적이고 다양한 선혈 이론이 등장하였던 것으로 사료된다. 그러나 본 연구에서는 3개의 서적의 3개의 질환을 다루었으므로 일반화하기 어려우며 보다 많은 서적과 질환을 대상으로 연구할 수 있는 틀을 제시하였다.

[O3]

[제목]: Distribution of monetary incentives in health insurance scheme influences acupuncture treatment choices: An experimental study.

[발표자명/저자명]: Ye-Seul Lee^{1,2}, Song-Yi Kim², Younbyoung Chae¹.

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[Background and Purpose/서론]: Understanding how doctors respond to occupational and monetary incentives in health care payment systems is important for determining the effectiveness of such systems. This study examined changes in doctors' behaviors in response to monetary incentives within health care payment systems in a ceteris paribus setting.

[Methods/방법]: An online experiment was developed to analyze the effect of monetary incentives similar to fee-for-service (FFS) and capitation (CAP) on doctors' prescription patterns. In the first session, no monetary values were presented. In the second session conducted 1 week later, doctors were randomly assigned to one of two monetary incentive groups (FFS group: n = 25, CAP group: n = 25). In all sessions, doctors were presented with 10 cases and asked to determine the type and number of treatments.

[Results/결과]: In the first session with no monetary incentives, there was no significant difference between the FFS and CAP groups in the number of treatments. When monetary incentives were provided, doctors in the CAP group prescribed fewer treatments than the FFS group. The perceived severity of the cases did not change significantly between sessions and between groups. linear mixed-effects regression model indicated the treatment choices were influenced by monetary incentives, but not by the perceived severity of the patient's symptoms.

[Conclusion/결론]: The monetary values incentivized the doctors' treatment choices, but not their professional evaluation of patients. Monetary values designed within health care systems influence the doctor's decisions in the form of external rewards, in addition to occupational values, and can thus be adjusted by more effective incentives.

[Acknowledgment/사사]: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT & Future Planning (No. 2018R1D1A1B07042313) and the Korea Institute of Oriental Medicine (no. K18181).

[O4]

[제목]: Reduced tactile acuity in back pain is linked to somatosensory plasticity and altered by acupuncture

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[Background and Purpose/서론]: We previously demonstrated structural neuroplasticity in primary somatosensory (S1) cortex in carpal tunnel syndrome, which was linked to improved peripheral nerve conduction after acupuncture. Whether this linkage extends to other chronic pain patients and/or is associated with tactile acuity is unknown. In this well-powered longitudinal neuroimaging study, we evaluated structural neuroplasticity in the S1-adjacent white matter (WM), gray matter volume and tactile acuity following acupuncture in chronic low back pain (cLBP) patients.

[Methods/방법]: We enrolled 102 cLBP patients and 50 age-matched healthy controls. After baseline clinical and MRI evaluation, 78 patients were randomized to verum acupuncture (n=18, 6 treatments over 4 weeks), or matched sham acupuncture (n=18), mock laser acupuncture (n=19), or no-treatment usual care (n=23) control groups. Whole-brain diffusion-weighted MRI and T1-weighted image were used to quantify WM microstructural parameters & gray matter volumes. The S1-back and S1-hand regions were defined by a fMRI functional localizer activation map. Mean fractional anisotropy (FA) on the S1-back/hand adjacent WM skeleton was calculated using FMRIB Software Library (FSL) Tract-Based Spatial Statistics (TBSS) and gray matter volume was calculated using VBM. Tactile acuity was evaluated using 2-point discrimination testing (2PDT) on right lower back (just above iliac crest), and middle phalange of right index finger, at baseline and following 4-weeks of therapy/usual care.

[Results/결과]: Larger (worse) 2PDT scores were found for cLBP compared to HC over the back, but not the hand. S1-back FA was reduced in cLBP compared to HC (P<0.05). Following therapy, as no differences were noted for 2PDT-back/hand between control groups (sham acupuncture, mock laser, and usual care), these groups were combined into a single control group. Verum acupuncture improved (reduced) 2PDT-back more than control, while no longitudinal change was found for 2PDT-hand. Furthermore, while S1 FA did not change for either verum acupuncture or control groups, within-group FA change in right S1-back adjacent WM and gray matter volume were associated with 2PDT-back change for verum acupuncture, but not control.

[Conclusion/결론]: Chronic LBP patients demonstrated elevated 2PDT at the back and reduced FA for the WM feeding the back representation in S1 cortex. Only verum acupuncture, which was designed to include greater somatosensory afference from deep receptors, improved tactile acuity on the back, and greater 2PDT improvement was linked with the alterations of S1-back WM microstructure and S1-back gray matter volume. However, as 4 weeks of acupuncture did not, on average, change S1-back FA, beneficial structural S1 neuroplasticity following acupuncture may lag behind the linked improvements in tactile acuity for cLBP patients.

[Acknowledgment/사사]: This project was supported by the National Institutes of Health, National Center for Complementary and Integrative Health (P01-AT006663, R01-AT007550, R61-AT009306 to VN and BRR), the National Institute of Arthritis and Musculoskeletal and Skin Diseases (R01-AR064367 to VN and RRE), National Institute of Neurological Disorders and Stroke (R01NS095937, R01NS094306 to MLL), and the National Center for Research Resources (P41RR14075, S10RR021110, S10RR023043 to BRR). Support was also generously provided by the Korean Institute of Oriental Medicine (KSN1621051 to VN, JK, and HK) and by the Traditional Korean Medicine R&D program funded by the Ministry of Health & Welfare through the Korea Health Industry Development Institute (HI17C2212 to HK).

[O5]

[제목]: **Involvement of the cuneate nucleus in the acupuncture inhibition of drug-seeking behaviors**

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[Background and Purpose/서론]: Our previous studies have shown that acupuncture suppresses addictive behaviors induced by drugs of abuse, including cocaine, morphine and ethanol, by modulating GABA neurons in the ventral tegmental area and dopamine release in the nucleus accumbens. The mechanisms by which the peripheral signals generated by acupoint stimulation are transmitted to brain reward systems are largely unexplored.

[Methods/방법]: The present study aims to investigate the role of spinal dorsal column somatosensory pathways in the acupuncture inhibition of drug addictive behaviors. Thus, we tested whether acupuncture at *Shenmen* (HT7) points reduces drug-seeking behaviors in rats self-administering morphine or ethanol and whether such effects are inhibited by the disruption of the cuneate nucleus (CN).

[Results/결과]: The stimulation of HT7 suppressed morphine and ethanol self-administration, which were completely abolished by surgical lesioning of the CN. In *in vivo* extracellular recordings, single-unit activity of the CN was evoked during acupuncture stimulation.

[Conclusion/결론]: The results suggest that acupuncture suppresses morphine- and ethanol-seeking behaviors through the modulation of the CN, second-order neurons of the dorsal column somatosensory pathway.

[Acknowledgment/사사]: This research was supported by a National Research Foundation of Korea (NRF) grant funded by the Korean government (MSIT) (No. 2018R1A5A2025272 and 2018R1D1A1B07046196), the KBRI basic research program through the Korea Brain Research Institute funded by the Ministry of Science and ICT (18-BR-03) and the Korea Institute of Oriental Medicine (KIOM) K18181.

[O6]

[제목]: Acupuncture Improves Chronic Pain and Comorbid Conditions by Modulating DNA Methylation in the Prefrontal Cortex of Neuropathic Pain Mice

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[Background and Purpose/서론]: Chronic pain is an important clinical problem associated with emotional and cognitive dysfunction, which further reduce quality of life. Epigenetic regulation of DNA methylation is involved in the induction of abnormal behaviors and pathologic gene expression. This study examined whether acupuncture can restore epigenetic changes caused by chronic pain, and identify the underlying mechanisms in a mouse model.

[Methods/방법]: One week after the left partial sciatic nerve ligation (PSNL), acupuncture treatment on the acupoints Hwando (GB30) and Yanglingquan (GB34), or control points were performed for 6 months (3 days/week). We assessed the effect of repeated acupuncture on mechanical and cold allodynia, and also evaluated emotional and cognitive impairment for 6 months.

[Results/결과]: Acupuncture treatment for 6 months was shown to not only improve mechanical/cold allodynia, but also the emotional/cognitive dysfunction caused by left PSNL-induced neuropathic pain in mice. Interestingly, the effects of the acupuncture treatment were associated with global DNA methylation recovery in the prefrontal cortex (PFC) compared to that in other brain regions. Analysis of DNA methylation patterns in the PFC indicated that 1,364 overlapping genes among the 4,442 and 4,416 methylated genes in the PSNL vs. sham and PSNL vs. AP groups, respectively, were highly associated with the DNA methylation process (*Mecp2*, *Dnmt1*, and *Dnmt3a*). Interestingly, the DNA methylation of these process-related genes following acupuncture treatment indicated that methylation in promoter regions decreased while mRNA expression increased. Finally, acupuncture administration restored the protein expression levels of 5-methylcytosine, methyl-CpG binding protein 2, and DNA methyltransferase family enzymes (DNMT1 and DNMT3a) in the PFC.

[Conclusion/결론]: These results suggest that acupuncture can relieve chronic pain-induced comorbid conditions by altering DNA methylation in the PFC.

[Acknowledgment/사사]: This research was supported by grants from the National Research Foundation of Korea funded by the Korean government (NRF-2017R1A2B4009963 and NRF-2017R1A2B4011707) and from the Korea Institute of Oriental Medicine (grant K18182). All other authors declare no competing financial interests.

○ 포스터발표 [Poster Presentations]

- [P1] Cognitive and emotional aspects of cupping therapy (Minyoung Hong, Kyung Hee University)
- [P2] Exploring acupoint selection patterns for pain control: Data mining of randomised controlled clinical trials (Ye-Chae Hwang, Kyung Hee University)
- [P3] The role of substance P in acupuncture signal transduction and effects (Yu Fan, Daegu Hanny University)
- [P4] Augmented Mechanical Forces of the Surface-Modified Nanoporous Acupuncture Needles Elicit Enhanced Analgesic Effects (Sun-Jeong Bae, Kyung Hee University)
- [P5] Analgesic Effect of Melittin at Acupoint ST36 on Oxaliplatin-Induced Peripheral Neuropathy in Rats (Seunghwan Choi, Kyung Hee University)
- [P6] Combined treatment with acupuncture and Chunggan formula improves abnormal symptoms in a mouse model of Parkinson's disease (Tae-Yeon Hwang, Kyung Hee University)
- [P7] Mica pharmacopuncture mitigate neuropathic pain by modulating neuroglial activation and the inflammatory response in the spinal cord (Ju-Young Oh, Kyung Hee University)
- [P8] Locating acupuncture point using Laser-device (Dha-Hyun Choi, Kyung Hee University)
- [P9] Effects of Laser and Electro Acupuncture Treatment with GB30 • GB34 on Inflammation change in Collagenase-Induced Osteoarthritic Rat Model (Mi-rae Kim, Dong Shin University)
- [P10] The Effects of Placenta Pharm Acupuncture on Stress and Sleep-related Substance of Rats induced by Chronic Mild Stress (Sung-young Cho, Dong Shin University)
- [P11] Effect of Resina Dendropanax morbifera Pharm Acupuncture on Stress and Sleep Hormone in Chronic Mild Stress-Induced Rats (Soo-jung Choi, Dong Shin University)
- [P12] Development of the Electronic Smokeless Moxibustion to Treat Arthritis (Jimin Yu, Raontech Co., LTD.)
- [P13] Contemporary Application of Roller Needle and Stamp Needle: a patent review (Seung-yeon Jeong, Gachon University)
- [P14] Effect of acupuncture on scopolamine-induced impairment of spatial memory in rats (Bombi Lee, Kyung Hee University)
- [P15] A mechanical acupuncture instrument mitigates the endoplasmic reticulum stress and oxidative stress of ovariectomized rats (SuYeon Seo, Korea Institute of Oriental Medicine)
- [P16] Biological Safety of Electroacupuncture with STS316 Needles (Kwang-Ho Choi, Korea Institute of Oriental Medicine)
- [P17] Neuroprotective effect of Korean medicinal herbs in vitro Parkinson's disease model (Hee-Young Kim, Pusan National University)
- [P18] Korea Red Ginseng extract Regulate PINK1 mediated mitochondrial dysfunction and mitophagy induced by MPP⁺ in SH-SY5Y cells (Hyongjun Jeon, Pusan National University)
- [p19] Herbal medicine for inflammatory bowel diseases: a development of a pattern identification algorithm based on the best case series (Jiyoon Won, Kyung Hee University)
- [P20] Component analysis of four part extracts from *Chamaecyparis obtusa* Endl. by supercritical fluid extraction and anti-inflammatory effect on RAW 264.7cells (Byeong-Mun Kwak, Semyung University)
- [P21] Fatty acid analysis of extracts from seed of *Pinus koraiensis* by supercritical fluid extraction and antioxidant effect (Byeong-Mun Kwak, Semyung University)

[P1]

[제목]: Cognitive and emotional aspects of cupping therapy

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[Background and Purpose/서론]: Cupping therapy has recently gained public attention and is widely used in many regions. Some patients are resistant to being treated with cupping therapy, as visually unpleasant marks on the skin may elicit negative reaction. This study aimed to identify cognitive and emotional components of cupping therapy.

[Methods/방법]: Twenty-five healthy volunteers were presented with emotionally evocative visual stimuli representing fear, disgust, happiness, neutral emotion, and cupping, along with control images. Participants evaluated the valence and arousal level of each stimulus. Before the experiment, they completed the Fear of Pain Questionnaire-III. In two-dimensional affective space, emotional arousal increases as hedonic valence rating become increasingly pleasant or unpleasant.

[Results/결과]: Cupping therapy images were more unpleasant and more arousing than were control images. Cluster analysis showed that the response to cupping therapy images had emotional characteristic similar to those for fear images. Individuals with greater fear of pain rated cupping therapy images as more unpleasant and more arousing. Psychophysical analysis showed that individuals experienced unpleasant and aroused emotional states in response to the cupping therapy images.

[Conclusion/결론]: Our findings suggest that cupping therapy might be associated with unpleasant -defensive motivation and motivational activation. Determining the emotional components of cupping therapy would help clinicians and researchers to understand the intrinsic effects of cupping therapy.

[Acknowledgment/사사]: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT & Future Planning (No. 2018R1D1A1B07042313) and the Korea Institute of Oriental Medicine (no. K18181).

[P2]

[제목]: Exploring acupoint selection patterns for pain control: Data mining of randomised controlled clinical trials

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[Background and Purpose/서론]: The underlying principles of acupoint selection for pain control are complex. Analysis of acupuncture treatments from clinical studies may provide us with a potential rule when selecting an acupoint to control pain. The aim of the present study was to investigate which acupoints were most commonly used to treat pain in randomised controlled clinical trials (RCTs).

[Methods/방법]: We searched acupuncture treatment regimens in RCTs included in the Cochrane Database of Systematic Reviews for pain management. We analysed acupoint information (more than ten RCTs included) from seven eligible systematic reviews on pain control. The frequency of the acupoints used was calculated and visualised on a human body template.

[Results/결과]: The main acupoints commonly used across many diseases were SP6, ST36, LI4, and LR3. However, the most frequently used acupoints varied across many different conditions. For example, the most frequently used acupoints to treat migraine were GB20, LR3, GV20, EX-HN5, LI4, and TE5, while the most frequently used acupoints for managing dysmenorrhoea were SP6, CV4, SP8, LR3, and BL32. Both regional and distal acupoints were used for pain management with acupuncture.

[Conclusion/결론]: Our findings reveal that both local and segmental/extra-segmental neuromodulation are the most common frequent phenomena for pain control in acupuncture research. Analysis of acupoint information through a data-driven approach will unveil the hidden rules of acupoint selection in clinical practice.

[Acknowledgment/사사]: This research was supported by the Basic Science Research Program through the National Research Foundation of Korea funded by the Ministry of Science, ICT & Future Planning (No. 2018R1D1A1B07042313) and the Korea Institute of Oriental Medicine (no. K18181).

[P3]

[제목]: The role of substance P in acupuncture signal transduction and effects

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[Background and Purpose/서론]: Acupuncture has been used to treat a variety of diseases and symptoms for more than 2,500 years. Our previous studies have suggested that known acupoints can be identified as neurogenic inflammatory spots arising from the release of neuropeptides from activated small diameter sensory afferents in the dermatome that are associated with visceral disorders. The neuropeptide substance P (SP), which is released during neurogenic inflammation, may play an important role in the initiation of the effects of acupuncture.

[Methods/방법]: Neurogenic spots were visualized by injecting Evans Blue dye into male Sprague-Dawley rats. Rats were subjected to a procedure for immobilization-induced hypertension (IMH) model. In vivo fluorescence imaging of neurogenic spots was used with the IVIS lumina III system (Perkin Elmer Company, California, USA). Somatic afferent fiber recordings and in vivo spinal dorsal horn recordings were recorded and analyzed via a CED 1401 Micro3 device and Spike2 software (Cambridge Electronic Design, Cambridge, UK).

[Results/결과]: Neurogenic inflammation quickly appeared at acupoints on the wrist and were fully developed within 15 min after the start of immobilization in a rat model of immobilization-induced hypertension (IMH). The acupoints showed the increased release of SP from afferent nerve terminals. Stimulation of these acupoints alleviated the development of hypertension, which was blocked by the local injection of an SP antagonist into acupoints on the wrist and mimicked by the local injection of either SP or capsaicin. Single fiber recording showed that the local injection of SP into the acupoint increased the sensitivity of A- and C-fibers in response to acupuncture stimulation. In addition, the discharge rates of spinal wide dynamic response (WDR) neurons significantly increased following SP treatment in acupoints in normal rats but was decreased following the injection of SP antagonists into acupoints in IMH rats.

[Conclusion/결론]: Our findings suggest that SP released during neurogenic inflammation enhances the responses of sensory afferents to the needling of acupoints and serves as an important neuropeptide involved in the initiation of acupuncture effects.

[Acknowledgment/사사]: This research was supported by a National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. 2018R1A5A2025272, 2019R1A2C1002555) and the Korea Institute of Oriental Medicine (KIOM) (KSN1812181).

[P4]

[제목]: Augmented Mechanical Forces of the Surface-Modified Nanoporous Acupuncture Needles Elicit Enhanced Analgesic Effects

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[Background and Purpose/서론]: Over the past several decades, clinical studies have shown significant analgesic effects of acupuncture. The efficacy of acupuncture treatment has improved with the recent development of nanoporous needles (PN), which are produced by modifying the needle surface using nanotechnology. Here we observed how PN differ from conventional needle (CN) in *deqi*, local morphological change, and its analgesic effect.

[Methods/방법]: C57BL/6 mice were used in all experiments. First we analyzed pullout force and rotational torque of PNs and CNs on ST36, LI11, ST25 and BL23 acupoints using Acusensor. Then we compared the morphological deformation by immunohistochemical staining. And we investigated the difference in therapeutic effects by assessing paw withdrawal frequency in CFA-induced inflammatory pain model after PN or CN treatment on ST36.

[Results/결과]: We showed that PN has greater rotational torque and pulling force than CN, particularly at acupoints ST36(P<0.001) and LI11(P<0.01), which are situated on thick muscle layers. And likewise, PN showed greater winding of subcutaneous connective tissues and muscle layers(P<0.01) around the needle track. Also the analgesic effects of PN acupuncture were sustained over 2 h, while those using CN lasted only 30 min, and after given the treatment for 10 days, PN showed greater therapeutic effects than CN.

[Conclusion/결론]: Here, we report that the PN, with its large surface area, shows a greater needle grasping power than the CN, thus producing greater morphological changes in subcutaneous and muscle tissues. More importantly, we showed that this treatment increases the analgesic effects with prolonged time. This study suggests that the PN is an effective tool for improving acupuncture efficacy in clinical medicine.

[Acknowledgment/사사]: This work was supported by grants from the National Research Foundation of Korea funded by the Korean Government (2017R1A2B4009963) and the Korea Institute of Oriental Medicine (Grant K18182) to H-JP, and by grants of the Korea Health Technology R&D Project through the Korea Health Industry Development Institute (KHIDI), funded by the Ministry of Health and Welfare (HI19C0506) to S-II.

[P5]

[제목]: Analgesic Effect of Melittin at Acupoint ST36 on Oxaliplatin-Induced Peripheral Neuropathy in Rats

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[Background and Purpose/서론]: Oxaliplatin is a chemotherapeutic agent used for metastatic colon and other advanced cancers. Most common side effect of oxaliplatin is peripheral neuropathy, manifested in mechanical and cold allodynia. Although the analgesic effect of bee venom has been proven to be effective against oxaliplatin-induced peripheral neuropathy, the effect of its major component; melittin has not been studied yet. Thus, in this study, we investigated whether melittin has an analgesic effect on oxaliplatin-induced allodynia.

[Methods/방법]: In this study, first, we conducted behavioral tests to assess whether melittin can relieve oxaliplatin-induced mechanical and cold allodynia in rats. Secondly, by using *in vivo* electrophysiological method, we observed the activities of wide dynamic range (WDR) neurons in the spinal cord after oxaliplatin and melittin injection. Finally, by administrating receptor antagonists intrathecally, we determined whether spinal adrenergic receptors, which are known to be the key mechanisms of bee venom analgesia, are involved in the effect of melittin.

[Results/결과]: Intraperitoneal single injection of oxaliplatin (6 mg/kg) induced mechanical and cold allodynia, resulting in increased withdrawal behavior in response to von Frey filaments and acetone drop on hind paw. Subcutaneous melittin injection on acupoint ST36 (0.5 mg/kg) alleviated oxaliplatin-induced mechanical and cold allodynia. In electrophysiological study, using spinal *in vivo* extracellular recording, it was shown that oxaliplatin-induced hyperexcitation of spinal wide dynamic range neurons in response to peripheral stimuli, and melittin administration inhibited this neuronal activity. In behavioral assessment, analgesic effect of melittin was blocked by intrathecal α 1- and α 2- adrenergic receptor antagonists administration.

[Conclusion/결론]: The results of the present study demonstrate that melittin administration on ST36 can relieve the mechanical and cold allodynia induced by a single injection of oxaliplatin in rats. Furthermore, by *in vivo* electrophysiological study, we demonstrated that melittin can inhibit the hyperexcitation of spinal WDR neuron in response to peripheral stimuli. This analgesic effect of melittin was shown to be mediated by spinal α 1 and α 2-adrenergic receptor activation.

[Acknowledgment/사사]: This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (NRF-2017M3A9E4057926), and by a grant from the Immune and Pain Society.

[P6]

[제목]: Combined treatment with acupuncture and Chunggan formula improves abnormal symptoms in a mouse model of Parkinson's disease

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[Background and Purpose/서론]: Parkinson's disease (PD) is a neurodegenerative disorder characterized by reduced dopamine secretion. In clinical situation, acupuncture and herbal medicine are used in combination. However, in most studies, only the single treatment effects of acupuncture and herbal medicine have been conducted. Thus, we evaluated the effects of a combined treatment with acupuncture and herbal medicine in PD.

[Methods/방법]: MPTP-induced PD mice were used for this study. We used acupoint GB34 for acupuncture and modified Chunggantang (KD5040) as the herbal medicine, as they have been reported to be effective in PD. We investigated the suboptimal dose of KD5040 and then used this dose in the combined treatment.

[Results/결과]: The results showed that the combined treatment had a synergistic effect on improvements in abnormal motor function and neurodegeneration compared to the use of acupuncture or herbal medicine alone. Also, the combined treatment had a neuroprotective effect via the PI3K/AKT and MAPK/ERK signaling pathways.

[Conclusion/결론]: This study demonstrated that the combined treatment had greater effects than acupuncture or herbal medicine alone. These findings suggest that the combined treatment with acupuncture and KD5040 can help improve the symptoms of PD.

[Acknowledgment/사사]: This research was supported by grants from the National Research Foundation of Korea funded by the Korean government [NRF-2017R1A2B4009963] and from the Korea Institute of Oriental Medicine [grant K18182]. None of the authors declares any competing financial interests.

[P7]

[제목]: Mica pharmacopuncture mitigate neuropathic pain by modulating neuroglial activation and the inflammatory response in the spinal cord

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[Background and Purpose/서론]: Despite numerous efforts to overcome neuropathic pain, various pharmacological drugs often cannot meet the needs and can have many side effects. Mica is an aluminosilicate mineral that has been used as an anti-inflammatory agent in traditional medicine, but the efficacy of mica for neuropathic pain has not been investigated. Here, we assessed whether mica injections can reduce the symptoms of pain by controlling the inflammatory process observed in neuropathic pain.

[Methods/방법]: The analgesic effects of mica were explored using partial sciatic nerve ligation (PSNL) in a neuropathic pain model. Mica (4 mg/100 μ l) was given intramuscularly to evaluate its effects on neuropathic pain (3 days per week for 4 weeks) at GB30, GB34, and BL20.

[Results/결과]: The results showed that the mica injections at GB30 significantly alleviated PSNL-induced mechanical and cold allodynia. In addition, the mica injections exhibited inhibitory effects on astrocyte and microglia activation and reduced the expression of pro-inflammatory cytokines, such as interleukin (IL)-1 β , tumor necrosis factor- α , IL-6, IL-10, and monocyte chemoattractant protein-1, in the spinal cord, which were upregulated in the PSNL model. Moreover, the mica injections resulted in a decrease of activating transcription factor 3, a neural damage marker, in the sciatic nerve compared to the PSNL group.

[Conclusion/결론]: These results suggest that the analgesic effects of mica on PSNL-induced neuropathic pain may result from inhibiting activated astrocytes and microglia as well as pro-inflammatory cytokines. We propose that mica is a potential candidate anti-nociceptive agent for neuropathic pain.

[Acknowledgment/사사]: This research was supported by grants from the National Research Foundation of Korea funded by the Korean government (NRF-2017R1A2B4009963) and from the Korea Institute of Oriental Medicine (grant K18182). None of the authors declares any competing financial interests.

[P8]

[제목]: Locating acupuncture point using Laser-device

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[Background and Purpose/서론]: Accurate location of an acupoint have been considered an essential component of clinical practice. In fact, the location of acupoints can be varied among practitioners without any assistant device. Laser device can provide us with the visual guide for finding acupoints by dividing equally between the two landmark of the body. The present study was performed to compare the accuracy of location of acupoint between naked-eyes and Laser device.

[Methods/방법]: Twenty-two students were asked to mark an acupoint PC5 on a male volunteer's arm using two different acupoint positioning methods: without-Laser device (naked eyes) and with-Laser device. All marks on the acupoint from the participants were plotted onto a thin, flexible, and transparent plastic film. Identified points were converted to the coordinate points. The distributions of acupoint were further estimated with Kernel density estimation methods.

[Results/결과]: The overall distributions of acupoint on the map were smaller when they used the Laser device method compared to naked-eye method. There were significant differences in the longitudinal axis between the two methods.

[Conclusion/결론]: Our findings indicate that variations of acupoint locations can be minimized using Laser device. Laser-assistant tools will help practitioners locate the acupoints in more accurate.

[Acknowledgment/사사]: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT & Future Planning (No. 2018R1D1A1B07042313).

[P9]

[제목]: Effects of Laser and Electro Acupuncture Treatment with GB30 • GB34 on Inflammation change in Collagenase-Induced Osteoarthritic Rat Model

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[Background and Purpose/서론]: Degenerative arthritis is a disease that increases with age. It is expected that the prevalence rate will increase according to aging society. Clinical symptoms include pathological symptoms such as pain and inflammation. The main focus of the treatment of arthritis is to reduce the pain, to suppress the factors such as cartilage loss, joint deformation, and to restore functional recovery. In this study, we have investigated the effects of the eletropuncture and 650 nm laser acupuncture on the GB30 and GB34 acupoints of the collagenase - arthritis induced animal model. In addition, we compared the treatment effects of the electro acupuncture, the laser acupuncture and the combination therapy.

[Methods/방법]: The experimental groups were divided into ① normal group, ② arthritis induced group, ③ electro acupuncture group after arthritis induced, ④ laser acupuncture group after arthritis induced, and ⑤ combination therapy after arthritis induced group. Collagenase was dissolved in saline to induce arthritis. The left knee was injected with 50ul and the ankle with 25ul. Treatment was continued for 3 minutes. Combination therapy was first treated for 1 minute and 30 seconds electro and then treated for 1 minute and 30 seconds with laser.

[Results/결과]: All of the treatment methods used in this study were effective in reducing pain. All treatment groups were effective in the inflammatory cytokines TNF-a and IL-6, and were effective in the 650LA and 650LA + EA groups in IL-1 β . Since the blood biochemical test results showed no problem, the treatment method used in this study is harmless to human body.

[Conclusion/결론]: 650 nm Laser and electro acupuncture inhibit the production of collagenase-induced inflammatory mediators of arthritis.

[P10]

[제목]: The Effects of Placenta Pharm Acupuncture on Stress and Sleep-related Substance of Rats induced by Chronic Mild Stress

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[Background and Purpose/서론]: This study aimed to evaluate the anti-stress and sleep-inductive effects of Placenta Pharm Acupuncture (PPA) on rats induced by Chronic Mild Stress (CMS).

[Methods/방법]: Experimental Rats were randomly divided into 5 groups : Normal, CMS(Control), PC(Zolpidem), PPA 0.5x, PPA 1x, and PPA 2x. All rats except the normal group were exposed to unpredicted stress condition like Forced Treadmill, Water cage, Temperature variation, Immobilization stress, and etc. according to the timetable of CSM for 3 weeks. After a week starting experiment, Rats in PPA 0.5x, PPA 1x, and PPA 2x groups were fed orally once a day for 2 weeks. Afterward, Blood samples were taken from the rats for analysis of Complete blood count, AST and ALT. Gamma-Aminobutyric Acid(GABA), Melatonin(MT), Tumor Necrosis Factor Alpha(TNF- α) and Interleukin-6 (IL-6) were measured by ELISA kit. SOD and GPX were measured by RT-PCR.

[Results/결과]: 1. In the Nestlet Shredding behavior change, PPA 1x and PPA 2x groups showed significant decrease compared to the control group. 2. In the GABA and Melatonin content, PPA 2x groups showed significant increase compared to the control group. 3. In the Activity of TNF- α and IL-6, all group showed significant decrease compared to the control group.

[Conclusion/결론]: These results suggest that Placenta Pharm Acupuncture have anti-stress and sleep-inductive effects on rats induced by CMS.

[P11]

[제목]: Effect of Resina Dendropanax morbifera Pharm Acupuncture on Stress and Sleep Hormone in Chronic Mild Stress-Induced Rats

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[Background and Purpose/서론]: This study aimed to evaluate the effects of Dendropanax morbifera Pharm Acupuncture (DPA) on stress and sleep hormones when administered to Chronic Mild Stressed(CMS) rats.

[Methods/방법]: Experimental Rats were randomly divided into 5 groups: Normal, CMS(Control), PC(Zolpidem), DPA 0.5x, DPA 1x, and DPA 2x. All rats except the normal group were exposed to unpredicted stress condition like Predator, Noise, Flash, Wet cage stress, and etc. according to the timetable of CSM for 3 weeks. After a week starting experiment, Rats in DPA 0.5x, DPA 1x, and DPA 2x groups were fed orally once a day for 2 weeks. Afterward, Blood samples were taken from the rats for analysis of Complete blood count, AST and ALT. Gamma-Aminobutyric Acid (GABA), Melatonin (MT), Serotonin and Corticosterone (CORT) were measured by ELISA kit. Bax and Bcl2 were measured by RT-PCR.

[Results/결과]: 1. In the Y-maze behavior change, PPA 1x and PPA 2x groups showed significant increase compared to the control group. 2. In the Serotonin content, PPA 2x groups showed significant increase compared to the control group. 3. In the Corticosterone content, all groups showed significant increase compared to the control group. 4. In the Activity of BDNF DPA-1x and DPA-2x group showed significant increase compared to the control group. 5. In the Activity of CREB DPA-0.5x and DPA-2x group showed significant increase compared to the control group. 6. In the Activity of GABA all group showed significant increase compared to the control group.

[Conclusion/결론]: These results suggest that Dendropanax morbifera Pharm Acupuncture (DPA) have anti-stress and sleep-inductive effects on rats induced by CMS.

[P12]

[제목]: Development of the Electronic Smokeless Moxibustion to Treat Arthritis

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[Background and Purpose/서론]: Moxibustion is Korean traditional medical apparatus for caring of disease by heating. It often causes many kinds of unexpected circumstance such as burns, suppurations and smoke. So we have developed electronic moxibustion can use without fire.

[Methods/방법]: Arthritis induced by 0.25mL of Complete Freund's Adjuvant (CFA) was injected to the left knee of the rat, and the second injection was performed 7 days after the first injection. The procedure started from the 10th day after the first arthritis induction, and was performed one time in 2 days, total 5 times. The treatment time was 3 minutes. And it was performed at 0°C(n=5), 35°C(n=5), and 40°C(n=5) and 45°C(n=5), respectively. We measured the body weight and grade of paw swelling on the 3rd (2nd injection of CFA), 7th, and 11th day from the first injection date. After completion of the procedure, blood samples of rats were collected and the concentrations of TNF- α , IL-1 β and IL-6 were measured by ELISA.

[Results/결과]: The results of the study were divided into three groups: first, arthritis is not induced(mock), untreated and treated. Based on the normal group, when compared to the untreated group, the paw swelling of the treated group decreased from a minimum of 30% to a maximum of 70% depending on the experimental condition. And concentration of pro-inflammatory cytokine (TNF- α , IL-1 β and IL-6) is also reduced from 10% to 30%.

[Conclusion/결론]: The results show that the developed moxibustion device can effect the inflammation in each experimental data. The size of the paw swelling and the level of pro-inflammatory cytokine were found to decrease after treatment as a whole with a tendency to decrease further at 40°C and 45°C. We expect to see the larger effect by introducing laser-diode for future vision techniques applying to reinforcement and reduction.

[Acknowledgment/사사]: This research was supported by the Technology development Program(S2681501) funded by the Ministry of SMEs and Startups(MSS, Korea)

[P13]

[제목]: Contemporary Application of Roller Needle and Stamp Needle: a patent review

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[Background and Purpose]: Dermal needle such as roller or stamp needle is one of the therapeutic method by stimulating or tapping the certain points of skin. Recently, roller or stamp needle has been applied to various diseases in combination with microneedle technology. In this study, we analyzed the trend of roller needle and stamp needle in Korean patent.

[Methodes]: Electronic search for Korean patent of roller or stamp needle was performed in KIPRIS (Korea Intellectual Property Right Information Service) database to April, 2019.

[Results]: Sixty five patents met the inclusion criteria. Of the 65 patents, 52 were roller needle patents, 14 were stamp needle patents, and one was applied to both types of roller and stamp needle. According to patent details, 38 of 65 patents were skin stimulation, 13 patents were intended to increase the efficiency of drug delivery through skin stimulation, 12 patents combined skin stimulation with technologies such as electrode or high frequency, and three patents applied both electrode or high frequency stimulation, and drug application as well as physical skin stimulation. Each of these patents aims to increase the efficiency of the needle manufacturing process (n=25), to increase the technical skill of the needle itself (n=22), or to improve the effect of the needle by combining with other kinds of techniques (n=17).

[Conclusion]: In this study, we examined the current status of dermal needle technology through patent analysis. In the future, more research is needed in order to apply the traditional acupuncture to modern technology.

[Acknowledgment]: This work was supported by the Gachon University research fund of 2017. (GCU-2017-0371).

[P14]

[제목]: Effect of acupuncture on scopolamine-induced impairment of spatial memory in rats

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[Background and Purpose/서론]: Acupuncture is an alternative therapy that is widely used to treat various neurodegenerative diseases and effectively improve cognitive and memory impairment. The aim of this study was to examine whether acupuncture stimulation at the Baihui (GV20) acupoint improves memory defects caused by scopolamine (SCO) administration in rats. We also investigated the effects of acupuncture stimulation at GV20 on the cholinergic system as well as the expression of brain-derived neurotrophic factor (BDNF) and cAMP-response element-binding protein (CREB) in the hippocampus.

[Methods/방법]: SCO (2 mg/kg, i.p.) was administered to male rats once daily for 14 days. Acupuncture stimulation at GV20 was performed for 5 min before SCO injection. After inducing cognitive impairment via SCO administration, we conducted a passive avoidance test (PAT) and the Morris water maze (MWM) test to assess behavior.

[Results/결과]: Acupuncture stimulation at GV20 improved memory impairment as measured by the PAT and reduced the escape latency for finding the platform in the MWM test. Acupuncture stimulation at GV20 significantly alleviated memory-associated decreases in the levels of choline acetyltransferase (ChAT), BDNF and CREB proteins in the hippocampus. Additionally, acupuncture stimulation at GV20 significantly restored the expression of choline transporter 1 (CHT1), vesicular acetylcholine transporter (VACHT), BDNF and CREB mRNA in the hippocampus. These results demonstrate that acupuncture stimulation at GV20 exerts significant neuroprotective effects against SCO-induced neuronal impairment and memory dysfunction in rats.

[Conclusion/결론]: These findings suggest that acupuncture stimulation at GV20 might be useful in various neurodegenerative diseases to improve cognitive functioning via stimulating cholinergic enzyme activities and regulating BDNF and CREB expression in the brain.

[Acknowledgment/사사]: This research was supported by a Grant from the National Research Foundation of Korea funded by the Korean government (2016R1D1A1A09917012).

[P15]

[제목]: A mechanical acupuncture instrument mitigates the endoplasmic reticulum stress and oxidative stress of ovariectomized rats

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[Background and Purpose/서론]: Acupuncture has become a common complementary and alternative treatment approach for anxiety and depression. However, there is little research on the detailed mechanism of acupuncture therapy relieving depression. Previously, 17 β -estradiol (E2) was shown to prevent oxidative stress and endoplasmic reticulum (ER) stress in ovariectomized (OVX) rats. This study investigated whether stimulation of Sanyinjiao (SP6) using a mechanical acupuncture instrument can alleviate depression-like behavior caused by estrogen deficiency in OVX rats. Furthermore, we found that acupuncture reduced ER stress and oxidative stress-related proteins expression.

[Methods/방법]: The OVX operation was performed on female SD rats that were separated into four groups: The E2 (2.5 mg/kg, i.p.) injection group (OVX + E2), the OVX group (OVX), and the OVX with acupuncture stimulation group (OVX + SP6). Non-acupoint stimulation group (OVX + NonAcu). The acupuncture point stimulation began three weeks after surgery. The depressive behavior was analyzed by the forced swim test and open field test. The 8-OHDG, BiP, Sigma receptor 1, pJNK, PDI, Ero1- α and Calnexin protein levels were evaluated by immunoreactivity in the amygdala.

[Results/결과]: Acupuncture stimulation reduced depressive behavior and altered depression-related proteins. Stimulation of SP6 decreased the immobility time of the FST and altered the ER stress and oxidative stress marker proteins, such as 8-OHDG, BiP, pJNK, PDI, Ero1- α and Calnexin.

[Conclusion/결론]: Acupuncture stimulation reduced depressive behavior and altered depression-related proteins. Stimulation of SP6 decreased the immobility time of the FST and altered the ER stress and oxidative stress marker proteins, such as 8-OHDG, BiP, pJNK, PDI, Ero1- α and Calnexin. Our results indicated that acupuncture at SP6 showed a significant antidepressant-like effect on an OVX-induced depression rat model by mitigation of ER stress and oxidative stress in amygdala.

[Acknowledgment/사사]: This research was supported by a grant (KSN1812181) from the Korea Institute of Oriental Medicine (KIOM; Daejeon, South Korea).

[P16]

[제목]: Biological Safety of Electroacupuncture with STS316 Needles.

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[Background and Purpose/서론]: Electroacupuncture (EA) is often used in clinical settings due to its analgesic effect, but its safety has not been verified due to the lack of clear criteria. This study examined the critical range of the corrosion of stainless steel types STS304 and STS316, which have been used clinically, and the relationship between needle corrosion and cell necrosis.

[Methods/방법]: The critical point of corrosion for STS304 and STS316 was identified by varying the time, frequency, and stimulation intensity. In a tissue necrosis experiment, EA stimulation was applied to rats using STS316 needles with different thicknesses at maximum intensity for 60 minutes, and the presence of corrosion and tissue necrosis was determined. A cytotoxicity experiment was also conducted and assessed the needles and tissue necrosis.

[Results/결과]: The results showed that STS316 was more stable than STS304 and that only coated needles corroded. Furthermore, tissue necrosis was observed regardless of corrosion, and slight cell necrosis was associated with needles with corrosion.

[Conclusion/결론]: This study demonstrated that non-coated STS316 was the most stable for EA stimulation and that corrosion byproducts and cell necrosis were not directly related.

[Acknowledgment/사사]: This research was supported by a study on the signaling pathway of acupuncture stimulus: based on neurogenic inflammation (No. KSN1812181) under Korea Institute of Oriental Medicine, Korea.

[P17]

[제목]: Neuroprotective effect of Korean medicinal herbs *in vitro* Parkinson's disease model

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[Background and Purpose/서론]: Recently, many researches present importance of correlation between brain and gut in some kinds of diseases. Immune system and gut are closely connected with central nerve system and brain. Two kinds of medicinal herbs in Korea, *Rumex japonicus* Houtt. (RJ) and *Atractylodes macrocephala* Koidz. (AM), has been used to treat various digestive disease and inflammation. Also, RJ and AM has anti-oxidative and anti-inflammatory effect. Therefore, RJ and AM are expected to improve not only digestive disease but also brain disorders such as Parkinson's disease (PD).

[Methods/방법]: SH-SY5Y human neuroblastoma cells were incubated with RJ or AM for 24 h, after which they were treated with neurotoxin 1-methyl-4-phenylpyridinium ion (MPP⁺). MPP⁺-induced cytotoxicity and apoptosis were confirmed by 3-(4,5-dimethyl-thiazol-2-yl)-2,5-diphenyl tetrazolium bromide assay. Immunofluorescent staining is conducted to confirm the PD related factors (PINK1 and DJ-1), reactive oxidative species (ROS), and permeability in mitochondria. Also, ATP assay and western blot was performed to evaluate mitochondrial function-related factors and apoptosis factors.

[Results/결과]: Methanol extracts (0.01 mg/mL of RJ; 0.01 mg/mL of AM) suppressed MPP⁺-induced cytotoxicity and apoptosis. Also, The SH-SY5Y cells treated with RJ or AM showed higher ATP activity than MPP⁺ only treated group. RJ and AM effectively inhibited collapse of mitochondrial membrane potential and increase of ROS. In addition, In the immunofluorescent staining and western blot results, RJ and AM regulated the expressions of and PD (Parkin, PINK1 and DJ-1) related proteins and apoptosis (caspase-3 and cytochrome c, Bcl-2 and Bax) related proteins.

[Conclusion/결론]: The Korean medicinal herbs RJ and AM effectively suppressed MPP⁺-induced cell death, mitochondrial dysfunction, and loss or mutation of mitochondria-related PD markers. Therefore, RJ and AM are expected a kind of way to alleviate PD. Further, a study is needed to prove the effects of these herbs in digestive system and brain, and correlative mechanism.

[Acknowledgment/사사]: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (No. NRF-2018R1D1A1B07042881).

[P18]

[제목]: Korea Red Ginseng extract Regulate PINK1 mediated mitochondrial dysfunction and mitophagy induced by MPP⁺ in SH-SY5Y cells

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[Background and Purpose/서론]: Parkinson's disease (PD) is common chronic neurodegenerative disease. Multiple mechanisms have been found that lead to PD progression. Mitochondrial dysfunction is implicated in pathogenesis of PD. Korea Red Ginseng (KRG) has been used to traditional oriental medicine. It offers neuroprotection against mitochondrial dysfunction induced neurotoxicity.

[Methods/방법]: We have investigated the effect of KRG in the exposure of SH-SY5Y neuroblastoma cells to 1-methyl-4-phenylpyridinium (MPP⁺). Pre-treatment KRG (0.1µg/ml) and following day treatment with MPP⁺(2mM) cells were measured the apoptosis pathway by TUNEL assay, also we measured Parkin/ PINK1 pathway, Mitosox regents assay and autophagy at mitochondria by western blot and Immuno fluorescent.

[Results/결과]: We found that Confocal microscopy and western blot data show an intriguing pre-treatment of KRG in maintaining in cell healthy condition and decreasing mitophagy. We measured about apoptosis pathway and autophagy at mitochondria, KRG suppressed the reactive oxidative stress induced apoptosis pathway such as Bcl-2family, cytochromec, caspase9, cleaved-caspase3. Parkin, PINK1 and DJ-1 genes change and improve at wholecell. Moreover, KRG was involved in the PINK1/ Parkin at mitochondria and regulated mitophagy such as SQSTM1/p62 (p62), Beclin 1 proteins.

[Conclusion/결론]: The KRG pre-treatment significantly improved the cell survival rates and inhibited apoptosis, Parkin/ PINK1 accumulation on mitochondria outer membrane and abnormal mitophagy induced by MPP⁺ in the SH-SY5Y cells. Taken together, it suggests that KRG is the potential useful treatment of early onset Parkinson's disease.

[Acknowledgment/사사]: This work was supported by a National Research Foundation of Korea (NRF) grant funded by the Korean government (MSIP) (No. NRF-2014R1A5A2009936).

[P19]

[제목]: Herbal medicine for inflammatory bowel diseases: a development of a pattern identification algorithm based on the best case series

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[Background and Purpose/서론]: Herbal medicine has emerged as a treatment option for intractable inflammatory bowel diseases (IBD) as Western medicine treatments do not always guarantee complete remission and/or are not free from treatment-associated adverse events. Herbal medicine prescriptions following pattern identification have been criticised for high inter-practitioner variability and/or not reflecting real-world practice. Using the best case series data, we aimed to explore treatment algorithms by identified patterns and key symptoms which practitioners can easily use.

[Methods/방법]: Five patterns based on herbal medicine prescriptions were determined: Large intestine type, Water-dampness type, Respiratory type, Upper gastrointestinal (GI) tract type, and Coldness type. By term frequency-inverse document frequency (TF-IDF) method, association between 22 symptoms indicated for the herbal medicine prescriptions and patterns was analyzed. Decision tree modeling was built applying classification and regression tree (CART) algorithm for prediction of relevant patterns.

[Results/결과]: Symptoms that had larger TF-IDF values for respective patterns were significant nodes in decision tree analysis: incomplete feeling of bowel emptying for Large intestine type, water dampness for Water-dampness type, chronic rhinitis for Respiratory type, gastric stuffiness for Upper GI tract type, and abdominal pain for Coldness type.

[Conclusion/결론]: The treatment algorithm we suggest can be a useful tool for Korean Medicine doctors in prescribing herbal medicines for IBD patients.

[Acknowledgment/사사]: This work was supported by the National Research Foundation (NRF) of Korea funded by the Korean government (Ministry of Science and ICT, grant No. NRF-2017R1A2B4006407).

[P20]

[제목]: Component analysis of four part extracts from *Chamaecyparis obtusa* Endl. by supercritical fluid extraction and anti-inflammatory effect on RAW 264.7 cells

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[Background and Purpose/서론]: The main purpose of this study was to suggest a solution for a inflammation caused by urban daily life based on extract from *Chamaecyparis obtusa* Endl.(*C.obtusa*). *C.obtusa* has a positive image to korean people and it is easy to find and without any discomfort when using. Thus, this study used *C.obtusa* to analyze and evaluate anti - inflammatory substances.

[Methods/방법]: The leaves, cone, wood, and bark of *C.obtusa* were separately extracted with supercritical fluid extraction. α -Pinene, anti-inflammatory active compound of *C.obtusa* was analyzed by ESI-MS, GC, and GC/MS from each part of extracts. The each extract was evaluated for NO inhibition rate on RAW 264.7 cells.

[Results/결과]: GC/MS analysis for each component of four parts, the kind of similar volatile components and proportion of components in leaves and cone was analyzed. The most number of volatile component was analyzed extract from bark of *C.obtusa*. α -pinene taken as the indicator material was analyzed at the highest rate in extract from wood. NO inhibition was highest in wood extracts and lowest in extract from leaves. It was shown that NO production was reduced as the ratio of α -pinene analyzed by GC / MS was high. Among extract from four parts, highest difference was observed at 200 ppm which was not occurred cytotoxicity.

[Conclusion/결론]: This study demonstrates among the various natural products, *Chamaecyparis obtusa* Endl.(*C.obtusa*) has a positive image to korean people and it is easy to find and without any discomfort when using. On this study extracts from *C.obtusa* by supercritical extraction could be used as a anti-inflammatory substance for pharmacopuncture.

[Acknowledgment/사사]: This research was supported by 2019 Semyung university innovation support project.

[P21]

[제목]: Fatty acid analysis of extracts from seed of *Pinus koraiensis* by supercritical fluid extraction and antioxidant effect

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[Background and Purpose/서론]: The main purpose of this study was to suggest a solution for a antioxidant effect extract from seed of *Pinus koraiensis*. *Pinus koraiensis* has a lot of unsaturated fatty acid in lipid which is Oleic acid, Linoleic acid from seed. Linoleic acid has anti oxidant effect. Thus, this study used *Pinus koraiensis* to analyzed fatty acid and evaluate anti oxidant substances.

[Methods/방법]: The investigate of anti-inflammation effect of extract from *Pinus koraiensis* by supercritical fluid extraction. And analyzed fatty acid by GC. RAW 264.7 cell dosed with extract from *Pinus koraiensis* were harvested and the intracellular proteome was analyzed expression of proteins related LPS binding, LPS singalling, inflammatory, cytokines and TNF- α pathway by 2-D electrophoresis.

[Results/결과]: GC analysis for component of extract from *Pinus koraiensis* has shown oleic acid was 28% and linoleic acid was 46%. and The antioxidative effect was about 60% by beta carotene bleaching assay. In 2D PAGE analysis, twelve protein changes in five mechanisms which was collagen synthesis pathway, MMPs, ECM-cell interaction, cytokines, antioxidant enzymes were analyzed.

[Conclusion/결론]: This study demonstrates among the various natural products, *Pinus koraiensis* was korean herbal medicine that has no resistance to Korean people. On this study extracts from seed of *Pinus koraiensis* by supercritical extraction could be used as a antioxidant substance for pharmacopuncture.

[Acknowledgment/사사]: This research was supported by 2019 Semyung university innovation support project.

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