2022 18th Annual Meeting of the Korean Hair Research Society

2022년 제18차

# 대한모발학회 학술대회

2022년 5월 29일 (일) 09:00~17:40 | 서울삼정호텔

KHRS
The Korean Hair Research Society

21th years[6]

Propecia® (finasteride)

Always Your 1st Choice[2,3*]

# Men 먼저[1] 프로페시아®

국내 판매 1위[4,†]
(2020년, finasteride 부분)

FDA 승인받은 유일한
경구용 남성형 탈모 치료제[5]

FDA, Food and Drug Administration

프로페시아® 허가사항에 따르면 남성형 탈모증 환자를 대상으로 한 12개월에 걸친 3가지의 대조임상시험에서, 1% 이상의 빈도로 나타난 이상반응 중 약물과 관련성이 있다고 보고된 이상반응으로는 성욕감퇴(프로페시아® 1.8% vs. 위약 1.3%), 발기 부전(1.3% vs. 0.7%), 사정 장애(1.2% vs. 0.7%; 사정액 감소 0.8% vs. 0.4%), 성기능 관련 이상반응으로 인하여 투약을 중단한(1.2% vs. 0.9%)이 있습니다. 처방하시기 전 더 자세한 정보가 있는 제품설명서를 참고하시기 바랍니다.[1]

*유럽가이드라인에서 5ARIs 중 남성형 탈모 치료에 1차 치료제로 권고[2,3] †Based on other dermatological preparation with finasteride only, IQ 2018-4Q 2020.


**References**

**1.** 프로페시아® 허가사항. 식품의약품안전처 **2.** Kanti V, Messenger A, Dobos G, et al. Evidence-based (S3) guideline for the treatment of androgenetic alopecia in women and in men – short version. J Eur Acad Dermatol Venereol. 2018 Jan;32(1):11-12. **3.** Kanti V, Messenger A, Dobos G, et al. S3 – European dermatology forum guideline for the treatment of androgenetic alopecia in women and in men 2017. Available at https://www.edf.one/dam/jcr:96a6d7fd-d022-490c-99b0-8b6189182055/S3_guideline_androgenetic_alopecia_update2017.pdf> Accessed Oct. 14, 2019. **4.** IMS Health Data, with finasteride of Androgenic alopecia in the S. Korea, Sales Value(TRD), 4Q 2020 data. (Data on file) **5.** FDA. Drugs@FDA. PROPECIA®. Available at <https://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview. process&ApplNo=020788>Accessed May 10 2021. **6.** 식품의약품안전처. 의약품 특허 의료제품스-제품검색 "성분명 Finasteride. 분류번호 267(모발용제)" Available at <https://nedrug.mfds.go.kr/searchDrug?sort=ITEM_PERMIT_DATE&sortOrder=false&searchYn=& page=1&searchDivision=detail&itemName=&entpName=&ingName1=피나스테리드& ingName2=&ingName3=&itemSeq=&stdrCodeName=&indutyClassCode=&sClassNo=&narcoticKindCode=&etcOtcCode=&makeMaterialGb=&searchConEe=AND&eeDocData=&searchConUd=A ND&udDocData=&searchConNb=AND&nbDocData=&startPermitDate=&endPermitD ate=> Accessed Jul. 27. 2021.


**프로페시아® 주요 안전성 정보**

1. 효능·효과 : 성인남성(만18-41세)의 남성형 탈모증의 치료. 2. 용법·용량 : 일반적으로 피나스테리드로서 1일 1회 1 mg을 경구투여하며, 식사와 관계없이 투여할 수 있다. 용량을 증량하면 유효성이 증대된다는 근거가 없다. 일반적으로 3개 월 이상 복용해야 치료효과를 볼 수 있으며, 치료효과 유지를 위해 지속적으로 복용할 것을 권장한다. 3. 경고 : 1) 이 약을 소아환자 혹은 여성에게 투여하여서는 안 된다. 2) 임부 또는 임신하고 있을 가능성이 있는 여성이 약의 부서진 조각을 만지는 경우, 피부를 통해 이 약이 흡수되어 남성태아에 위험을 초래할 가능성이 있으므로 임부나 임신했을 가능성이 있는 여성은 이 약의 부서진 조각을 만져서는 안 된다. 이 약의 표면은 코팅되어 있으므로 정제가 부서지지 않은 상태에서 정상적으로 취급할 때에는 주성분과 접촉되지 않는다. 3) 기본변형과 우울증 : 피나스테리드 1mg을 투여한 환자에서 우울한 기분, 우울증이 보고되었고, 이보다는 적은 건수로 자살생각을 포함한 기본변형이 보고되었다. 정신학적 증상에 대해 환자를 관찰하고, 만약 환자에게 이러한 증상이 발생하는 경우 피나스테리드 투여를 중단하고 의료전문가에게 상담하도록 해야 한다. 4. 금기 : 1) 임부 혹은 임신했을 가능성이 있는 여성-이 약과 같은 5α-환원효소 억제제는 테스토스테론이 디히드로테스토스테론으로 전환되는 것을 저해하므로 임부가 프로페시아를 복용하는 경우 남성태아 외부생식기의 비정상을 초래할 수 있다. 2) 이 약 또는 이 약의 구성 성분에 대해 과민반응을 나타내는 환자. 3) 양성전립샘비대증 등으로 인해 이 약 5 mg 또는 다른 5α-환원효소 억제제를 복용하고 있는 환자. 4) 이 약은 유당을 함유하고 있으므로, 갈락토오스 불내성, Lapp유당분해효소 결핍증 또는 포도당-갈락토오스 흡수장애 등의 유전적인 문제가 있는 환자에게는 투여하면 안 된다. 5. 신중투여 : 이 약은 간에서 광범위하게 대사되므로 간기능에 이상이 있는 환자에 대해서는 주의하여 투여한다. 6. 이상반응 : 1) 12개월에 걸친 3가지의 대조임상시험에서, 남성형 탈모증 환자에게 피나스테리드 1 mg 또는 위약을 투여한 결과 1% 이상의 빈도로 나타난 이상반응 중 약물과 관련성이 있거나 상당히 관련되어 있거나 또는 관련성이 명백히 있다고 보고된 이상반응으로는 성욕감퇴(프로페시아 1.8% vs 위약 1.3%), 발기부전(1.3% vs 0.7%), 사정장애(1.2% vs 0.7%, 사정액감소 0.8% vs 0.4%)가 있다. 성기능관련 이상반응으로 인하여 투약을 중단한 경우, 투약 중단 후에는 모든 환자에서 이러한 이상반응이 사라졌으며, 투약을 계속한 환자의 대부분에서 이상반응이 사라졌다. 2) 시판 후 보고된 이상반응으로는 발진, 가려움, 두드러기 및 혈관부종(입술, 혀, 목구멍 및 얼굴의 종창을 포함)과 같은 과민반응, 근육통, 근무력증, 우울증, 투여 중단 후 지속되는 성욕감퇴, 유방압통 및 비대, 고환통; 투여 중단 후 지속되는 성기능 장애(발기부전, 사정장애), 오르가즘 장애 ; 남성 불임, 그리고/또는 정액의 질 저하. 이 약 투여 중단 후 정액의 질 정상화 혹은 개선이 보고되었다. 남성유방암, 혈장백혈, 위장장애, 어지러움, 두통이 있다. 7. 일반적 주의 : 1) 의사는 환자에게 멍울, 통증 및 유두분비물, 유방비대, 압통 및 신생물을 포함한 유방의 변화가 있을 경우 신속히 의사에게 보고하도록 안내한다. 2) 의사는 이 약으로 치료하는 동안 일부 환자에서 사정량이 감소할 수 있다는 것을 환자에게 알려야 한다. 이런 사정량 감소가 정상적인 성기능을 방해하는 것으로 보이지는 않지만 이 약으로 치료를 받는 환자에게 발기부전과 성욕감퇴가 발생할 수도 있다. 3) 직장수지검사에서 정상이고 PSA 수치가 3.0 ng/mL인 55세 이상의 남성을 대상으로 7년간 이 약 일일 5 mg을 복용한 PCPT 임상시험에서 Gleason 등급 8 ~ 10의 전립샘암 위험성이 증가되었다 (피나스테리드 1.8 % vs 위약 1.1 %). 다른 5α-환원효소 억제제(두타스테리드 vs 0.5 % 위약)에 대한 4년간의 위약-조절 임상시험에서도 비슷한 결과가 관찰되었다. 5α-환원효소 억제제는 고등급 전립샘암 발현의 위험성을 증가시킬 수 있으나, 전립샘 부피를 감소시키기 위한 5α-환원효소 억제제 효과 때문인지, 이러한 연구들의 결과에 영향을 미치는 다른 요인들 때문인지는 확립되지 않았다. 8. 상호작용 : 임상적으로 중요한 약물상호작용은 밝혀진 바가 없다. 이 약은 CYP-450 관련 약물대사효 소계에는 영향을 끼치지 않는다고 알려졌다. 안티피린, 디곡신, 글리부라이드, 글리벤클라미 드, 프로프라놀롤, 테오필린 및 와르파린 등과 이 약의 상호작용 조사를 위한 임상시험을 실시한 바 있으나 유의한 상호작용이 관찰되지 않았다. 비록 상호작용에 관한 연구를 실시하지는 않았으나, 임상시험시 이 약 1 mg 혹은 그 이상 의 용량은 아세트아미노펜, 아세틸살리실산, α-차단제, 진통제, ACE저해제, 칼슘채널차단제, Cardiac nitrates, 이뇨제, H2 길항제, HMGCoA 환원 효소 저해제, Prostaglandin synthetase 저해제(NSAIDs) 및 퀴놀론계 항균제에도 임상적으 로 유의한 이상반응 없이 병용하여 사용되었다. 9. 임부에 대한 투여 : 1) 이 약을 여성에게 투여하여서는 안된다. 2) 임신한 랫트에게 이 약을 100 mcg/kg/일 ~ 100 mg/kg/일의 용량범위(사람에서의 상용량의 5 ~ 5000 배)로 투여하면 수컷 차신자에서의 요도하열(hypospadias)의 발생률이 투여용량에 비례하여 3.6 ~ 100 %로 증가되었다. 이 약 30 mcg/kg/일 이상의 용량(사람에서의 상용량의 1.5 배 이상)을 임신한 랫트에게 투여하면 전립샘과 정낭의 무게가 감소되고 포피분리가 지연되며, 일시적인 유두발달을 보이는 수컷 차신자가 생산되었다. 또한 3 mcg/kg/일 이상의 용량(사람에서의 상용량의 1/4)을 임신한 랫트에게 투여하면 항문과 생식기사이의 거리가 감소된 수컷 차신자가 생산되었다. 이러한 효과들이 수컷 랫트에게 유도되는 시기는 임신 16 ~ 17일 사이인 것으로 밝혀졌다. 위의 변화들은 type 1 5α-환원효소 억제제 계열에 속한 약물들의 약리학적 효과로, 선천적으로 type II 5α-환원효소가 결핍된 남성유아에서 보고된 바와 유사하다. 자궁 내에서 이 약의 다량한 용량에 노출된 적이 있는 암컷 차신자에서는 비정상적 소견이 발견되지 않았다. 3) 이 약을 투여받은 수컷 랫트(80 mg/kg/일, 사람에서의 상용량의 488 배)와 이 약을 투여받지 않은 암컷 랫트를 교미시켜 생산된 제 1세대 수컷 및 암컷 차신자에서는 발생상의 비정상적 소견이 관찰되지 않았다. 임신후기 및 수유기 동안 3 mg/kg/일의 용량(사람에서의 상용량의 150 배)을 투여시에는 제 1세대 수컷 차신자의 수태능이 경미하게 감소하였으나, 암컷 차신자에는 아무런 영향이 없었다. 임신 6 ~ 18 일 사이에 자궁 내에서 이 약의 100 mg/kg/일의 용량(사람에서의 상용량의 5000 배)에 노출된 토끼의 태자에서는 최기형의 증가를 발견할 수 없었다. 그러나 이 시험에서는 생식계 발생 시기 동안 이 약에 노출되지 않았으므로 수컷 생식기에 대한 영향을 기대할 수 없었다. 4) 배자 및 태자 발생시기동안 자궁 내에서 이 약에 노출되었을 때의 효과는 랫트나 토끼에 비해 사람의 발생과정에서의 영향을 더 잘 예측할 수 있게 해주는 동물모델인 리서스 원숭이에서 평가되었다(임신 20 ~ 100 일). 임신한 원숭이에게 800 ng/일의 용량(1 mg/일의 용량을 복용하는 남성의 정액으로부터 여성에게 노출될 수 있는 이 약 최고 용량의 250 배 이상)을 정맥투여했을 때 수컷 태자에서의 비정상적 소견은 관찰되지 않았다. 사람 태아의 발생 과정에서의 영향을 예측하기 위해 원숭이 모델을 사용하는 것이 적절한지를 확인하기 위하여 이 약 2 mg/kg/일을 임신한 원숭이에게 경구투여 했을 때, 수컷 태자 외부생식기에서의 비정상적 소견이 관찰되었다. 수컷 태자에서의 다른 이상은 발견되지 않았으며, 암컷 태자에서는 어떤 투여 용량에서도 이 약과 관련된 이상은 관찰되지 않았다. 10. 수유부에 대한 투여 : 이 약을 여성에게 투여하여서는안된다. 이 약이 유즙으로 분비되는지 여부는 알려져 있지 않다. 11. 소아에 대한 투여 : 이 약을 소아 환자에게 투여하여서는 안된다. 소아에서의 안전성 및 유효성은 확립되어 있지 않다. 12. 고령자에 대한 투여 : 이 약은 65세 이상의 환자를 대상으로 유효성에 대한 임상연구를 실시하지 않았다. 이 약 5mg을 투여한 약동학적자료를 근거할 때 이 약을 고령자에게 투여시 용량조절이 필요하지 않다. 그러나 이 약은 고령자에 대한 유효성이 확립되어 있지 않다. 개정년월일 : 2019년 5월 3일


ORGANON 한국오가논㈜ 서울특별시 종로구 종로1길 50, 4층, 03142 Tel) 1577-8582 http://www.msd-korea.com/organon



KR-PRO-110065 08/2023

2022년 제18차

# 대한모발학회 학술대회

2022 18th
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Korean Hair Research Society

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# WELCOME MESSAGE

안녕하십니까?

3년째 지속되는 COVID-19 사태의 어느 정도 정점에 다다른 듯하고 계절은 꽃망울을 터트리는 찬란한 봄이 왔습니다. 어려움 속에서도 환자의 진료와 연구에 매진하시는 회원 여러분께 깊은 경의를 표합니다.

올해로 18회를 맞게 되는 대한모발학회 학술대회는 기초연구 및 임상 분야의 새로운 성과를 중심으로 2022년 5월 29일 서울 역삼동 삼정호텔에서 개최됩니다.

본 학술대회에서는 다양한 면역질환에 치료제로 각광받는 Janus kinase 억제제에 대해 Brett King을 포함한 국내외 석학들을 초청하여 최신 지견을 공유할 예정입니다. 원형탈모증과 남성형탈모증 분야의 최신 임상 지견과 hair biology와 gray hair에 대해 국내외 전문가들을 초청하여 최신 연구 동향을 공유할 예정입니다. 특히, 정년을 앞둔 경희대학교 심우영 교수님의 기념강의로 더욱 뜻깊은 행사가 될 예정입니다.

대한모발학회는 그동안 COVID-19로 학술활동에 제약을 받는 상황에서도 방역기준을 준수하며 정기학술대회 및 연수강좌, 공동연구 등을 지속적으로 계승 발전해왔습니다.

이 모든 것은 회원 여러분들의 관심과 이사진들의 헌신으로 가능하였다고 생각합니다. 또한 이번 학술대회를 준비해주신 상임이사진 및 연자분들과 좌장분들께도 깊은 감사의 인사를 드립니다.

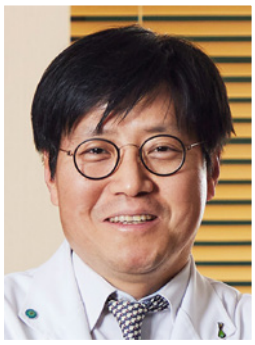
아직은 확정할 수 없지만, 이번 18차 학술대회는 방역기준이 마스크를 제외하고는 예전의 일상의 수준으로 돌아가는 상황에서 개최될 수 있기를 간절히 빌며, 아직은 어려운 상황 이지만 그 희망을 품어봅니다.

끝으로 COVID-19가 종료될 때까지 항상 건강하시고, 가능한 많은 분을 직접 학술대회장에 뵐 수 있게 되기를 소망합니다.

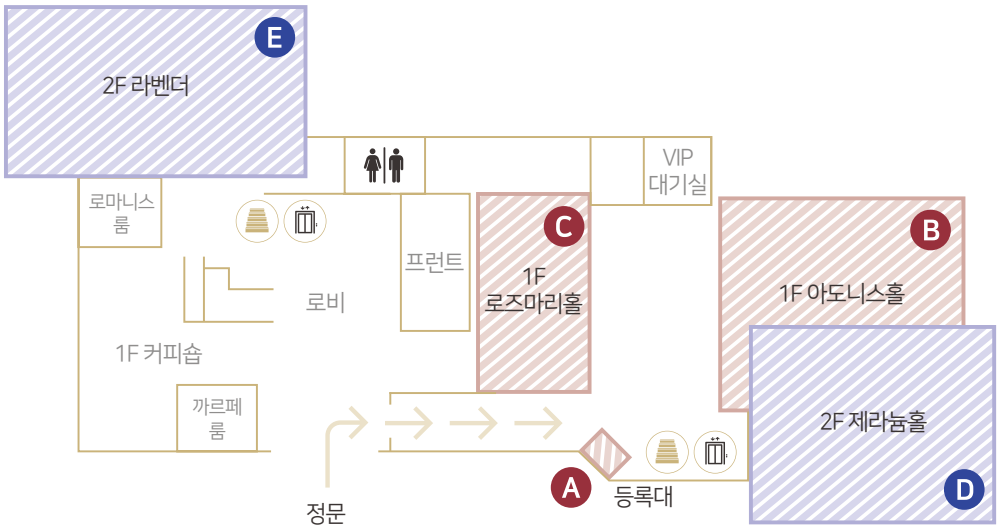
감사합니다.

**2022년 5월, 대한모발학회 회장**

**최광성**

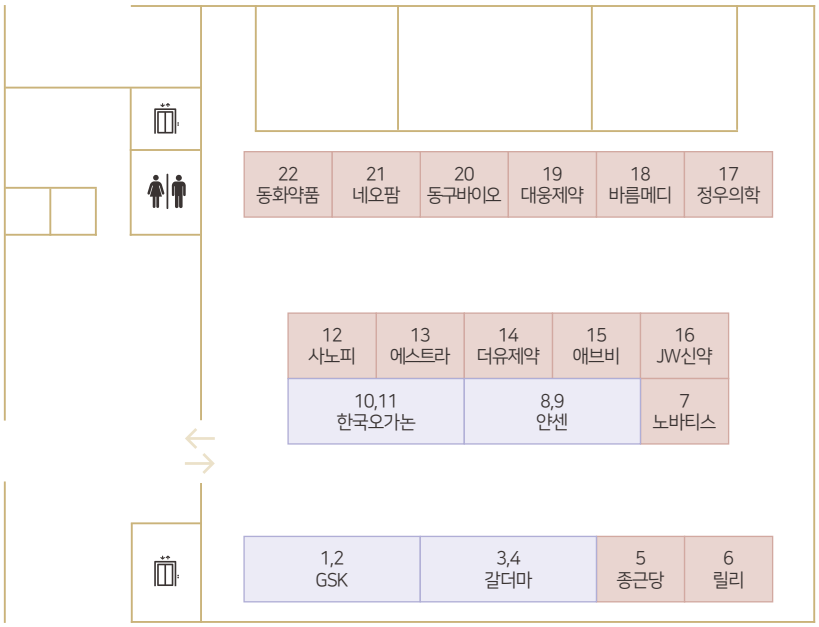


## 학회장 안내도




A 등록대 : 1F
B 부스 전시 : 1F 아도니스홀
C 포스터 전시 : 1F 로즈마리홀
D 컨퍼런스 : 2F 제라늄홀
E 이사회 : 2F 라벤더홀

## 부스 전시 안내




| 부스번호 | 회사명 |
|---|---|
| 1,2 | GSK |
| 10,11 | 한국오가논 |
| 3,4 | 갈더마 |
| 8,9 | 안센 |
| 5 | 종근당 |
| 6 | 릴리 |
| 7 | 노바티스 |
| 12 | 사노피 |
| 13 | 에스트라 |
| 14 | 더유제약 |
| 15 | 애브비 |
| 16 | JW신약 |
| 17 | 정우의학 |
| 18 | 바름메디 |
| 19 | 대웅제약 |
| 20 | 동구바이오 |
| 21 | 네오팜 |
| 22 | 동화약품 |

## 2022년 제18차 대한모발학회 학술대회 프로그램

| | | |
|---|---|---|
| 09:00-09:20 | Registration | |
| 09:20-09:30 | Opening Ceremony | OPENING REMARKS<br>Gwang Seong Choi<br>President, KHRS |
| 09:30-10:40 | **Session 1. Alopecia areata** | CHAIR<br>Won-Soo Lee<br>Yonsei Wonju University<br>CHAIR<br>Chang Hun Huh<br>Seoul National University |
| 09:30-10:00 | Clinical Challenges and Emerging Treatments | Brett King<br>Yale University |
| 10:00-10:20 | What's new in pathogenesis of alopecia areata: possible role of skin-gut/oral axis? | Jin Park<br>Chonbuk National University |
| 10:20-10:40 | Promising trials for new alopecia areata treatments | Young Lee<br>Chungnam National University |
| 10:40-11:00 | Coffee Break | |
| 11:00-12:20 | **Session 2. Hair biology** | CHAIR<br>Hoon Kang<br>Catholic University<br>CHAIR<br>Ohsang Kwon<br>Seoul National University |
| 11:00-11:30 | A revolution in dermatology: JAK inhibitors for refractory skin disease | Brett King<br>Yale University |
| 11:30-12:00 | Skin Deep: Stem Cells at the Nexus of the Niche, Physiology, and the External Environment | Ya-Chieh Hsu<br>Harvard University |
| 12:00-12:20 | Application of Cell-Derived Nanovesicles for Hair Growth | Byeong-Cheol Ahn<br>Kyungpook National University |
| 12:20-12:30 | Group Photo | |
| 12:30-13:40 | Luncheon Symposium / KHRS Board Meeting<br>Long term effectiveness and safety of dutasteride versus finasteride in patients with androgenic alopecia in South Korea | Hyun-Tae Shin<br>Inha University |
| 13:40-14:40 | **Session 3. Amorepacific symposium (Gray hair)** | CHAIR<br>Moon-Bum Kim<br>Pusan National University<br>CHAIR<br>Won-Seok Park<br>AMOREPACIFIC R&I Center |
| 13:40-14:00 | Pathogenesis of gray hair | Do-Young Kim<br>Yonsei University |

* 위 프로그램은 상황에 따라 변경될 수 있습니다.

## 2022년 제18차 대한모발학회 학술대회 프로그램

| | | |
|---|---|---|
| 14:00-14:20 | Review of Active Ingredients Development to Prevent Gray Hair | Su na Kim<br>AMOREPACIFIC R&I Center |
| 14:20-14:40 | Review of gray hair covering technology development | Jonghyub Kim<br>AMOREPACIFIC R&I Center |
| 14:40-15:10 | **Special lecture** | CHAIR<br>Gwang Seong Choi<br>Inha University |
| 14:40-15:10 | The endless journey toward alopecia research | Woo-Young Sim<br>Kyunghee University |
| 15:10-15:30 | Coffee Break | |
| 15:30-16:30 | **Session 4. Patterned hair loss** | CHAIR<br>Dong-Youn Lee<br>Sungkyunkwan University<br>CHAIR<br>Soo Hong Seo<br>Korea University |
| 15:30-15:50 | Genetics and Androgenic Alopecia :<br>How much do genetics affect male pattern hair loss? | Jee Woong Choi<br>Ajou University |
| 15:50-16:10 | Evidence based approach to the botulinum toxin and hair loss | Byung Cheol Park<br>Dankook University |
| 16:10-16:30 | Promising trials for new androgenetic alopecia treatments | Min Sung Kim<br>Chosun University |
| 16:30-17:30 | **Session 5. KHRS scholarship lecture** | CHAIR<br>Yang Won Lee<br>Konkuk University<br>CHAIR<br>Sang Seok Kim<br>Hallym University<br>Kangdong Sacred Heart Hospital |
| 16:30-16:50 | The Evidence and Consensus Guidelines<br>for the Management of Patients with Alopecia Areata in Korea | Bark-Lynn Lew<br>Kyunghee University |
| 16:50-17:10 | A validation study of an alopecia areata severity assessment tool reflecting overall disease activity, “Alopecia Areata Progression Index, AAPI” | Yong Hyun Jang<br>Kyungpook National University |
| 17:10-17:30 | A nationwide cross-sectional study of molecular diagnosis of genetic hair disorders in Korea | Hyun-Tae Shin<br>Inha University |
| 17:30-17:40 | Closing Remarks | |
| 17:40- | KHRS General Assembly | |

* 위 프로그램은 상황에 따라 변경될 수 있습니다.

목차

## Session 1. Alopecia areata



## Session 2. Hair biology



## Luncheon Symposium / KHRS Board Meeting



## Session 3. Amorepacific symposium (Gray hair)

## Special lecture



## Session 4. Patterned hair loss



## Session 5. KHRS scholarship lecture



*2022 18th Annual Meeting of the Korean Hair Research Society*

## P-22 Long-term Prognosis of Subclinical Sensitization with Diphenylcyclopropenone in Patients with Alopecia Areata

Sang-Hoon Lee, MD, Yeon Woo Heo, MD, Won-Soo Lee, MD, PhD

*Department of Dermatology and Institute of Hair and Cosmetic Medicine, Yonsei University Wonju College of Medicine, Wonju, Korea*

87

## P-23 Increased Risk of Alopecia Areata in Patients with Autism Spectrum Disorders: A Korean Nationwide Population-based Study

Sang-Hoon Lee, MD[1], Solam Lee, MD[1], Seung Won Jeong, MD[1], Jinhee Lee, MD, PhD[2], and Won-Soo Lee, MD, PhD[1]

[1]*Department of Dermatology and Institute of Hair and Cosmetic Medicine, Yonsei University Wonju College of Medicine, Wonju, Korea*

[2]*Department of Psychiatry, Yonsei University Wonju College of Medicine, Wonju, Republic of Korea*

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Session 1

# Alopecia areata

09:30-10:40

CHAIR

Won-Soo Lee

Yonsei Wonju University

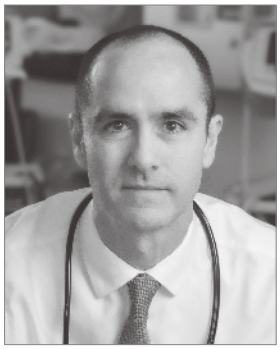
CHAIR

Chang Hun Huh

Seoul National University

KHRS

The Korean Hair Research Society



Brett.king@yale.edu

## Brett A. King, M.D., Ph.D.

### Education:

| | |
|---|---|
| B.A. | University of California, Santa Cruz (Chemistry) 1992 |
| Ph.D. | Stanford University (Chemistry) 2000 |
| M.D. | Yale University School of Medicine 2005 |

### Career/Academic Appointments:

| | |
|---|---|
| 2005-2006 | Intern, Internal Medicine, Massachusetts General Hospital, Boston, MA |
| 2006-2009 | Resident, Dermatology, Yale-New Haven Hospital, New Haven, CT |
| 2008-2009 | Postdoctoral Fellow, Dermatology, Yale University School of Medicine, New Haven, CT |
| 2009-2010 | Instructor, Dermatology, Yale University School of Medicine, New Haven, CT |
| 2011-2017 | Assistant Professor, Dermatology, Yale University School of Medicine |
| 2017-present | Associate Professor, Dermatology, Yale University School of Medicine |

### Administrative Positions:

| | |
|---|---|
| 2012-2017 | Medical Director, Yale Dermatology-Middlebury, Middlebury, CT |

### Board Certification:

| | |
|---|---|
| 2009 | American Board of Dermatology |

### Professional Honors & Recognition:

International/National/Regional

| | |
|---|---|
| 2009-2011 | National Institutes of Health Loan Repayment Program |
| 2008 | Women's Dermatologic Society Mentorship Award |

University

| | |
|---|---|
| 2005 | Alpha Omega Alpha Society |

# Clinical Challenges and Emerging Treatments

Brett King

*Yale University, USA*

Laboratory evaluation of patients who present with alopecia areata is common – likely because autoimmune comorbidities are commonly associated with alopecia areata – but may not be necessary. Alopecia areata severity classification has largely been ignored until recently, and the terms alopecia totalis and alopecia universalis may no longer be helpful. Janus kinase (JAK) inhibitors have ushered in a new era in alopecia areata, an era marked by the possibility of reliably effective treatment for severe disease. More than ever before, it is paramount to address these and other clinical challenges and understand current and future treatments of this common disease.

airmd@jbnu.ac.kr

## Jin Park

Department of dermatology, Jeonbuk (Chonbuk) National University Medical School, Jeonju, Korea

### Education and Training

| | |
|---|---|
| 1997-2003 | College of Medicine, Wonkwang University, Iksan, Korea |
| 2007-2011 | Resident, Department of Dermatology, Jeonbuk National University Hospital, Jeonju, Korea |
| 2007-2009 | M.S. in Dermatology, Jeonbuk National University, Jeonju, Korea |
| 2013-2018 | Ph.D. in Dermatology, Chonnam National University, Kwangju, Korea |

### Current and Past Professional Positions

| | |
|---|---|
| 2011-2012 | Instructor, Department of Dermatology, Jeonbuk National University Medical School, Jeonju, Korea |
| 2012-2015 | Assistant Professor, Department of Dermatology, Jeonbuk National University Medical School, Jeonju, Korea |
| 2015-2019 | Associate Professor, Department of Dermatology, Jeonbuk National University Medical School, Jeonju, Korea |
| 2020-present | Professor, Department of Dermatology, Jeonbuk National University Medical School, Jeonju, Korea |
| 2019-present | Guest researcher, Cutaneous microbiome and inflammation section, Dermatology branch, NIAMS, NIH, Maryland, US |

### Awards

| | |
|---|---|
| 2018 | Yong Investigator Award, Korean Society for Medical Mycology |

### Society Memberships

Korean Society of Dermatology
Korean Hair Research Society
Korean Society for Medical Mycology/Cutaneous Mycology

### Featured Publications

Park J, Schwardt NH, Jo JH, Zhang Z, Pillai V, Phang S, Brady SM, Portillo JA, MacGibeny MA, Liang H, Pensler M, Soldin SJ, Yanovski JA, Segre JA, Kong HH. Shifts in the skin bacterial and fungal communities of healthy children transitioning through puberty. J Invest Dermatol 2022;142(1):2112-219

Harkins CP, MacGibeny MA, Thompson K, Bubic B, Huang X, Brown I, Park J, Jo JH, Segre JA, Kong HH, Rozati S. Cutaneous T-Cell Lymphoma Skin Microbiome Is Characterized by Shifts in Certain Commensal Bacteria but not Viruses when Compared with Healthy Controls. J Invest Dermatol 2021;141(6):1604-1608

Hao L, Park J, Jang HY, Bae EJ, Park BH. Inhibiting Protein Kinase Activity of Pyruvate Kinase M2 by SIRT2 Deacetylase Attenuates Psoriasis. J Invest Dermatol 2021;141(2):355-363.

Kwak HB, Yun SK, Kim HU, Park J. Pityriasis Amiantacea: An Epidemiologic Study of 44 Cases in Korean Patients. Ann Dermatol. 2020;32(1):83-87.

Park SK, Park SW, Yun SK, Kim HU, Park J. Tinea capitis in adults: A 18-year retrospective, single-centre study in Korea. Mycoses. 2019;62(7):609-616.

### Major Interests

Alopecia, Skin infection, Skin microbiome

# What's new in pathogenesis of alopecia areata: possible role of skin-gut/oral axis?

Jin Park

*Department of dermatology, Jeonbuk National University Medical School, Jeonju, Korea*

Alopecia areata is a T-cell-mediated, autoimmune hair loss condition in genetically susceptible individuals. Although the pathogenesis of alopecia areata is not exactly understood, it has been suggested to be a consequence of loss of immune privilege of hair follicles, probably due to environmental triggers or dysregulation of the immune system. The human microbiome is a key regulator for the immune system and maintain homeostasis by communicating with tissues in a bidirectional manner. Microbial dysbiosis in the skin or gut/oral cavity is associated with an altered immune response and the development of several inflammatory skin diseases, such as atopic dermatitis, acne, and rosacea.

Immunomodulatory potential of the microbiome on distant organ sites is an expanding research field. Notably, the influence of gut microbiota extends beyond gut and thus regulates the immune system of distant organs such as skin, clarifying the existence of the "gut-skin" axis. Gut microbiota play a role in autoimmune disease that are related with alopecia areata including inflammatory bowel disease, systemic lupus erythematosus, and rheumatoid arthritis. Since two cases of alopecia areata who developed hair regrowth after fecal microbiota transplantation have been reported, emerging evidence suggests that gut microbiota may contribute to the pathogenesis of alopecia areata. While data are limited, a few microbiome studies in human and mice have demonstrated that the gut bacterial composition of alopecia areata was distinct from that of healthy controls; alopecia areata displayed higher or lower in relative abundance of specific genera compared with controls, although the distinguishing taxa were different in each study. A possible hypothesis how the gut microbita contribute to alopecia areata development is that the reduced short chain fatty acid (butyrate)-producing bacteria results in downregulation of regulatory T cells and upregulation of pro-inflammatory cytokines, providing possible insights into how the gut microbiota contributes to alopecia areata pathogenesis.

resina20@gmail.com

## Young Lee

Department of Dermatology, Chungnam National University, Daejeon, Korea

### Education and Training

| | |
|---|---|
| 2005.02 | M.S. in Dermatology, Chungnam National University, Daejeon, Korea |
| 2008.02 | Ph.D in Dermatology, Chungnam National University, Daejeon, Korea |

### Current and Past Professional Positions

| | |
|---|---|
| 2011.03-2014.08 | Assistant Professor, Department of Dermatology, Chungnam National University, Korea |
| 2014.09-2018.08 | Associate Professor, Department of Dermatology, Chungnam National University, Korea |
| 2019.08-2020.08 | Visiting Scholar, Department of Dermatology, Rutgers, New Jersey Medical School. New Jersey, USA |
| 2018.09-present | Professor, Department of Dermatology, Chungnam National University, Korea |

### Awards

| | |
|---|---|
| 2015 | Research award (Daejeon Medical R&D Forum) |
| 2017 | Uam award (The Korean Society for Investigative Dermatology) |
| 2017 | 27$^{th}$ KOFST award |

### Society Memberships

Member of the Korean Hair Research Society
Member of Korean Society for Investigative Dermatology
Member of Korean Society of Dermatology

### Featured Publications

Shin JM, Lee Y. Putative therapeutic mechanisms of simvastatin in the treatment of alopecia areata. J Am Acad Dermatol 2021;84:782-784
Shin JM, Lee Y. Exome sequencing reveals novel candidate gene variants associated with clinical characteristics in alopecia areata patients. J Dermatol Sci. 2020;99:216-220
Shin JM, Lee Y, Park KD. Clinical Relevance for Serum Cold-Inducible RNA-Binding Protein Level in Alopecia Areata. Ann Dermatol. 2019;31:387-392
Shin JM, Lee Y. Induction of alopecia areata in C3H/HeJ mice using polyinosinic-polycytidylic acid (poly[I:C]) and interferon-gamma. Sci Rep. 2018 21;8:12518
Shin JM, Lee Y. Double-stranded RNA induces inflammation via the NF-κB pathway and inflammasome activation in the outer root sheath cells of hair follicles. Sci Rep. 2017 7;7:44127

### Major Interests

Alopecia areata, androgenetic alopecia, female pattern hair loss, vitiligo

# Promising trials for new alopecia areata treatment

Young Lee

*Department of Dermatology, Chungnam National University, Daejeon, Korea*

Alopecia areata (AA) is a common T cell-mediated autoimmune disorder characterized by non-scarring hair loss. Although AA is considered benign, it is estimated that approximately 14-25% of affected individuals will have eventual total loss of hair on the scalp. Recent genetic studies uncovered new molecular pathways disrupted in AA and controlling JAK-STAT signaling with JAK inhibitors produced marked clinical improvement in patients with severe AA, resulting in downregulation of Th1 selective cytokine secretion.

The JAK family, comprising JAK1/2/3 and tyrosine kinase 2 (TYK2), modulates various inflammatory pathways via signal transduction. First generation of JAK inhibitors, such as baricitinib, ruxolitinib, and tofacitinib, inhibit many JAKs. The second-generation JAK inhibitors are more selective to particular JAK isoforms to limit adverse effects and possibly maintain treatment efficacy.

Recently, two phase 3 trials (BRAVE-AA1 and BRAVE-AA2) of baricitinib (JAK1/2 inhibitor) showed superior efficacy in hair growth compared to placebo at 36 weeks in severe AA patients. In phase II trial, ritlecitinib (PF-06651600, JAK 3 inhibitor) and brepocitinib (PF-06700841, TYK2/JAK1 inhibitor) were found to be well tolerated and led to clinical meaningful improvements in hair growth. CTP-543 (JAK1/2 inhibitor) also showed significant hair regrowth in severe AA patients after 24 weeks of treatment. Topical JAK inhibitors for the treatment of localized AA could be proven useful, but more studies are needed for validation. Several JAK inhibitors, although yet not studied in AA, are under clinical trials for rheumatoid disorders and hematologic disorders (delgocitinib, filgotinib, itacitinib, etc.). In future, numerous additional studies are anticipated that will evaluate the systemic or topical application of JAK inhibitors in AA treatment.

Session 2

# Hair biology

11:00-12:20

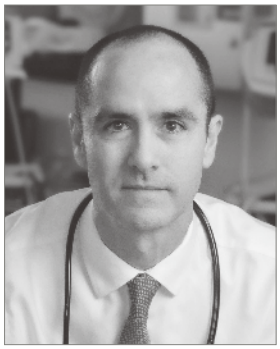
CHAIR

Hoon Kang
Catholic University

CHAIR

Ohsang Kwon
Seoul National University

KHRS
The Korean Hair Research Society



Brett.king@yale.edu

## Brett A. King, M.D., Ph.D.

### Education:

| | |
|---|---|
| B.A. | University of California, Santa Cruz (Chemistry) 1992 |
| Ph.D. | Stanford University (Chemistry) 2000 |
| M.D. | Yale University School of Medicine 2005 |

### Career/Academic Appointments:

| | |
|---|---|
| 2005-2006 | Intern, Internal Medicine, Massachusetts General Hospital, Boston, MA |
| 2006-2009 | Resident, Dermatology, Yale-New Haven Hospital, New Haven, CT |
| 2008-2009 | Postdoctoral Fellow, Dermatology, Yale University School of Medicine, New Haven, CT |
| 2009-2010 | Instructor, Dermatology, Yale University School of Medicine, New Haven, CT |
| 2011-2017 | Assistant Professor, Dermatology, Yale University School of Medicine |
| 2017-present | Associate Professor, Dermatology, Yale University School of Medicine |

### Administrative Positions:

| | |
|---|---|
| 2012-2017 | Medical Director, Yale Dermatology-Middlebury, Middlebury, CT |

### Board Certification:

| | |
|---|---|
| 2009 | American Board of Dermatology |

### Professional Honors & Recognition:

International/National/Regional

| | |
|---|---|
| 2009-2011 | National Institutes of Health Loan Repayment Program |
| 2008 | Women's Dermatologic Society Mentorship Award |

University

| | |
|---|---|
| 2005 | Alpha Omega Alpha Society |

# A revolution in dermatology: JAK inhibitors for refractory skin disease

Brett King

*Yale University, USA*

Besides the biologics for psoriasis and more recently dupilumab for atopic dermatitis, the treatment of the majority of inflammatory skin diseases has relied on nontargeted immunosuppressants such as prednisone, methotrexate, azathioprine, mycophenolate, and cyclosporine. Systemic corticosteroids are not tenable for the treatment of chronic skin disease and the other therapeutics are often inadequate. Janus kinase (JAK) inhibitors are a relatively new class of medicines that modulate signaling of several cytokines that are important mediators of inflammatory skin disease and thus present a unique opportunity for effective treatment of previously refractory diseases such as alopecia areata, atopic dermatitis, dermatomyositis, granuloma annulare and sarcoidosis, lichen planus, morphea, psoriasis, pruritus and vitiligo.

yachieh_hsu@harvard.edu

## Ya-Chieh Hsu, Ph.D.

Professor Department of Stem Cell and Regenerative Biology, Harvard University

### Professional Positions Held

| | |
|---|---|
| 2014-2018 | Assistant Professor-Dept of Stem Cell & Regenerative Biology, Harvard University |
| 2014-present | Principal Faculty-Harvard Stem Cell Institute |
| 2015-present | Associate Member-The Broad Institute |
| 2018-2021 | Alvin and Esta Star Associate Professor-Dept of Stem Cell & Regenerative Biology, Harvard University |
| 2021-present | Professor-Dept of Stem Cell & Regenerative Biology, Harvard University |

### Education and Training

| | |
|---|---|
| 1998-2002 | B.Sc. in Life Sciences, National Tsing-Hua University, Taiwan |
| 2000-2001 | Visiting Student in Biochemistry, University of Toronto, Canada |
| 2002-2008 | Ph.D. in Developmental Biology, Baylor College of Medicine, Houston, TX, Advisor: Dr. Kwang-Wook Choi |
| 2008-2014 | Postdoctoral Fellow, The Rockefeller University, New York, NY, Advisor: Dr. Elaine Fuchs |

### Honors and Awards

| | |
|---|---|
| 2016-2018 | Basil O'Connor Starter Scholars Award, March of Dimes Birth Defects Foundation |
| 2017-2021 | The Pew Scholar, Pew Charitable Trusts |
| 2018 | Harvard FAS Dean's Award, Harvard University |
| 2019-2022 | Research Scholars Award, American Cancer Society |
| 2018-2020 | Smith Odyssey Award, Smith Family Foundation |
| 2019 | Roslyn Abramson Award, Harvard University-Excellence and sensitivity for undergraduate teaching |
| 2020 | LEO Foundation Award, The LEO Foundation-Outstanding research |
| 2020-2024 | NYSCF-Robertson Investigator, New York Stem Cell Foundation |
| 2020 | Special Commendation: Extraordinary Teaching in Extraordinary Times, Harvard University<br>Special teaching award recognizing outstanding contributions during the abrupt online transition in Spring, 2020 |

### Publications (* Corresponding author)

#### Research Articles

1. Matilde Miranda, Itzetl Avila, Jasmine Esparza, Yuila Shwartz, Ya-Chieh Hsu; Rebecca Berdeaux, William Lowry (2021) Defining a Role for G-Protein Coupled Receptor/cAMP/CRE-Binding Protein Signaling in Hair Follicle Stem Cell Activation. *Journal of Investigative Dermatology, S0022-202X(21)01454-8.*

2. Sekyu Choi, Bing Zhang, Sai Ma, Meryem Gonzalez-Celeiro, Daniel Stein, Xin Jin, Seungtea Kim, Yuan-Lin Kang, Antoine Besnard, Amelie Rezza, Laura Grisanti, Jason Buenrostro, Michael Rendl, Matthias Nahrendorf, Amar Sahay, Ya-Chieh Hsu* (2021) Corticosterone inhibits GAS6 to govern hair follicle stem-cell quiescence. *Nature, 592 (7854): 428-432.*

3. Aimee Flores, Sekyu Choi, Ya-Chieh Hsu, William Lowry (2021) Inhibition of pyruvate oxidation as a versatile stimulator of refractory hair cycling. *Experimental Dermatology,* 30 (4):448-456.

4. Inbal Rachmin, Ju Hee Lee, Bing Zhang, James Sefton, Inhee Jung, Young In Lee, Ya-Chieh Hsu, David E. Fisher (2021). Stress-associated ectopic differentiation of melanocyte stem cells and ORS amelanotic melanocytes in an ex vivo human hair follicle model. *Experimental Dermatology* 30(4): 578-587.

5. Bing Zhang, Megan He, Seung Tea Kim, Ya-Chieh Hsu* (2021) Melanocortin 1 receptor is dispensable for acute stress induced hair graying in mice. *Experimental Dermatology* 30(4):572-577.

# Skin Deep: Stem Cells at the Nexus of the Niche, Physiology, and the External Environment

Ya-Chieh Hsu

*Harvard University, USA*

Chronic, sustained exposure to stressors can profoundly impact tissue homeostasis and regeneration. However, how stress leads to tissue changes remain largely elusive. Here, we report that the adrenal gland-derived stress hormone corticosterone (the cortisol equivalent in rodents) enforces hair follicle stem cell quiescence in mice. Without corticosterone, hair follicle stem cells lose quiescence and enter continuous rounds of regeneration cycles throughout life with no signs of exhaustion. Conversely, under chronic stress, elevated corticosterone levels prolong hair follicle stem cell quiescence and inhibit hair follicle regeneration. Mechanistically, corticosterone acts on the dermal niche to suppress the expression of Growth Arrest Specific 6 (Gas6), a secreted factor that stimulates hair follicle stem cell activation. Of significance, restoring Gas6 expression levels is sufficient to overcome the stress-induced regeneration block on hair follicle stem cells. Our findings delineate a cellular and molecular mechanism by which stress leads to defects in tissue regeneration. Moreover, we identify corticosterone as a potent systemic inhibitor of hair follicle stem cell activity via its impact on the niche, and demonstrate that removal of such inhibition drives hair follicle stem cells into continuous regeneration cycles without losing stem cell potential.

byeongcheolahn@gmail.com

## Byeong-Cheol Ahn

Department of Nuclear Medicine, School of Medicine, Kyungpook National University, Kyungpook National University Hospital, Daegu, Korea

### Education and Training

| | |
|---|---|
| 1984-1990 | School of Medicine, Kyungpook National University, Daegu, Korea. (M.D.) |
| 1993-1997 | Kyungpook National University, Daegu, Korea (PhD) |
| 1991-1995 | Resident, Department of Internal Medicine, Kyungpook National University Hospital, Daegu (Korean Board of Internal Medicine) |
| 1995-1997 | Resident, Department of Nuclear Medicine, Kyungpook National University Hospital, Daegu (Korean Board of Nuclear Medicine) |
| 2007-2009 | Visiting Professor, Stanford Medical School, Stanford University, USA |

### Current and Past Professional Positions

| | |
|---|---|
| 2000-present | Professor, School of Medicine, Kyungpook National University |
| 2000-present | Professor, Department of Nuclear Medicine, Kyungpook National University Hospital |
| 2009-present | Director, Department of Nuclear Medicine, Kyungpook National University Hospital |
| 2021-present | Secretory General, Asia and Oceania Thyroid Association |
| 2022-present | Auditor director, The Korean Society of Molecular Imaging |
| 2014-present | Academic Editor, PLOS ONE |
| 2015-present | Associate Editor, Nuclear Medicine and Molecular Imaging |
| 2017-present | President, Thyroid Research Group of The Korean Society of Nuclear Medicine |
| 2021-present | International Liaison Board, Korean Academy of Medical Sciences |
| 2021-present | Director of International Cooperation Committee, Korean Thyroid Association |
| 2011-present | Editorial board member, American Journal of Nuclear Medicine and Molecular Imaging |
| 2013-present | Editorial board member, Asia Oceania Journal of Nuclear Medicine and Biology |
| 2019-present | Editorial board member, Annals of thyroid |

### Awards

| | |
|---|---|
| 2021 | Award of Basic Medical Research, Korean Thyroid Association |
| 2021 | Award of Best Oral Presentation, Korean Thyroid Association |
| 2018 | Academic Award for Best Paper, Korean Thyroid Association |
| 2018 | Best academic Award, Kyungpook National University Hospital |
| 2017 | Best academic Award, Korean Society of Nuclear Medicine |
| 2017 | Academic Award, Korean Thyroid Association |
| 2015 | Award for Best Research, Ministry of Science, ITC, and future planning, Korea |
| 2013 | Award of Excellent oral presentation, Korean Thyroid Association |
| 2012 | Academic Award for Best Paper, Korean Society of Nuclear Medicine |
| 2012 | Best academic Award, Kyungpook National University Hospital |
| 2012 | Faculty Award for Research Excellence, Kyungpook National University School of Medicine |
| 2010 | Author of Excellent Academic Book, Ministry of Cultures, Sports and Tourism, Korea |
| 2009 | Academic Award for Best Paper, The Korean Society of Nuclear Medicine |
| 2003 | Daiichi Academic Award, The Korean Society of Nuclear Medicine |
| 1996 | Young Investigator Award, Asia-Oceania Society of Nuclear Medicine and Biology |
| 1990 | Summa Cum Laude, Kyungpook National University, School of Medicine |

# Application of Cell-Derived Nanovesicles for Hair Growth

Byeong-Cheol Ahn, MD, PhD

*Department of Nuclear Medicine, School of Medicine, Kyungpook National University, Kyungpook National University Hospital, Daegu, Korea*

Hair loss is one of the most common disorders affects both male and female patients seek treatments. Cell-derived nanovesicles (natural extracellular vesicles and engineered nanovesicles) are carrying various biologicals materials such as proteins, lipids, mRNA, miRNA and DNA. Extracellular vesicles or engineered nanovesicles are capable of deliver endogenous materials and exogenous drugs for regenerative therapies. Recent studies revealed that cell-derived nanovesicles can serve as new treatment strategies for hair growth. The in-depth understanding of the mechanisms by cell-derived nanovesicles carry out therapeutic effects for hair growth accelerates successful clinical translation of cell-derived nanovesicles for treating hair loss. One of beauty characteristics of cell-derived nanovesicles is their ability as drug carriers, therefore, their therapeutic effects can be augmented by incorporating effective drugs.

In this presentation, findings what my laboratory experienced about the role of cell-derived nanovesicles to hair growth will be discussed.

# Luncheon Symposium

12:30-13:40

Hyun-Tae Shin
Inha University

KHRS
The Korean Hair Research Society

hyuntae.shin@inha.ac.kr

## Hyun-Tae Shin

Department of Dermatology, Inha University School of Medicine, Incheon, Korea

### Education and Training

| | |
|---|---|
| 2014.03-2019.02 | Ph.D. in department of health sciences and technology, SAIHST, Sungkyunkwan University, Seoul, Korea. |
| 2013.03-2014.02 | M.S. in department of dermatology, school of medicine, Sungkyunkwan University, Seoul, Korea. |
| 2003.03-2009.03 | M.D. in school of medicine, Inha University, Incheon, Korea. |

### Current and Past Professional Positions

| | |
|---|---|
| 2021.01-Present | Assistant professor in department of dermatology, Inha University School of Medicine, Incheon, Korea. |
| 2020.03-2020.12 | Clinical assistant professor in department of dermatology, Inha University School of Medicine, Incheon, Korea. |
| 2019.03-2020.02 | Research doctor, Veterans Medical Research Institute, Veterans Health Service Medical Center, Seoul, Korea. |
| 2014.03-2019.02 | Researcher, Samsung Genome Institute, Samsung Medical Center, Seoul, Korea. |
| 2010.03-2014.02 | Resident in department of dermatology, Samsung Medical Center, Seoul, Korea. |

### Society Memberships

Korean Hair Research Society

### Featured Publications

Long-term efficacy and safety of intravenous injection of clonal mesenchymal stem cells derived from bone marrow in five adults with moderate to severe atopic dermatitis. Shin HT, Lee SH, Yoon HS, Heo JH, Lee SB, Byun JW, Shin J, Cho YK, Chung E, Jeon MS, Song SU, Choi GS. J Dermatol. 2021 Aug;48(8):1236-1242.

Evolutionary processes of melanomas from congenital melanocytic nevi. Lim Y, Shin HT, Choi Y, Lee DY. Pigment Cell Melanoma Res. 2020 Mar;33(2):318-325.

Junction Location Identifier: Accurate Detection of DNA Fusions in Clinical Sequencing for Precision Oncology. Shin HT, Kim NKD, Yun JW, Lee B, Kyung S, Lee KW, Ryu D, Kim J, Bae JS, Park D, Choi YL, Lee SH, Ahn MJ, Park K, Park WY. J Mol Diagn. 2019 Dec 25. pii: S1525-1578(19)30456-8.

Prevalence and detection of low-allele-fraction variants in clinical cancer samples. Shin HT, Choi YL, Yun JW, Kim NKD, Kim SY, Jeon HJ, Nam JY, Lee C, Ryu D, Kim SC, Park K, Lee E, Bae JS, Son DS, Joung JG, Lee J, Kim ST, Ahn MJ, Lee SH, Ahn JS, Lee WY, Oh BY, Park YH, Lee JE, Lee KH, Kim HC, Kim KM, Im YH, Park K, Park PJ, Park WY. Nat Commun. 2017 Nov 9;8(1):1377.

Histopathological analysis of the progression pattern of subungual melanoma: late tendency of dermal invasion in the nail matrix area. Shin HT, Jang KT, Mun GH, Lee DY, Lee JB. Mod Pathol. 2014 Nov;27(11):1461-7.

### Major Interests

Genetic disease, Hair disease, Computational biology

# Long term effectiveness and safety of dutasteride versus finasteride in patients with androgenic alopecia in South Korea

Hyun-Tae Shin

*Department of Dermatology, Inha University School of Medicine, Incheon, Korea*

Androgenetic alopecia is an androgen-induced, progressive disorder, which is the most common type of baldness. Dihydrotestosterone, the main pathogenic androgen in androgenetic alopecia, is produced by conversion of testosterone, which is catalyzed by the 5-alpha reductase isoenzyme family. 5α-reductase inhibitors, finasteride and dutasteride, are efficacious for treatment of androgenetic alopecia. Finasteride, which is a single receptor 5-alpha reductase inhibitor, acts by blocking dihydrotestosterone. Dutasteride, a dual receptor dihydrotestosterone blocker, has a higher potency than finasteride. Currently, there is insufficient evidence to show the advantages and disadvantages of the both drugs. Today, I will review the evidence comparing the efficacy and safety of dutasteride and finasteride.

Session 3

# AmorePacific Symposium (Gray hair)

13:40-14:40

CHAIR

Moon-Bum Kim

Pusan National University

CHAIR

Won-Seok Park

AMOREPACIFIC R&I Center

KHRS

The Korean Hair Research Society

dykim@yuhs.ac

## Do-Young Kim, M.D.,Ph.D.

Department of Dermatology & Cutaneous Biology Research Institute, Yonsei University College of Medicine, Seoul, Korea

### Education and Training

| | |
|---|---|
| 1997-2003 | B.S. at Yonsei University College of Medicine, Seoul, Korea |
| 2004-2008 | Resident, Dermatology, Severance Hospital, Seoul, Korea |
| 2017-2019 | M.S. at Yonsei University, Seoul, Korea (Dermatology) |
| 2019-present | Ph.D. at Yonsei University, Seoul, Korea (Dermatology) |

### Current and Past Professional Positions

| | |
|---|---|
| 2011-2014 | Instructor / Clinical Assistant Professor, Department of Dermatology, Yonsei University College of Medicine, Seoul, Korea |
| 2014-2019 | Assistant Professor, Department of Dermatology, Yonsei University College of Medicine, Seoul, Korea |
| 2017-2019 | Guest Researcher, Dermatology Branch (Keisuke Nagao Lab), NIAMS, National Institutes of Health, Bethesda, MD, USA |
| 2019-present | Associate Professor, Department of Dermatology, Yonsei University College of Medicine, Seoul, Korea |

### Society Memberships

Korean Hair Research Society
Korean Society for Investigative Dermatology
Korean Society for Beh et's Disease

### Featured Publications

Chung KB, Oh J, Roh WS, Kim TG, **Kim DY**. Core Gene Signatures of Atopic Dermatitis Using Public RNA-Sequencing Resources: Comparison of Bulk Approach with Single-Cell Approach. J Invest Dermatol. 2022; 142:717-721
Hwang JH, Lee HY, ⋯, **Kim DY**. Non-thermal atmospheric pressure plasma activates Wnt/β-catenin signaling in dermal papilla cells. Sci Rep 2021;11(1):16125.
**Kim DY**, Kobayashi T, Voisin B, ⋯, Nagao K. Targeted therapy guided by single-cell transcriptomic analysis in drug-induced hypersensitivity syndrome/drug reaction with eosinophilia and systemic symptoms: A case report. Nat Med, 2020; 26:236-243.
**Kim DY**, Chung KB, Kim TG. Application of single-cell RNA sequencing on human skin: Technical evolution and challenges. J Dermatol Sci 2020;99:74-81.
Hwang JH, Chu H, Ahn Y, Kim J, **Kim DY**. HMGB1 promotes hair growth via the modulation of prostaglandin metabolism. Sci Rep. 2019;9(1):6660.

### Major Interests

Hair disorders, Beh et's disease, Drug adverse events

# Pathogenesis of hair graying

Do-Young Kim

*Department of Dermatology & Cutaneous Biology Research Institute,*
*Yonsei University College of Medicine, Seoul, Korea*

Hair graying or canities is an common condition associated aging and infrequently certain diseases.
The activity of melanocytes in the hair matrix is under cyclical control where melanogenesis and anagen are tightly coupled. Melanocytes in the hair bulb are terminally differentiated and a pool of undifferentiated melanocyte stem cells (MeSCs) exist in hair bulge which replenish the differentiated melanocytes.
Previous investigators have proposed that oxidative nature of melanin biosynthesis itself is cytotoxic, leading to degeneration of melanocytes and naturally hair graying. Still many hypothetical factors are proposed as the cause of hair graying, however, based on Dct-LacZ transgenic mouse model in 2005, incomplete maintenance and premature differentiation of MeSCs are considered the main pathomechanism of hair graying.
Factors causing the depletion and dysfunction of MeSCs can be divided into two aspects; 1) niche condition, and 2) local factors surrounding the hair follicle. MeSCs reside in the bulge which provides the appropriate niche for the homeostasis of both keratinocyte- and melanocyte stem cells. We will briefly discuss on the how niche factors support and regulate the quiescence of MeSCs. In addition, based on recent studies on stress and sympathetic nerves, immune cells and adipocytes surrounding hair follicle, microenvironments surround hair follicle are emerging as important regulators for hair pigmentation.Thus, understanding the MeSCs, melanocyte niches and microenvironments will be helpful to disrupt any step leading to hair graying and potentially develop new strategy for the reverse of hair graying.

suna6951@amorepacific.com

## Su Na Kim

AMOREPACIFIC R&I Center

### Education and Training

2006-2008 M.S. in College of Pharmacy, Seoul National University, Seoul, Korea

### Current and Past Professional Positions

2019-Present Leader of Hair Science Part in Bioscience Lab
2017-2018 Hair Project Leader in Future Technology Lab
2015-2017 Researcher in Scalp Hair Research TF
2010-2014 Researcher in Advanced Hair Research Lab
2008-2009 Researcher in Hair Care Team

### Featured Publications

Fermented Jeju Soybean Extract Promotes Hair Growth in Human Hair Follicle Organ Culture and Clinical Trial. Korean Journal of Cosmetic Science Vol. 47, No. 3, September 2021, 255-263
Efficacy of Caffeine in Promoting Hair Growth by Enhancing Intracellular Activity of Hair Follicles. Korean Journal of Cosmetic Science Vol. 1, No. 1, December 2019, 11-18
Panax ginseng extract antagonizes the effect of DKK-1-induced catagen-like changes of hair follicles. Int J Mol Med. 2017 Oct;40(4):1194-1200
Ageing-Related Features of Hair and Scalp in Chinese Women by Clinical Evaluation Study. Journal of Cosmetics, Dermatological Sciences and Applications, 2017, 7, 245-257
Isolation and identification of Malassezia species from Chinese and Korean patients with seborrheic dermatitis and in vitro studies on their bioactivity on sebaceous lipids and IL-8 production. Mycoses. 2016 May;59(5):274-80
The ginsenosides of Panax ginseng promote hair growth via similar mechanism of minoxidil. J Dermatol Sci. 2015 Feb;77(2):132-4
The inhibitory effect of Scutellaria baicalensis extract and its active compound, baicalin, on the translocation of the androgen receptor with implications for preventing androgenetic alopecia. Planta Med. 2014 Feb;80(2-3):153-8
Characteristic features of ageing in Korean women's hair and scalp. Br J Dermatol. 2013 Jun;168(6):1215-23
Effects of in vitro-digested ginsenosides on lipid accumulation in 3T3-L1 adipocytes. Planta Med. 2009 May;75(6):596-601
Simultaneous quantification of 14 ginsenosides in Panax ginseng C.A. Meyer (Korean red ginseng) by HPLC-ELSD and its application to quality control. J Pharm Biomed Anal. 2007 Sep 21;45(1):164-170

### Major Interests

Hair cosmetics, Alopecia, Scalp, Hair biology

# Review of Active Ingredients Development to Prevent Gray Hair

Su Na Kim

*AMOREPACIFIC R&I Center, Yong-in, Republic of Korea*

Gray hair is one of the most prominent symptoms of human aging. As the function of hair melanocytes decreases with aging, the production of hair melanin decreases, resulting in gray hair. Hair dye is most often used to cover up gray hair, however, there are several studies and products stimulating melanin production in hair melanocytes for preventing gray hair. These ingredients promote melanin synthesis signaling, such as the expression of melanin synthesis enzymes and transcription factors in hair melanocytes, or down-regulate melanin synthesis inhibitors, such as hydrogen peroxide production. The gray hair care products containing these biological active ingredients are provided as a topical cosmetics and dietary supplements. However, the effects of these active ingredients have not satisfied people's expectation. The further studies for developing effective ingredients for gray hair treatment are necessary.

j_kim@amorepacific.com

## Jonghyub Kim

Amorepacific R&I center

### Education and Training

| | |
|---|---|
| 1997-2004 | Hanyang University College of Chemistry, Seoul, Korea |
| 2004-2006 | Hanyang University College of Chemistry(master), Seoul, Korea |

### Current and Past Professional Positions

| | |
|---|---|
| 2006-2014 | Amorepacific R&D unit, Haircare research team, Senior Researcher |
| 2014-2017 | Amorepacific R&D unit, Haircare research 3 team, Team leader |
| 2018-2020 | Amorepacific R&D unit, HairBodyDental research 3 team, Team leader |
| 2021- | Amorepacific R&I center, HairBodyDental research 1 team, Team leader |

### Featured Publications

Hydrogen peroxide and monoethanolamine are the key causative ingredients for hair dye-induced dermatitis and hair loss, J Dermatol Sci. 2012 Apr;66(1):12-9

### Major Interests

Hair cosmetics

# Chemistry and characteristics of hair coloring

Jonghyub kim

*Amorepacific R&I center, 1920, Yonggu-daero, Giheung-gu, Yongin-si, Gyeonggi-do*

Hair coloring is being commonly used to change the color of hair for beauty. Hair coloring can be classified in various ways. It is divided into permanent, semi-permanent, and temporary depending on the duration. Depending on the formula, it may be divided into a cream type, a gel type, a foam type, a shampoo type and so on.

Recently, hair coloring shampoo products through various dyeing methods have been released in Korea. Coloring shampoo provides the convenience of not coloring additionally or increasing the wash fastness. It can be largely classified into an oxidation method and a non-oxidization method. The oxidation method can be divided into using hydrogen peroxide and a method using oxygen in the air. The non-oxidation method can be divided into using colorant, mordant and so on.

There are chemical and physical principles and characteristics according to each coloring methods.

# Special lecture

14:40-15:10

CHAIR

Gwang Seong Choi
Inha University

KHRS
The Korean Hair Research Society

# Special lecture

## Woo-Young Sim, M.D.

Professor, Department of Dermatology, College of Medicine, Kyung Hee University, Seoul, Korea

### Education and Training

| | |
|---|---|
| 1976-1982 | College of Medicine, Kyung Hee University, Seoul, Korea |
| 1993-1997 | Assistant Professor, Dept. of Dermatology, College of Medicine, Kyung Hee University |
| 1994-1995 | Research Fellow, Dept. of Dermatology, University of Sheffield, UK |
| 2002- | Professor Dept. of Dermatology, College of Medicine, Kyung Hee University |

### Career Highlight

| | |
|---|---|
| 1999-2006 | Secretary General, Korean Hair Research Society |
| 2011-2013 | General Secretory, Korean Dermatolgoical Association |
| 2014-2016 | President, Korean Hair Research Society |

# The endless journey toward alopecia research

심 우영

*강동경희대병원 피부과*

피부부속기인 모발 질환 및 모발 생물학은 최근 이삼십년 사이 많은 발전을 이루고 있다. 세계적으로 약 삼십년전부터 모낭의 stem cell의 발견, immune previlege 등의 개념이 정립되고, 원형탈모 환자를 대상으로 한 GWAS에서 NKG2D 수용체와의 관련성이 발견되고 이를 통하여 JAK 억제제의 효과가 입증되고 있어 지금까지 치료에 반응하지 않았던 전두 탈모환자의 치료에 새 장을 열고 있다. 남성형 탈모도 이십여년 전 개발된 finasteride로 치료하므로 그 이전과 전혀 다른 세상이 펼쳐지고 있다.
이는 세계모발학회의 발전과 평행을 이룬다고 말할 수 있다. 더욱이 세계모발학회의 발전에 대한모발학회의가 함께 하였다는데 대한모발학회의 회원으로 큰 자부심을 느낀다. 1998년 시작된 대한모발학회 창립부터 현재까지 발전되는 모습을 지켜보며 가슴 깊이 무한한 감동을 느낀다. 또한 예전의 일로 사라져 가는 대한모발학회의 시작 때의 모습을 여러 회원들과 공유하고자 한다. 뿐만 아니라 모발 생물학, 원형탈모, 남성형탈모의 발생 기전을 밝히는 중요한 연구들에 대해서도 소개한다.

Session 4

# Patterned hair loss

15:30-16:30

CHAIR

Dong-Youn Lee
Sungkyunkwan University

CHAIR

Soo Hong Seo
Korea University

KHRS
The Korean Hair Research Society

jwchoi@ajou.ac.kr

## Jee Woong Choi

Assistant Professor Department of Dermatology Ajou University School of Medicine

### Education and Training

| | |
|---|---|
| 2007 | M.D., Seoul National University College of Medicine, Seoul, Korea |
| 2007-2008 | Internship, Samsung Medical Center, Seoul, Korea |
| 2008-2012 | Resident, Department of Dermatology, Seoul National University Hospital, Seoul, Korea |
| 2012 | M.S., Seoul National University Graduate School of Medicine, Seoul, Korea |
| 2018 | Ph.D., Seoul National University Graduate School of Medicine, Seoul, Korea |

### Current and Past Professional Positions

| | |
|---|---|
| 2012-2015 | Public Health Doctor, Danyang Public Health Care Center, Danyang, Korea |
| 2015-2017 | Clinical Fellow, Seoul National University Bundang Hospital, Seongnam, Korea |
| 2017-2020 | Clinical Assistant Professor, Department of Dermatology, Ajou University Medical Center |
| 2020-present | Assistant Professor, Department of Dermatology Ajou University School of Medicine |

### Awards

| | |
|---|---|
| 2010 | Travel Grant, Korean Hair Research Society |
| 2017 | Travel Grant, Korean Hair Research Society |
| 2018 | Research Grant, 1st Korean Hair Research Society |
| 2020 | Amore Pacific Scholarship |

### Society Memberships

The Korean Dermatological Association
The Korean Hair Research Society
The Korean Society of Skin Cancer
The Korean Society for Dermatologic Surgery

### Featured Publications

Kim JC, Lee E, Choi JW. Impacts of Alopecia Areata on Psychiatric Disorders : A Retrospective Cohort Study. J Am Acad Dermatol. 2020 Feb;82(2):484-486
Kim JC, Choi JW. Impacts of Alopecia Areata on Subsequent pregnancy. Australas J Dermatol. 2021 Feb;62(1):e121-e123
Lee H, Kim YC, Choi JW. Alopecia areata is not a risk factor for heart diseases. PLOS one, 2021 May 7;16(5):e0250216
Choi JW, Kim DC, et al. A Survey of Non-dermatologic Facility Uses in Hair Loss Patients: A Nationwide Multi-Center Questionnaire Study. J Eur Acad Dermatol Venereol. 2021 Sep;35(9):e594-e597
Choi JW, Huh CH, Choi GS. Hair loss is related to suicidality and psychological adverse events rather than finasteride use. JAMA Dermatol. 2021 Jun 1;157(6):737-738

### Major Interests

Hair and nail disorders, skin cancer, dermatologic surgery

# Genetics and Androgenic Alopecia : How much do genetics affect male pattern hair loss?

Jee Woong Choi, M.D., Ph.D.

*Assistant Professor, Department of Dermatology*
*Ajou University School of Medicine*

Androgenic or androgenetic alopecia (AGA) is a highly heritable condition, and the most common form of hair loss in men. A genetic predisposition and androgen status (androgen sensitivity) are considered as major risk factors for this condition. Several recent advances in molecular biology and genetics have increased our understanding of the mechanisms of hair loss in androgenetic alopecia. However, the majority of contributing genetic risk factors other than androgen receptor gene still await identification. In this presentation, I will review the current status of AGA genetic research.

<Contents>

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## Byung Cheol Park, M.D., Ph.D.

Department of Dermatology, Dankook Medical College, Korea

### Education and Training

| | |
|---|---|
| 1994-2000 | M.D., School of medicine, KyungPook National University(KNU) |
| 2004-2008 | Resident, Department of Dermatology, KNU hospital, Korea |
| 2011-2013 | Ph.D., School of Medicine, ChoongNam University Graduate school |

### Current and Past Professional Positions

| | |
|---|---|
| 2008-2009 | Research Fellow, Department of Dermatology, Ajou University hospital |
| 2010-2016 | Assistant Professor, Department of Dermatology, Dankook Medical College |
| 2016-2022 | Associate Professor and Chair, Department of Dermatology, Dankook Medical College |
| 2022-present | Professor and Chair, Department of Dermatology, Dankook Medical College |

### Awards

| | |
|---|---|
| 2010 | Travel grant for 6th Meeting of World Hair Research Society |
| 2014 | Travel grant for 8th Meeting of World Hair Research Society |
| 2015 | Travel grant for 23rd Meeting of World Congress of Dermatology |

### Society Memberships

Korean Dermatological Society (Board member)
Korean Hair Research Society
International Society for Hair Reconstruction Surgery
American Board of Hair Reconstruction Surgery (diplomat)

### Featured Publications

The effect of intradermal botulinum toxin on androgenetic alopecia and its possible mechanism. J Am Acad Dermatol . 2020 Dec;83(6):1838-1839
Comment on "The effect of platelet-rich plasma on female androgenetic alopecia: A randomized controlled trial": Phototrichogram analysis. J Am Acad Dermatol . 2021 Jun;84(6):e285-e286
Overlay photography technique to acquire the identical images to evaluate hair loss and treatment response in clinical practice
J Am Acad Dermatol . 2020 Oct 26;S0190-9622(20)32874-7

### Major Interests

Alopecia, Genetics, Hair transplantation

# Evidence based approach to the botulinum toxin and hair loss

Byung Cheol Park

*Department of Dermatology, Medical College , Dankook University, Cheon-An, Korea*

Botulinum toxin has been used for reducing the wrinkles by muscle relaxation.
However, the multiple action mechanism of botulinum toxin made many doctors or researchers investigate its use for the treatment on the various dermatologic problem.
Among them, alopecia treatment with botulinum toxin has induced a lot of interests from the clinicians.
Besides the author, many researchers have published the effect of botulinum toxin on the androgenetic alopecia.
However, there still been much doubts about the real effectiveness of botulinum toxin on the hair loss because no randomized controlled study has been done so far.
In this lecture, at first I will review the published articles about botulinum toxin and hair loss.
Secondary, we will show you our research about the botulinum toxin and male pattern baldness.
With this evidence based approach to botulinum toxin and hair loss, we will check if the botulinum toxin would be the potential candidate or not for treating androgenetic alopecia.

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## Min Sung Kim

Department of Dermatology, Chosun University School of Medicine, Gwangju, Korea

### Education and Training

| | |
|---|---|
| 1996-2002 | Chosun University College of Medicine (MD), Gwangju, Korea |
| 2011-2013 | Doctor of Medicine, Chosun University, Gwangju, Korea |
| 2003-2007 | Dermatology residency, Chosun University Hospital, Gwangju, Korea |
| 2010-2011 | Dermatology fellow, Chosun University Hospital, Gwangju, Korea |

### Current and Past Professional Positions

| | |
|---|---|
| 2011-2016 | Assistant professor, Department of Dermatology, Chosun University Hospital |
| 2017- | Associate professor, Department of Dermatology, Chosun University Hospital |

### Society Memberships

Korean Dermatological Association
Korean Hair Research Society
Korean Society for Aesthetic and Dermatologic Surgery

### Major Interests

Hair disease, dermatologic surgery, skin cancer

# Promising trials for new androgenetic alopecia treatments

Min Sung Kim

*Department of Dermatology, Chosun University School of Medicine, Gwangju, Korea*

Androgenetic alopecia (AGA) is the most diagnosed hair loss dysfunction, which commonly shows a decrease in hair density and thickness in the temples, vertex, and mid frontal scalp. Its pathophysiology comprises a genetic predisposition affording an exacerbated response of the hair follicles cells to androgens aggravated by scalp inflammation and extrinsic factors.
Although the most used medical treatments for AGA are topical minoxidil, finasteride and low-level laser light therapy which are the only FDA –approved therapies for AGA, it can be non satisfactory results in some cases. Some injectables (platelet rich plasma, exosomes), microneedling, hormonal therapies and nutraceuticals are also used to stimulate hair growth and show promising results. Pharmaceutical substances with mechanisms differing from the anti-androgen activity, such as prostaglandin F2α analogues, clascoterone, oral JAK inhibitors and other medical products are under current investigations. Moreover, there are trials for developing a new drug delivery system and nanotechnology to reduce adverse effect and maintain anagen phase.

Session 5

# KHRS scholarship lecture

16:30-17:30

CHAIR

Yang Won Lee

Konkuk University

CHAIR

Sang Seok Kim

Hallym University Kangdong Sacred Heart Hospital

KHRS

The Korean Hair Research Society

# Session 5. **KHRS scholarship lecture**

## Bark-Lynn Lew, M.D., Ph.D.

### EDUCATION

2001.02 Graduate of College of Medicine, Kyunghee University, Seoul, Korea
2005.02 Master of Medicine, Kyunghee University, Seoul, Korea
2007.08 Doctor of Medicine, Kyunghee University, Seoul, Korea

### POSITIONS HELD SINCE GRADUATION

2001.03-2002.02 Internship, Kyunghee University hospital
2002.03-2006.02 Residency in Dermatology, Kyunghee University hospital
2006.03-2008.08 Clinical Instructor, Clinical Assistant Professor, Dept. of Dermatology, Kyunghee University hospital at Gangdong
2008.09-2019.02 Instructor, Assistant Professor, Associate Professor, Dept. of Dermatology, Kyunghee University hospital at Gangdong
2019.03-present Professor, Dept. of Dermatology, Kyunghee University hospital at Gangdong, Kyunghee University
2020.03-present Chair, Dept. of Dermatology, Kyunghee University hospital at Gangdong, Kyunghee University

### MEDICAL SOCIETY MEMBERSHIP

Korean Hair Research Society: Educational Director
Korean Atopic Dermatitis Association: Academic Director
Korean Dermatological Association, Education Director

### AWARDS

2004, Travel Grant, Korean Hair Research Society
2006, Best Poster, the 58thAnnual Meeting of KDA
2009, Best Paper, College of Medicine, Kyunghee University
2012, Best Poster, the 9th Annual Meeting of Korean Hair Research Society
2013, Research scholarship, Amore pacific
2014, Faculty Excellence prize, College of Medicine, Kyunghee University
2015, Faculty Excellence prize, College of Medicine, Kyunghee University
2017, Basic research grant, National Research Foundation of Korea
2018, Best Poster, the 14th Annual Meeting of Korean Hair Research Society
2019, Best Poster, the 15th Annual Meeting of Korean Hair Research Society
2019, Basic research grant, National Research Foundation of Korea
2020, Best Poster, the 16th Annual Meeting of Korean Hair Research Society
2020, Stiefel research funds

### INTERESTS

Hair and hair diseases, Atopic dermatitis

# The Evidence and Consensus Guidelines for the Management of Patients with Alopecia Areata in Korea

Bark-Lynn Lew, MD, PhD

*Department of Dermatology, Kyung Hee University Hospital at Gangdong, Kyunghee University School of Medicine, Seoul, Korea*

Alopecia areata (AA) is an autoimmune disease that produces variable degrees of hair loss in genetically susceptible individuals. Even though it does not generally impair the overall health of the patients, we need to consider the significant and often devastating impact of AA when making treatment decisions. A range of treatments modalities currently used to treat AA. However, there is no treatment option which is approved by the FDA yet and there are lack of data evaluating their use, effectiveness, and tolerability. Previously, several therapeutic guidelines for AA treatment have been published by professional work groups in various countries. However, the KHRS aims to provide up-to-date information to clinicians by establishing guidelines for treatment of AA, which is tailored to the health care system in Korea. In this regard, the KHRS intends to present not only evidence-based treatment guidelines, but also treatment algorithms based on the consensus from AA experts in Korea. As patient age and disease extent may influence treatment decision, treatment algorithms specific to patient age and disease extent were prepared to help clinicians select optimal strategies.

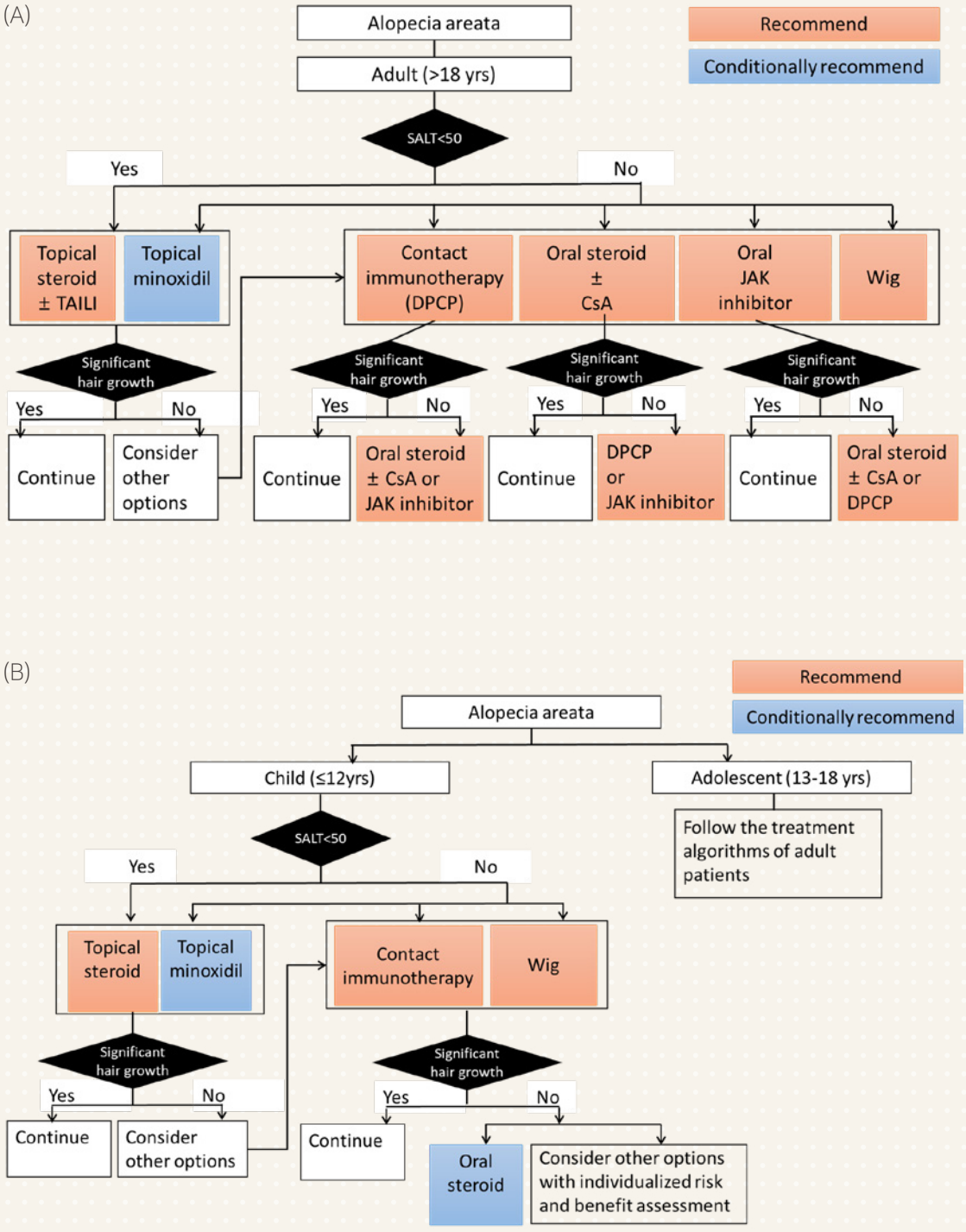
We searched for relevant studies from inception to May, 2021 regarding the topical and systemic treatment of AA. Evidence-based recommendation was prepared. The evidence for each statement was graded and classified according to the strength of recommendation. Hair experts from Korean Hair Research Society voted on the statement and agreement of 75% or greater was considered consensus.

Currently, there is scarce systemic or topical treatment which is supported by robust evidence from a number of high-quality randomized controlled trials. The current evidence mostly from uncontrolled studies supports the efficacy of topical corticosteroid, corticosteroid intralesional injection, and contact immunotherapy for AA patients and oral corticosteroids, oral cyclosporine monotherapy or in combination with oral corticosteroid, and oral Janus kinase inhibitors for severe AA patients. For pediatric AA, the use of topical steroid and contact immunotherapy is supported. Consensus was achieved in 4 out of 12 (33.3%), 6 out of 14 (42.8%), and 1 out of 5 (20.0%) statements pertaining to systemic, topical, and miscellaneous

treatment in AA, respectively.

The present study produces up-to-date evidence-based treatment guidelines for AA associated with the consensus obtained by experts based on the regional healthcare circumstances, adding diversity to the previous guidelines.

Fig. 1 Treatment algorithms for management of AA according to the severity and patient age (A) adult (B) child and adolescent



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## Yong Hyun Jang

Department of Dermatology, School of Medicine, Kyungpook National University

### Education and Training

| | |
|---|---|
| 1995-2001 | Ajou University School of Medicine (MD), Suwon, Korea |
| 2002-2004 | Ajou University Graduate School of Medicine (MS), Suwon, Korea |
| 2009-2011 | Ajou University Graduate School of Medicine (PhD), Suwon, Korea |

### Current and Past Professional Positions

| | |
|---|---|
| 2010.08 | Visiting fellow, National skin center, Singapore |
| 2011-2012 | Dermatology fellow, Kyungpook National University Hospital |
| 2012-2013 | Clinical assistant professor, Department of Dermatology, Ajou University School of Medicine |
| 2019-2020 | Research scholar, Keck School of Medicine, University of Southern California |
| 2013-present | Assistant/Associate professor, Department of Dermatology, Kyungpook National University School of Medicine |

### Awards

| | |
|---|---|
| 2015 | Korean Dermatological Association, Stiefel Academic Award |
| 2016 | Daegu Medical Association Academic Award/Korean Dermatological Association, Paul Janssen Academic Award |
| 2018 | Kyungpook National University, Excellent Academic Research Achievement Award/Korean Dermatological Association, Dong Wha Academic Award |
| 2020 | Korean Dermatological Association, Inbong Academic Award |

### Society Memberships

The Korean Dermatological Association/ Korean Society for Investigative Dermatology
The Korean Hair Research Society
The Korean Atopic Dermatitis Association
The Korean Society for Cutaneous Mycology and Infection
The Korean Society of Skin Barrier Research

### Featured Publications

Jang YH et al. Systematic review and quality analysis of studies on the efficacy of topical diphenylcyclopropenone treatment for alopecia areata. J Am Acad Dermatol. 2017 Jul;77(1):170-172.
Jang YH et al. Increased blood levels of NKG2D+CD4+ T cells in patients with alopecia areata. J Am Acad Dermatol. 2017 Jan;76(1):151-153.
Jang YH et al. Long-Term Prognosis of Alopecia Totalis and Alopecia Universalis: A Longitudinal Study with More than 10 Years of Follow-Up: Better than Reported. Dermatology. 2017;233(2-3):250-256-8.
Jang YH et al. Investigation on the role of necroptosis in alopecia areata: A preliminary study. J Am Acad Dermatol. 2016 Aug;75(2):436-9.
Jang YH et al. Alopecia Areata Progression Index, a Scoring System for Evaluating Overall Hair Loss Activity in Alopecia Areata Patients with Pigmented Hair: A Development and Reliability Assessment. Dermatology. 2016;232(2):143-9.

### Major Interests

Immunodermatology (Alopecia areata, Atopic dermatitis, Psoriasis)

# A validation study of an alopecia areata severity assessment tool reflecting overall disease activity, "Alopecia Areata Progression Index, AAPI"

Yong Hyun Jang, M.D., Ph.D.

*Department of Dermatology, School of Medicine, Kyungpook National University, Daegu. Korea*

Current treatment choices of alopecia areata (AA) are frequently based on disease activity and extent, as well as the age of the patient. The severity of AA can be measured by the Severity of the Alopecia Tool Score (SALT) score, developed by the National Alopecia Areata Foundation working committee. Although the overall hair loss activity has important impacts on the initial response to therapy, little has been said concerning this factor. Furthermore, no scoring systems to evaluate overall hair loss activity in alopecia areata have been established. So, we developed a measurement tool (Alopecia Areata Progression Index, AAPI) for the evaluation of overall hair loss activity in AA patients with pigmented hair. For the calculation of AAPI, the scalp surface area was divided into 4 quadrants. In each quadrant, hair loss activity was scored on the basis of the percentage of alopecic area, clinical findings associated with hair loss. In this study, we assessed that the usefulness of AAPI as a predictor of clinical courses of AA compared to SALT. A total of 68 AA patients were included in this study, of which 45, 23, and 14 patients were followed-up up to 3 months, 6 months, and 12 months, respectively. Clinical photography and SALT, AAPI, and global assessment (A0-A5) measurements were performed in all patients. Compared with baseline, AAPI measured 1 month later was useful in predicting global assessment results after 3 months, and AAPI measured 6 months after 12 months. In particular, the results showed a higher correlation with the clinical course after 12 months rather than the short-term progress after 3 months. Based on our findings, we believe that AAPI can be a useful scoring system for predicting the progress of AA and selecting more effective treatment options.

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## Hyun-Tae Shin

Department of Dermatology, Inha University School of Medicine, Incheon, Korea

### Education and Training

| | |
|---|---|
| 2014.03-2019.02 | Ph.D. in department of health sciences and technology, SAIHST, Sungkyunkwan University, Seoul, Korea. |
| 2013.03-2014.02 | M.S. in department of dermatology, school of medicine, Sungkyunkwan University, Seoul, Korea. |
| 2003.03-2009.03 | M.D. in school of medicine, Inha University, Incheon, Korea. |

### Current and Past Professional Positions

| | |
|---|---|
| 2021.01-Present | Assistant professor in department of dermatology, Inha University School of Medicine, Incheon, Korea. |
| 2020.03-2020.12 | Clinical assistant professor in department of dermatology, Inha University School of Medicine, Incheon, Korea. |
| 2019.03-2020.02 | Research doctor, Veterans Medical Research Institute, Veterans Health Service Medical Center, Seoul, Korea. |
| 2014.03-2019.02 | Researcher, Samsung Genome Institute, Samsung Medical Center, Seoul, Korea. |
| 2010.03-2014.02 | Resident in department of dermatology, Samsung Medical Center, Seoul, Korea. |

### Society Memberships

Korean Hair Research Society

### Featured Publications

Long-term efficacy and safety of intravenous injection of clonal mesenchymal stem cells derived from bone marrow in five adults with moderate to severe atopic dermatitis. Shin HT, Lee SH, Yoon HS, Heo JH, Lee SB, Byun JW, Shin J, Cho YK, Chung E, Jeon MS, Song SU, Choi GS. J Dermatol. 2021 Aug;48(8):1236-1242.

Evolutionary processes of melanomas from congenital melanocytic nevi. Lim Y, Shin HT, Choi Y, Lee DY. Pigment Cell Melanoma Res. 2020 Mar;33(2):318-325.

Junction Location Identifier: Accurate Detection of DNA Fusions in Clinical Sequencing for Precision Oncology. Shin HT, Kim NKD, Yun JW, Lee B, Kyung S, Lee KW, Ryu D, Kim J, Bae JS, Park D, Choi YL, Lee SH, Ahn MJ, Park K, Park WY. J Mol Diagn. 2019 Dec 25. pii: S1525-1578(19)30456-8.

Prevalence and detection of low-allele-fraction variants in clinical cancer samples. Shin HT, Choi YL, Yun JW, Kim NKD, Kim SY, Jeon HJ, Nam JY, Lee C, Ryu D, Kim SC, Park K, Lee E, Bae JS, Son DS, Joung JG, Lee J, Kim ST, Ahn MJ, Lee SH, Ahn JS, Lee WY, Oh BY, Park YH, Lee JE, Lee KH, Kim HC, Kim KM, Im YH, Park K, Park PJ, Park WY. Nat Commun. 2017 Nov 9;8(1):1377.

Histopathological analysis of the progression pattern of subungual melanoma: late tendency of dermal invasion in the nail matrix area. Shin HT, Jang KT, Mun GH, Lee DY, Lee JB. Mod Pathol. 2014 Nov;27(11):1461-7.

### Major Interests

Genetic disease, Hair disease, Computational biology

# A nationwide cross-sectional study of molecular diagnosis of genetic hair disorders in Korea

Hyun-Tae Shin

*Department of Dermatology, Inha University School of Medicine, Incheon, Korea*

A variety of congenital hair diseases exist, and many syndromic genetic disorders often accompany hair symptoms. Changes in hair caused by genetic diseases could have a significant impact on a patient's quality of life. So far, there have been no large-scale studies on molecular diagnosis of congenital hair disease in Korea. To understand the characteristics of congenital hair diseases in Korea, we conducted a nationwide cross-sectional study on molecular diagnosis of congenital hair diseases, and furthermore, to discover a group of diseases to which the latest therapy is applicable. To this end, a nationwide congenital hair disease patient collection network was established, and through this, about 20 patients were collected and molecular diagnosis was conducted through genomic analysis. Today, I will report on the progress of the study and introduce some interesting patient examples.

# Posters

KHRS
The Korean Hair Research Society

# Periodontitis and risk of alopecia areata: A nationwide population-based cohort study in Korea

**Il-Jae Lee, Sang-Kyung Lee, Geon-Jong Lee, Kyung-Hwa Nam, Seok-Kweon Yun, Jin Park**

*Department of Dermatology, Jeonbuk National University Medical School, Jeonju, South Korea*

The association between periodontitis and immune-mediated cutaneous dermatoses and systemic inflammatory disorders, such as rheumatoid arthritis and psoriasis, has been increasingly recognized. However, the association between periodontitis and AA has never been studied. Therefore, we investigated to determine whether periodontitis increase the risk of AA using the Korean National Health Insurance System (NHIS) claims database.

The experimental cohort is defined as a patient who was diagnosed as a periodontitis between January 1, 2002 and December 31, 2004. This cohort is followed for the incident of alopecia areata or until December 31, 2013. A total of 300,414 individuals, 100,998 in the periodontitis group and 199,416 in the non-periodontitis group, were analyzed in the study. The adjusted hazard ratio (aHR) for alopecia areata in the periodontitis group was 1.36 (95% confidence interval [CI] 1.28–1.44).

In a subgroup analysis, the risks of alopecia areata for the patient with periodontitis significantly higher risks at the age between 20 and 39 with aHR of 2.06 (95% CI: 1.92-2.21), for age between 0 and 19 with aHR of 2.01 (95% CI: 1.79-2.25) respectively. Also, higher risks of alopecia areata were observed in the periodontitis patient with following underlying diseases; systemic lupus erythematosus (aHR 2.97, 95% CI:1.54–5.74), atopic dermatitis (aHR 1.22, 95% CI:1.08–1.38), and rheumatoid arthritis (aHR 1.18, 95% CI:1.02–1.36), respectively.

Our study highlights periodontitis as an important modifiable risk factor for alopecia areata.The interrelationship between the periodontitis and alopecia areata needs to be clarified.

# Home-based diphenylcyclopropenone immunotherapy in alopecia areata; A large retrospective study of 94 cases

**Geon-Jong Lee, Il-Jae Lee, Eui-Sung Jung, Kyung-Hwa Nam, Seok-Kweon Yun, Jin Park**

*Department of Dermatology, Jeonbuk National University Medical School, Jenonju, South Korea*

Despite the excellent efficacy and safety profile for chronic and extensive alopecia areata (AA), weekly-based outpatient diphenylcyclopropenone (DPCP) immunotherapy is limited in clinical practice due to inconvenience and medical expenses. We performed a retrospective study to evaluate safety and efficacy, convenience, and reduction of expenses of home-based DPCP immunotherapy. After sensitization and determination of optimal concentration, diluted DPCP solutions were given to the patients for self-administration of DPCP treatment under the well-structured treatment protocol, through education and training. The safety, efficacy, and convenience of home-based DPCP immunotherapy were measured every 1-2 months at the hospital for 1 year.

Among 94 patients who completed the study, 45 patients (47.9%) experienced cutaneous adverse events, including eczema, generalized pruritus, and lymphadenopathy during home-based treatment period, which showed no statistically significant difference compared with those of in-office treatment period (43.6%). In total 31 patient's family caregivers applied DPCP to the patients, 5 cases (16.1%) had experienced cutaneous adverse events, most commonly eczema and pruritus without serious one. Meaningful clinical improvement (≥50% regrowth) was noted in 65 patients (69.2%). Interference of daily functioning abilities were significantly improved along with about 60% decline of monthly medical expenditure during home-based treatment period compared to office-based treatment period.

Home-based DPCP immunotherapy can be a safe, effective, convenient, and cost-effective treatment for chronic, severe AA under the well-organized protocol and thorough instruction and training.

# A Clinical Investigation of Early-Onset Alopecia Areata in Children: onset earlier than 4 years of age might have a better prognosis

**Ji-Hoon Lim, M.D., Soon-Hyo Kwon, M.D., Ph.D., Woo-Young Sim, M.D., Ph.D., Bark-Lynn Lew, M.D., Ph.D.**

*Department of Dermatology, Kyung Hee University hospital at Gang-dong, Kyung Hee University School of Medicine, Seoul, Korea*

Alopecia areata (AA) is a non-scarring autoimmune hair loss on the scalp or body. While early onset was considered a primary factor for poor prognosis, children with early-onset AA show varied responses to treatment.

This study was conducted to describe the clinical characteristics and assess the prognostic factors of early-onset AA.

We performed a retrospective study of AA patients under 10 years of age of onset who visited our dermatologic clinic from January 2013 to December 2020. A clinical review of medical records, photographs, and telephone interviews were performed. Treatment efficacy was assessed visually by two dermatologists depending on the degree of hair regrowth compared to the initial state at 12 months of follow-up.

Among 3,916 patients with newly diagnosed AA, 291 were under 10 years of age of onset. Among these patients, 162 were followed-up more than 12 months. There were 84 male (51.9%) and 78 female (48.1%). The average age of disease onset was 4.24 (±2.74). Most patients were treated with topical corticosteroids alone or in combination. 57.4% (93/162) of patients showed more than 50% hair growth after these treatments. We compared the over 75% of hair regrowth group (good response) and under 25% of hair regrowth groups including patients with aggravation and relapse (poor response). There were no significant differences in the presence of known prognostic factors between the two groups except presence of personal atopic history. In addition, patients younger than 4 years of age at onset showed a significantly better response than older patients (p=0.0127).

Early onset AA patients are not affected by factors associated with the poor prognosis of general AA. In addition, early onset AA may have a better treatment response than previously known. In particular, it was confirmed that the prognosis was rather good in patients under 4 years of age.

# Long-term efficacy and safety of dutasteride in Korean men with androgenetic alopecia

**Sang-Min Choi, M.D., Soon-Hyo Kwon, M.D., Ph.D., Woo-Young Sim, M.D., Ph.D., Bark-Lynn Lew, M.D., Ph.D.**

*Department of Dermatology, Kyung Hee University hospital at Gang-dong, Kyung Hee University School of Medicine, Seoul, Korea*

Dutasteride 0.5mg is a dual inhibitor of both type I and II 5α-reductase, and was approved in 2009 in Korea for the treatment of AGA in men.

We investigated the 5-year efficacy and safety of dutasteride 0.5mg in Korean men with AGA using the basic and specific (BASP) classification and analyzed the changes in hair growth after treatment according to the distribution of hair loss.

This retrospective analysis included all male AGA patients aged ≥18 years treated with dutasteride 0.5mg for at least 5 years at Kyung Hee University Hospital at Gang-dong from October 2009 to December 2016.

Total of 99 patients who were treated with dutasteride for a minimum of 5 years and had regular visits to the clinic with clinical photographs were included in the study. Patients' photographs were evaluated using the BASP classification, and the investigator's global assessment (IGA) using a 7-point scale was performed. Based on the IGA score, after 5 years of treatment, proportions of patients with improvement (IGA score ≥1) or prevention of disease progression (IGA score ≥0) were 89.9% (89/99), and 93.9% (93/99), respectively. According to the BASP classification, 52.5% (52/99) of the basic type, 75% (15/20) of the specific F type, and 83.3% (60/72) of the specific V type showed clinical improvement after 5 years of treatment with a decrease in the grades of the basic and/or specific type compared to baseline. Sexual related symptoms including decreased libido (4.0%), erectile dysfunction (3.0%) were the most common adverse events within the first 6 months of the treatment period. Most of the adverse events were mild and subsided spontaneously without treatment.

Dutasteride exhibited long-term safety and efficacy for at least 5 years in Korean male AGA patients, with comparable outcomes to other long-term studies evaluating the efficacy of finasteride 1mg in male AGA patients.

# Fractional 1064-nm picosecond Nd:YAG laser treatment promotes hair regrowth in BALB/c mice

**Sung Ha Lim, Seung-Won Jung[1], Hee Seok Seo[1], Long-Quan Pi[2], and Seung Phil Hong[1]**

*[1]Department of Dermatology, Yonsei University Wonju College of Medicine, Wonju, Republic of Korea*
*[2]Department of Dermatology, Yanbian University Hospital, Yanji, China*

The picosecond-domain laser has been mainly used for tattoo removal and treatment of pigmentation disorders, and with the fractional mode, its effect has been expanded to various treatment fields such as acne scars and skin rejuvenation. Here, we evaluated the effect of a 1064-nm picosecond fractional laser on hair regrowth in a BALB/c mice model.

The chemically depilated dorsal skin of 8-week-old wild-type BALB/c mice (n = 4) was divided into four sections by each treatment condition: control, low fluence (0.15 J/cm2), intermediate fluence (0.23 J/cm2), and high fluence (0.30 J/cm2). Each site was treated once with 10 × 10 spot size, 2 Hz, and 50 shots, each at depth level II and level III settings, using the 1064-nm picosecond Nd:YAG laser. Petechiae occurred in the treated area in proportion to the level of fluence immediately after treatment. Differences in hair regrowth between the laser-treated and non-treated sites were observed over time. After 12 days, hair regrowth, which appeared to be dependent on the degree of the petechiae, was increased on the petechiae spots in the laser-treated site. Although we did not evaluate alterations at the microscopic or histological level following laser treatment, our results show the effect of the 1064-nm fractional picosecond laser for promoting hair regrowth.

In conclusion, our study could provide insights for further research to evaluate the efficacy of 1064-nm picosecond laser treatment in hair regrowth and anagen induction. For application in human patients, optimal fluence, detailed mechanisms of action, and therapeutic windows should be investigated. Ultimately, 1064-nm fractional picosecond lasers may have potential as an alternative treatment for patients who need hair regrowth.

# Rapidly increasing incidence and prevalence of lichen planopilaris in an Asian population: A Korean nationwide population-based study

**Sung Ha Lim[1], Sang Baek Koh[2], Won-Soo Lee[1], and Solam Lee[1,2]**

*[1]Department of Dermatology, Yonsei University Wonju College of Medicine, Wonju, Republic of Korea*
*[2]Department of Preventive Medicine, Yonsei University Wonju College of Medicine, Wonju, Republic of Korea*

Lichen planopilaris (LPP) is cicatricial alopecia associated with diverse comorbidities. Current evidence reported increasing LPPs in Caucasians. However, epidemiologic data on Asians are limited to date. This study aimed to investigate the prevalence, incidence, and clinical characteristics of LPPs in Korea.

This nationwide population-based study used data from the National Health Insurance Service database of Korea. We selected LPP patients with at least three documented visits with an International Statistical Classification of Disease 10th revision (ICD-10) code of L66.1 from 2003–2019. To select only incident LPP cases, patients with previous LPP medical visited dated before 2003 were excluded. For controls, 1:20 age, sex, insurance type, and income level-matched individuals without any documented visit of LPP were selected.

A total of 2,992 LPP patients and 59,840 matched controls were analysed. There was slight female predominance (male-to-female ratio, 1:1.24). Incidence and annual prevalence have increased over the last 17 years. The incidence was higher in urban areas than rural areas (2,283 [6.32 per 100,000 persons] vs. 719 [4.64 per 100,000 persons]). The significantly prevalent comorbid conditions at LPP diagnosis were atopic dermatitis (odds ratio [OR], 2.06; 95% confidence interval [CI], 1.89–2.24), allergic rhinitis (OR, 1.23; 95% CI, 1.15–1.33), and asthma (OR, 1.27; 95% CI, 1.17–1.38). Autoimmune connective tissue diseases (OR, 1.48; 95% CI, 1.17–1.87), thyroiditis (OR, 1.34; 95% CI, 1.05–1.72), hypothyroidism (OR, 1.54; 95% CI, 1.30–1.83), vitamin D deficiency (OR, 3.59; 95% CI, 2.34–5.51), and rosacea (OR, 3.48; 95% CI, 1.20–10.07) were also prevalent.

In conclusion, our study demonstrates increasing incidence and prevalence of LLP and describes common comorbidities among Asian LPP patients. We believe that our data is essential for elucidating the epidemiology of Asian LPP patients on a nationwide scale.

# Prognosis in Patients with Alopecia Areata with Poliosis: A Retrospective Cohort Study of 479 Cases

**Sung Ha Lim and Won-Soo Lee**

*Department of Dermatology, Yonsei University Wonju College of Medicine, Wonju, Republic of Korea*

Alopecia areata (AA) is a chronic autoimmune disease caused by autoreactive CD8+ T cells. During the treatment course of AA, poliosis, characterized by localized white hair growth, is a commonly observed condition, although little is known regarding the clinical importance. Herein, we performed an expanded retrospective analysis to evaluate and compare the overall hair regrowth outcomes in patients with AA with and without poliosis.

A total of 479 patients with AA who visited Wonju Severance Christian Hospital between March 2012 and December 2021 were analyzed. Patients who presented with poliosis during follow-up and those who did not were assigned to two different groups. Of the 479 patients assessed, 141 (29.4%) presented with poliosis. In univariable analysis, the average age was high in the poliosis group. The initial severity of alopecia areata tool (SALT) score was significantly elevated in patients with poliosis, which was consistent with all subdivisions of the scalp area. Hypertension, dyslipidemia, and atopic dermatitis were the associated comorbidities, and patients with poliosis showed a propensity toward obesity as compared with patients without poliosis. Diphenylcyclopropenone immunotherapy and topical corticosteroid treatment was associated with having poliosis. However, in the multivariable analysis, only age and initial SALT score were significantly associated. Cox proportional hazard analysis was performed to evaluate the probability of hair regrowth between the two groups. Among the included variables, increased age was significantly associated with hair regrowth (hazard ratio, 1.01; 95% confidence interval, 1.00–1.03). Although there was a tendency for hair regrowth in the non-poliosis group, the difference was not significant ($p = 0.10$).

Our study was limited by its retrospective nature, single-institution design, and single ethnicity population. However, we believe that our data are worth noting in that information about poliosis and the clinical prognosis is lacking. Further well-controlled studies are required to confirm our findings.

# Comparison of self-estimated and physician-measured SALT score in patients with alopecia areata: Alopecia areata patients rated themselves more severely than dermatologist

**Ju Yeong Lee, Jong Won Lee, Won-Soo Lee**

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Alopecia areata (AA) has a global prevalence of 2% and causes non-scarring hair loss due to autoimmunity. Although AA does not cause mortality, several papers have found that hair loss lowers the patient's quality of life and causes psychosocial problems. Based on these studies, we attempted to determine whether patients in our hospital also evaluated themselves more severely and whether it had a greater effect on quality of life (QoL).

A retrospective analysis was conducted on patients with AA who visited our clinic from April 2019 to May 2021. The Hair Specific Skindex-29 (HSS-29), which comprises three domains (functioning, symptoms, and emotions), was determined, and a questionnaire that allowed self-evaluation of the severity of alopecia tool (SALT) score was administered. We divided patients into three groups: 'Self-estimated SALT score<Physician-measured SALT score,' 'Self-estimated SALT score=Physician-measured SALT score,' and 'Self-estimated SALT score>Physician-measured SALT score.' Analysis of variance (ANOVA) was performed to compare the groups.

A total of 114 patients were evaluated, and most of the patients were in the higher self-estimated SALT score group (Self-estimated SALT score<Physician-measured SALT score, 23 people; Self-estimated SALT score=Physician-measured SALT score, 21 people; Self-estimated SALT score>Physician-measured SALT score, 70 people). Functioning, symptoms, and emotions ($p<0.001$, $p=0.026$, and $p=0.005$) and total HSS-29 scores ($p<0.001$) were significantly higher for the higher self-estimated SALT score group than those of the other groups. Also, their self-estimated and physician-measured SALT scores ($p<0.001$ and $p=0.029$, respectively) were significantly higher.

HSS-29 scores were higher in AA patients who thought seriously about themselves, suggesting that QoL is lower in these patients. Because these patients all scored higher on symptoms, functioning, and emotions, they may have more psychosocial and psychiatric problems. It is necessary to describe the severity of AA symptoms accurately, and appropriate intervention is required.

# Alopecia Areata and Pain: A Retrospective Analysis of 360 Cases

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Alopecia areata (AA) is caused by the loss of the immune privilege of the hair follicle. Despite knowing that AA does not have symptoms, some patients complain of pain. Therefore, we considered the pain to be a significant sign related to the development of AA and attempted to compare the clinical characteristics of patients with AA who felt pain and those who did not.

We conducted a retrospective study on patients with AA who visited Wonju Severance Christian hospital from October 2012 to May 2020. By analyzing the hair-specific skindex-29 (HSS-29) score and medical records at the first visit, we divided the patients into two groups: a group with pain and one without pain.

Of the 360 patients, 165 (45.8%) reported pain. Moreover, there were significantly more having previous treatment in the pain group ($p<.001$). The functional, symptomatic, and emotional HSS-29 scores, including pain, showed significant differences ($p<.001$). Even considering the maximum score for each question of HSS-29 was 4 points, the average of the symptomatic HSS-29 scores between the two groups ($10.2\pm4.0$ and $4.8\pm3.8$) differed by more than 4 points.

Several neuropeptides, such as substance P (SP) and calcitonin gene-related peptide (CGRP), have been implicated in the pathophysiology of immune reactions in AA, which are associated with pain. We considered the possibility that stress-induced neuropeptide could accompany the pain. A significant number of previously treated patients complained of pain. We considered the effects of CGRP and stimulation of intralesional injection or topical agents such as DPCP were associated with pain.

In conclusion, pain could be related to several psychological and immunological complexities. Still, it could be a meaningful symptom in developing alopecia areata, a neuropeptide-mediated inflammatory response.

# Therapeutic Effects of Microneedling with Novel Growth Factor Cocktail (Molinic™) on the Scalp in the Patients with Androgenetic Alopecia: A Split Study

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For patients with androgenetic alopecia, a growth factor cocktail (GFC) combined with microneedling is a successful and safe therapy option.

The purpose of this study is to determine the therapeutic effects of novel GFC containing various fibroblast growth factors and microneedling in patients with androgenic alopecia. Beginning with the first visit, AGA patients were treated 6 times over the course of 12 weeks at two-week intervals. The treatment was performed to a total of 23 individuals (12 men and 11 women). The scalp was divided into two parts, right and left, and both were treated with microneedle to a depth of 0.8 mm with normal saline on the right and GFC on the left. To evaluate the therapy effect, a clinical photograph and phototrichogram were taken before and two weeks after treatment. The phototrichogram images of the left scalp (control group) showed increased hair density from 154.9±28.5/cm2 to 175.1±32.8/cm2 and diameter from 55.8±8.4um to 58.7±9.3um. These results were statistically significant in difference ($p < 0.05$). The phototrichogram images of the right scalp (placebo group) treated with saline showed that hair density from 159.0±33.0/cm2 to 164.8±41.7/cm2 and diameter from 55.0±7.7um to 55.0±7.7um.These results were not significant in difference from baseline in both hair density and diameter.

In patients with AGA, the absorption of novel GFC with microneedling demonstrated its effectiveness in a 12-week period of time without pain. However, more research is required to determine the long-term consequences of the GFC.

# Various clinical features and course of ophiasis

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Background: Patients with the ophiasis subtype of alopecia areata have band-like alopecia usually at the occipital hairline extending toward the temples. In very rare cases, it extends to the frontal hairline, that can be confused with frontal fibrosing alopecia. To date, there have been few reports of treatment progress for this type of patients.

Objective: We report a rare type of patients with ophiasis that involve the entire hairline. we also would like to share their treatment progress.

Methods: We conducted a retrospective study on patients who visited the Department of Dermatology, Inha University Hospital, from July, 2021 to May 2022. Among the patients treated for alopecia, 16 patients were of the ophiasis type, showing an invasion of the entire hair line. The authors reviewed their treatments and course.

Results: Most of the patients showed patchy pattern in the early stage and invaded the entire hairline in the form of a snake crawling. They also invaded the inside and showed a hair loss of reticulated pattern in the occipital region. The patients had a chronic course and were resistant to diphenylcyclopropenone (DPCP) treatment. Three patients responded to either JAK inhibitor or methotrexate.

Conclusion: Patients with patch-type hair loss may develop ophiasis involving the entire hairline, which is resistant to DPCP treatment and has a chronic course.

# The efficacy and safety of Advanced Skincare Complex from ExCoBio (ASCE) plus Hair Rejuvenation Lyophilized Vial (HRLV)® in patients with androgenetic alopecia

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Background : Exosomes, 30-150nm extracellular vesicles, are important for the transfer of mRNAs, microRNAs and proteins to target cells, thereby altering the gene and protein levels of recipient cells to regulate their function. Recent studies have reported that exosomes are promising for tissue regeneration. Exosomes have been shown to promote the anagen stage and delay the catagen stage of hair follicle growth, and to stimulate the proliferation and differentiation of outer root sheath cells.

Objectives : This study was designed to evaluate the efficacy and safety of Advanced Skin Complex from ExCoBio (ASCE) plus Hair Rejuvenation Lyophilized Vial (HRLV)® in patients with androgenetic alopecia. There are 10,000,000,000 particles of exosome/vials in the ASCE plus HRLV®.

Methods : This study was designed as a 24-week, open-label pilot study. We recruited 30 persons with androgenetic alopecia (male and female) and they were guided to visit and receive treatment every 2 weeks for the first 3 months (7 times), and every 3 weeks for the 4-6th months (3 times). The ASCE plus HRLV® was mixed with normal saline and applied to the scalp with microneedle therapy system (MTS).

Results : The baseline hair density was 158.03±16.48/cm2, and after 24 weeks of treatment, the mean hair density increased to 166.14±19.28/cm2, which was statistically significant (p=0.001). The mean hair density was 161.90±17.78/cm2 after 12 weeks of treatment, also significantly increased compared to baseline (p=0.03). In the global photo assessment, a 7-point scale (-3 to +3) was used. In the expert panel's global photo assessment, the score was 0.321±0.449 (p=0.017) after 12 weeks of treatment, and 0.536±0.838 (p=0.02) after 24 weeks of treatment. Patient's subjective satisfaction score was also evaluated using 7-point scale (-3 to +3), and the score was significantly improved after 24 weeks of treatment. In the safety assessment, very mild stinging sensation was reported but it was temporary and reversible. No serious adverse reactions were reported during the study.

Conclusion : Human exosome, ASCE plus HRLV® could be valid and safe optional or alternative treatment for androgenetic alopecia.

# Clinical and demographic study of patients with alopecia areata after COVID-19 vaccination

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Side effects of common COVID-19 vaccination include fever, headaches, fatigue, and pain at the injection site. However, to date, alopecia areata (AA) after COVID-19 vaccination has been concerned. This study aimed to investigate the clinical characteristics of the patients with alopecia areata after COVID-19 vaccination in Korea.

This was a retrospective, single-center study. Among AA patients who visited Pusan National University Hospital during the last one year, we identified 23 patients who complained that their AA was caused by COVID-19 vaccination. These patients were compared with the control group (309 AA patients who did not complain about the effect of COVID-19 vaccination during the same period). Clinical manifestations were examined by the review of medical records and photographs. The severity of alopecia areata was assessed using the severity of alopecia tool (SALT).

The types of vaccination were Pfizer (n=9, 39.1%), Moderna (n=9, 39.1%), AstraZeneca (n=4, 17.4%), and Janssen (n=1, 4.4%). The average interval from vaccination to onset of AA was 19.57 ±17.17 days. Male to female ratio (0.35) was lower than that of the control group (0.82). The mean age of onset (44.4±15.6 years) was higher than that of the control group (31.4±19.2 years). The family history of AA (n=0, 0%) was lower than that of the control group (n=24, 7.8%). There was no statistical difference in the location and severity (SALT score) of AA between the two groups.

In conclusion, this study showed that there were some demographic differences, but no significant differences in clinical features between the two groups.

# Efficacy and Safety of Finasteride in Frontal Fibrosing Alopecia, Lichen Planopilaris, and Pseudopelade of Brocq

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Frontal Fibrosing Alopecia (FFA), Lichen Planopilaris (LPP), and Pseudopelade of Brocq (PB) are primary cicatricial alopecia resulting in permanent hair loss. Variable treatments have been tried, however, the data for the prevention of its progression is limited. Finasteride has been proposed as an effective preventive therapy for FFA, LPP and PB.

This study is aimed to investigate the efficacy and safety of finasteride for the treatment of FFA, LPP and PB. We retrospectively reviewed medical records and clinical photos of 16 FFA, 7 LPP and 17 PB patients treated with finasteride (2.5-5mg/day) in Pusan National University Hospital for 9 years (2014-2022). Therapeutic response was evaluated on a 3-point scale (worsening, stabilization, or improvement).

The mean age was 57.2 (40-70) years in FFA, 45.4 (27-62) years in LPP and 47.4 (32-75) years in PB group. The median follow-up was 25.8 (6-72) months in FFA, 15.4 (8-28) months in LPP and 13.7 (4-42) months in PB group. Most patients showed stabilization or improvement in FFA (100%, 16/16), LPP (85.8%, 6/7) and 94.1% in PB (94.1%, 16/17) group. Reported adverse events were lightheadedness in 2 patients, dry mouth in 1 patient and frequent urination in 2 patients among total 40 patients of the three groups. There was not any serious adverse event to stop treatment.

In conclusion, oral finasteride could be a safe treatment option to prevent the progression of FFA, LPP and PB.

# Differential expression of interferon and its relating molecules in alopecia areata

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Alopecia areata (AA) is thought to be an autoimmune process mediated by helper and cytotoxic T cells and hair follicle reactive antibodies. Interferons (IFN) are important immune system mediators that could impact the initiation or amplification of autoimmunity and tissue damage through their diverse action on dendritic cells, T and B lymphocytes, NK cells and mononuclear phagocytes.

We conducted the study to explore the expression of IFNα, IFNβ, IFNγ, and IFN inducible genes in patients with AA. Peripheral blood mononuclear cells (PBMC) from 31 AA patients were categorized according to disease duration, activity, and hair loss extent and compared to 23 healthy controls. Hair follicle bulbs were microdissected from scalp skin biopsies from both perilesional and lesional margins of 6 AA patients and compared to 6 normal haired controls. Quantitative real-time PCR analysis was conducted on PBMC and hair follicle bulbs to determine the IFN associated target gene expression. Immunohistology for selected gene products was subsequently conducted.

In our study, 7 genes in AA PBMC and 5 genes in AA hair follicles were significantly upregulated as compared to controls. Of these genes, TLR9 and TLR7 showed increased fold changes in PBMC. When the PBMC group was subdivided, upregulated TLR9 gene expression was prominent in patients with less scalp involvement, in a chronic and stable condition.

As a result, the increased expression of IFN associated genes and their products, particularly TLR7 and TLR 9, suggest components of the innate immune system may be active in AA pathogenesis.

# Comorbidities in Korean Patients with Alopecia Areata: A Cross-sectional Study in One Institution

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Alopecia areata (AA) is a chronic inflammatory autoimmune disease. In several prior studies, AA has been described in association with various systemic disorders, such as cataracts, thyroid disease, vitiligo, atopic dermatitis, and lupus erythematosus.

Our aim was to identify common associated comorbidities in Korean patients with AA. We identified patients initially diagnosed with specific diagnostic codes (L630 (Alopecia totalis), L631 (Alopecia universalis), L638 (Other alopecia areata), L639 (Alopecia areata)) from January 1st, 2015 to July 31st, 2021 at Eunpyeong St. Mary's Hospital. Diagnostic data other than alopecia was extracted from these patients and classified by disease groups.

A total of 370 patients were identified. Thyroid diseases had the highest prevalence, followed by ophthalmic, cardiovascular, auditory, and respiratory disorders. The majority of thyroid disorders were thyroid dysfunction, and only one patient was diagnosed with autoimmune thyroid disease. A limitation of our study was the small sample size and lack of comparison with the control group. Further studies with sufficient patients are needed to better understand and manage comorbidities in patients with AA.

# Hair Follicle Growth Regulation Effect of Novel 11β-HSD1 Inhibitor in UVB-induced Stress Environment

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Background: 11 β-Hydroxysteroid dehydrogenase type 1 (11β-HSD1) is an NADPH-dependent reductase, it is converted cortisone to cortisol within the Endoplasmic reticulum. Cortisol is one of the representative stress hormones, it is known to cause hair growth disruption by affecting the function and cyclic regulation of hair follicles.

Objective: This work was aimed at investigating the hair growth regulation ability of a novel 11β-HSD1 inhibitor on UVB-induced hair growth disruption in human hair follicles and cells.

Methods: In this study, the 11β-HSD1 inhibition effect of NTX-101, we investigated at the DPC, ORSC, and human hair follicle levels, and to create a stressful environment, cortisone and UVB were treated.

Results: In hair organ culture, hair follicle elongation was inhibited by UVB, and recovered by NTX-101 treatment. Cortisone and UVB up-regulated the 11β-HSD1 mRNA expression and down-regulated by NTX-101 only in ORSC but not in DPC. Given that 11β-HSD1 is inhibited only in ORSCs by NTX-101, we hypothesized that ORSC supernatants mediate hair follicle growth by regulating the proliferation of DP cells. It was confirmed that DPC proliferation by ORSC supernatant treatment was reduced by UVB exposure and restored by NTX-101.

Conclusion: In conclusion, a novel 11β-HSD1 inhibitor, NTX-101 inhibited 11β-HSD1 of ORS and induced DP proliferation, which could contribute to the regulation of hair growth to stress-related hair loss.

# Investigation on quantitative methods for objective evaluation of alopecia areata severity

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Severity of alopecia Tool (SALT) score is commonly used assessment for extent in alopecia areata(AA), however, might depend on individual criteria of each physician so that it is not easy to validate SALT score with objective indicator. The purpose of this study is to validate the SALT score through measurement of actual area of alopecic patches. Measurement of SALT was performed through direct inspection (SALT-I) as well as photograph assessment (SALT-P). Total area ($cm^2$) of each alopecic patch was calculated with ImageJ. Distribution of total area was investigated according to each SALT. Further analysis was also done based on accordance of both SALT grading. A total of 93 patients were enrolled. SALT-P (S1(n=68) 2.5~74.9, S2(n=16) 48.8~100.6, S3(n=7) 83.6~205.4, S4(n=2) 282~367.9) showed more clear correlation with total area with less overlap between each score compared with SALT-I (S1(n=64) 2.5~59.2, S2(n=22) 41.6~205.4, S3(n=5) 48.8~183.2, S4(n=2) 282~367.9) Seventy nine (84.9%) showed accordance between SALT-I and SALT-P. In this group, the average of total area($cm^2$) was as follows ; S1(n=63) 20.1±13.5(2.5~59.2), S2(n=12); 77.1 ±11.1(64.2~100.6), S3(n=2) 175.8 ±7.45(168.3~183), S4(n=2); 325.3 ±42.7(282.6~367.9). In those with discordance between each SALT, the range of total area was as follows; S1-2(SALT-I 1, SALT-P 2) (n=1) 54.7 S2-1(n=5) 41.6~74.9, S2-3(n=5) 83.6~205.4, S3-2(n=3) 48.8~88.6. It is suggestive total area of 60 $cm^2$ and 100 $cm^2$ might be referred as objective indicator in validating cut off value of S1 and S2 respectively. Considering SALT is a scoring method that involves a lot of subjectivity in measurement, our data can be used as an supplementary indicator of SALT in the S1, S2, and S3 categories in which assessment is difficult.

# Hormonal profile of androgenetic alopecia in adolescents and its association with metabolic dysfunction: single center retrospective study

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Androgenetic alopecia (AGA) has not been commonly reported in adolescents compared to adults. As puberty has shifted toward younger ages, early recognition of AGA and changes in related androgen or metabolic function are paid more attention.
So we investigated the clinical features and hormonal profile of AGA in adolescents.

Based on the clinical and trichoscopic findings, 21 subjects (8 boys and 13 girls) were enrolled. Mean age was 16.1 years (12~19) and family history of AGA in first- or second-degree relatives was observed in 61.9%. In the aspect of alopecia pattern, diffuse thinning at crown with frontal hairline preservation was most common (61.9%), followed by vertex and bitemporal thinning (28.6%) and 'Christmas tree' pattern (9.5%). Acne was accompanied in 10 (4 boys and 6 girls) with mean severity score of 1.8 and 1.1 respectively. There was no abnormality in total/free testosterone (T) and dehydroepiandrosterone sulfate (DHEA-S) in boys. On the contrary, 2 girls showed increased level in both total T and DHEA-S and 5 girls only in DHEA-S. Meanwhile, 9 subjects (3 boys and 6 girls) had increased level in random insulin test or concurrent type 2 diabetes mellitus (DM) or both. In addition, 5 girls satisfied the Rotterdam criteria of PCOS while 4 girls, who showed abnormality in androgen profile as well as metabolic dysfunction (increased random insulin or concurrent DM), did not.

Adolescents with AGA showed different profile in androgens between boys and girls, while concurrent metabolic dysfunction was observed similarly in both sexes. It is suggestive that AGA in adolescents should be estimated differentially based on sex and distinguished from adult, especially in girls, as a feature of hyperandrogenism as well as a risk factor of metabolic dysfunction.

# Clinical features that can predict polycystic ovarian syndrome and biochemical hyperandrogenism in female pattern hair loss patients

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Background

Female pattern hair loss (FPHL) is often accompanied by clinical signs of hyperandrogenism such as acne, hirsutism, irregular menses, infertility and have endocrinologic abnormality such as polycystic ovarian syndrome (PCOS) but predictable factors of PCOS and hyperandrogenism in FPHL patients has yet to be sufficiently studied.

Objectives

To find out clinical feature that could predict polycystic ovarian syndrome and biochemical hyperandrogenism in FPHL patients

Methods

A single-center, retrospective cohort study of 146 patients with Female pattern hair loss between January 2011 and April 2022.

Results

A total of 146 FPHL patients were included mean age was 29.8 years (range, 14-66 years). In this cohort, 22 patients who are diagnosed with PCOS or have high serum total testosterone over 95 percentiles of reference range classified as “endocrinologic abnormalities” group. On logistic regression analysis for evaluating clinical factors that affect endocrinologic abnormalities in FPHL patients. early onset age (OR = 0.87, P = 0.003), high BMI levels (OR = 1.42, P < 0.001) and oligomenorrhea (OR 39.86, P < 0.001) had significant correlation with endocrinologic abnormalities. Ludwig severity and presence of acne had no significant correlation. Hirsutism had significant correlation on univariable analysis but not on multivariable analysis.

Conclusion

Early onset age of FPHL, high BMI, clinical signs of oligomenorrhea are important clinical features for predicting endocrinologic abnormality in FPHL patients. Ludwig severity of FPHL, acne, hirsutism have less significance to predict endocrinologic abnormality in FPHL patients

# Subset analysis of NKG2D+ cells in peripheral blood mononuclear cells

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Alopecia areata(AA) is a chronic autoimmune disease with leading to recurrent hair loss. NKG2D is considered a crucial activating receptor in the pathogenesis of AA. NKG2D+ CD8+ T cells are pathogenic, indispensable cells for the development of AA in mouse model, but, the role of NKG2D+ cytotoxic T cells in human AA remains elusive. Moreover, some studies reported increased different subsets expressing NKG2D in peripheral blood of patients with AA (i.e. NKG2D+ CD4+, CD8 T cells or CD56+ NK cells), but their clinical implication need to be further studied. Herein, we tried to profile cellular subsets expressing NKG2D using flow cytometry and unbiased approach in blood of AA and healthy volunteers. For the profiling of cellular subset. Anti-CD3, CD4, CD8, CD14, CD16, CD56, and anti-NKG2D(CD314) antibodies were used.

First, sorted NKG2D+ PBMC from healthy controls consist of CD3+CD8+ T cells, CD56+CD16+ NK, CD56+CD16- NK cells in order of abundance and a minor subset of CD3+CD4+ T cells. Slightly increased proportions of total NKG2D+ cells or NKG2D+CD8+ cells among viable PBMC were observed in AA compared with healthy controls, but neither NKG2D+ cells nor NKG2D+CD8+ cells in AA blood showed statistically significant difference in comparison vs. healthy volunteers. To understand the relationship between immune subsets and clinical characteristics, we have evaluated the SALT score and activity of AA. But, most of parameters did not show strong correlation with activity nor severity in a small number of our cohorts. Thus, considering inter-person variation, unbiased comparison between peripheral blood in ‘active’ and ‘stable’ status of AA might be the appropriate to define disease-relevant immune subsets.

# Long-term Prognosis of Subclinical Sensitization with Diphenylcyclopropenone in Patients with Alopecia Areata

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Contact immunotherapy is widely used in the treatment of severe alopecia areata (AA). In addition, a varied treatment response to contact immunotherapy has been reported; therefore, it is not easy to predict the prognosis of AA. Furthermore, there were no results for long-term prognosis. The modified diphenylcyclopropenone (DPCP) treatment protocol, characterized by subclinical sensitization, has a favorable therapeutic efficacy as the standard protocol; however, it has fewer side effects. In a previous study conducted at our institution in 2017, 46 of 159 patients who underwent the modified DPCP treatment protocol showed complete response (CR). After 2 years of follow-up of patients who achieved CR at that time, 20 patients had recurrence. The purpose of this study was to examine the long-term prognosis and related factors by confirming the recurrence of AA in the remaining 26 patients with CR.

Two groups were created as relapse group and non-relapse group. Twenty-five patients were able to confirm the presence or absence of recurrence. Of these, 20 (80%) were confirmed for non-recurrence. In this follow-up study, when CR was achieved with modified DPCP treatment and continued for more than 2 years, it was confirmed that up to 80% of patients maintained well without recurrence. It was found that long-term prognosis was quite good, and the period without recurrence was maintained for nearly 18 years. On the other hand, it was confirmed that there was no significant difference between relapse group and non-relapse group indicating that the prognosis of AA is not easy to predict.

In conclusion, the modified DPCP treatment protocol may be considered a good treatment option for AA because it has fewer side effects as well as a good long-term prognosis.

# Increased Risk of Alopecia Areata in Patients with Autism Spectrum Disorders: A Korean Nationwide Population-based Study

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Autism spectrum disorder (ASD) is a major neurobehavioral disorder in children. Allergic disorders are more common in patients with ASD; however, an association between ASD and alopecia areata (AA) has not yet been reported. The aim was to investigate whether patients with ASD have an increased risk for AA. This nationwide population-based study was performed using the National Health Insurance Service (NHIS) database of Korea. We enrolled patients with ASD who was born after 2002 and had ≥ three documented visits with an International Statistical Classification of Diseases, 10th revision (ICD-10) code of F84.x. Patients were matched 1:5 for age, sex, insurance type, income level, and type of location with controls without ASD. The controls included individuals who had never been visited with F84.x during the entire observation period.

Patients with ASD had a significantly increased risk of AA with a crude hazard ratio (cHR) of 1.33 (95% confidence interval [CI], 1.18–1.49). Among the subtypes of AA, the risk of patchy alopecia increased (cHR, 1.33; 95% CI, 1.18–1.50). However, the increased risk of alopecia totalis in ASD patients did not reach statistical significance. After adjusting for thyroid diseases and vitamin D deficiency, which were associated with the development of AA, the risk of AA was still higher in patients with ASD (adjusted HR: 1.25; 95% CI, 1.11–1.40). This study found that patients with ASD had a higher AA risk than those without ASD. Linkage of autoimmunity, immune dysregulation, and genetic background could possibly explain this association. However, further research is needed due to the complex and multifaceted features of ASD.

In conclusion, the risk of AA is significantly increased in patients with ASD. Thus, in children with ASD, attention should be paid to developmental behavioral intervention as well as the development of autoimmune diseases such as AA.

# 대한모발학회



KHRS
The Korean Hair Research Society

# 대한모발학회 회칙

## 제 1 장 총 칙

제 1 조 (명칭) 본회는 대한모발학회(The Korean Hair Research Society)라 하며 대한피부과학회의 산하학회이다.

제 2 조 (구성) 본회는 모발 및 모발과 관련된 질환을 다루고 연구하는 사람으로 구성한다.

제 3 조 (목적) 본회는 모발에 대한 연구, 교육 및 학술활동을 수행하고 회원 간의 친목을 도모함을 목적으로 한다.

제 4 조 (사업) 본회는 전항의 목적을 달성하기 위하여 다음과 같은 사업을 수행한다.

1. 총회 및 학술대회 개최
2. 초록집, 학술지 및 소식지의 발간
3. 모발 및 모발질환에 대한 연구, 교육 등 제 문제에 대한 사업
4. 국내외 관련 학술단체와의 교류 및 제휴
5. 기타 본 학회 목적 달성에 필요한 사업

## 제 2 장 회 원

제 5 조 (자격) 본회의 회원은 모발 관련 진료 및 연구에 종사하거나 관심을 가지고 본 학회의 취지에 찬동하는 자로서 소정의 입회 수속을 밟고 이사회의 의결을 거 쳐 총회에서 인준을 받은 자로 한다.

제 6 조 (구분) 본회의 회원은 다음과 같이 구분한다.

1. 정회원: 대한피부과학회 정회원 자격자로 본 회 목적에 찬동하는 자로한다.
2. 명예회원: 모발 관련 진료 및 연구 업적이 탁월하고 본 회 발전에 공헌이 지대한자로 한다.
3. 연구회원: 생명과학 관련분야에 종사하는 박사학위 소지자이거나 이 에 준하는 경력자로 본 회 목적에 찬동하는자로 한다.
4. 전공의준회원: 대한피부과학회 준회원 자격자로 피부과 수련병원에서 수련 받는 전공의로 한다.
5. 연구준회원: 정회원 또는 연구회원의 지도를 받거나 생명과학 관련분야에 종사하는 연구원 또는 이에 준하는 경력자로 본 회 목적에 찬동 하는 자로 한다.

제 7 조 (의무) 회원은 본 회의 회칙, 제 규정 및 결의 사항을 준수하여야 하고, 정회원, 명예회원 및 연구회원은 회비 및 기타의 부담금을 납부할 의무가 있다.

제 8 조 (권리) 모든 회원은 본회에서 발간하는 소식지 및 학회지를 배부 받을 권리가 있으며 정회원은 선거권, 피선거권 및 기타 소정의 의결권을 가진다.

제 9 조 (제명) 본회의 의무를 준수하지 않거나 명예를 훼손한 회원은 이사회를 거쳐 총회의 인준을 받아 제명할 수 있다.

## 제 3 장 임 원

제 10 조 (임원) 본회는 회장, 부회장 3명 이내, 총무, 학술, 교육, 재무, 홍보, 간행정보, 기획, 의무, 대외협력, 국제관계, 무임소 상임이사, 간사, 감사 2명 및 약간 명의 고문을 두며 이사의 정원은 30명 내외로 한다.
무임소 상임이사와 간사는 약간명으로 한다.

제 11 조 (선임)

1. 회장, 감사는 총회에서 선출한다.
2. 부회장, 상임이사 및 상임부이사는 회장이 위촉한다.
3. 이사는 상임이사회에서 추천하여 회장이 위촉한다.
4. 고문은 회장이 위촉한다.

제 12 조 (임기) 임원의 임기는 2년으로 하며 연임할 수 있다.

전임자의 유고로 인해 보선된 임원의 임기는 전임자의 잔여 임기로 한다.

제 13 조 (직무)

1. 회장은 본회를 대표하여 업무를 총 관리하고 총회, 이사회의 의장이 된다.
2. 부회장은 회장의 유고시 그 직무를 대행하며, 본 회 운영의 주요한 사항을 심의하고 제반 업무를 집행한다.
3. 총무이사는 본회 운영의 주요한 사항을 심의하고 제반 업무를 집행한다.
4. 학술이사는 학술 모임에 관한 업무를 집행한다.
5. 교육이사는 회원 교육에 관한 업무를 집행한다.
6. 재무이사는 재무에 관한 업무를 집행한다.
7. 홍보이사는 홍보 및 대중 매체에 다루어지는 업무를 집행한다.
8. 간행정보이사는 간행 및 정보에 관한 업무를 집행한다.
9. 기획이사는 기획에 관한 업무를 집행한다.
10. 의무이사는 의무에 관한 업무를 집행한다.
11. 대외협력이사는 대관 및 대한피부과학회에 관한 업무를 집행한다.
12. 국제관계이사는 국제적 교류에 관한 업무를 집행한다.
13. 무임소이사는 특정 사업이나 지속적 업무를 집행한다.
14. 간사는 상임이사의 업무를 보좌한다
15. 감사는 본 학회의 재산 상황과 사업과 관련된 사항을 감사하고 이를 총회에 보고한다.
16. 이사는 이사회를 구성하여 본 학회 운영의 주요 사항을 심의 의결한다.
17. 고문은 본 학회의 운영 전반에 대한 자문을 한다.

## 제 4 장 회의

제 14 조 (구분) 본회에는 총회와 이사회, 상임이사회를 둔다.

제 15 조 (총회)

1. 정기총회는 연 1 회 회장이 소집한다. 단 정회원 5분의 1이상의 요구나 이사회의요청이 있으면 임시총회를 소집하여야 한다.
2. 총회는 출석 정회원으로 성립되고 재석 인원 과반수로 의결한다.
3. 총회는 다음과 같은 사항을 의결한다.
   (1) 회장, 감사 선출
   (2) 예산과 결산의 인준
   (3) 회칙 개정의 인준
   (4) 기타 이사회에서 제출한 사항

제 16 조 (이사회)

1. 이사회는 임원과 이사 및 부이사로 구성하며 회장이 의장이 되어 회의를 진행한다.
2. 이사회는 과반수 출석으로 성립하고 재석 인원 과반수로 의결한다.
3. 이사회는 총회에 제출하여 인준 또는 의결할 사항, 제 규정의 제정과 개정, 회원의 자격과 제명 및 기타 필요한 사항에 대하여 심의 의결 또는 인준한다.

# 대한모발학회 회칙

제 17 조 (상임이사회)

1. 상임이사회는 상임이사로 구성하며 회장이 의장이 되어 회의를 진행한다.
2. 상임이사회는 이사회 및 총회에 제출하여 인준 또는 의결할 사항을 포함하여 회무 전반에 관한 사항을 심의 의결 또는 인준하여 집행한다.

제 18 조 (각종 위원회)

1. 이사회의 의결을 거쳐 각종 위원회를 둘 수 있다.

## 제 5 장 재 정

제 19 조 (재원) 본 회의 재원은 회비, 입회비, 찬조금 및 기타 수입금으로 한다.

제 20 조 (회계년도) 본 회의 회계연도는 매년 정기 총회 일에서 다음 정기 총회 전일까지로 한다.

제 21 조 (임기) 본 회의 수지 결산은 감사의 감사를 거쳐 차기 정기 총회에 보고한다.
회계연도 결산 후 남은 잉여금은 배분하지 않는다.

## 제 6 장 부 칙

제 22 조 본 회칙에 규정되지 않은 세칙은 일반 관례에 준한다.

제 23 조 본 회칙의 개정은 이사회의 심의를 거쳐 총회의 인준을 받아야 한다.

제 24 조 본 회칙은 공포일로부터 시행한다.

2004. 07. 01 제정
2006. 05. 28 개정
2009. 05. 24 개정
2010. 10. 16 개정
2012. 06. 03 개정
2012. 10. 20 개정
2014. 10. 18 개정
2016. 10. 15 개정
2018. 10. 20 개정
2020. 08. 30 개정

| | |
|---|---|
| 고 문 | 노병인, 임철완, 박장규, 강진수, 김도원, 심우영, 이원수, 강훈 |
| 회 장 | 최광성 |
| 부 회 장 | 김문범 |
| 총무이사 | 권오상 |
| 국제관계이사 | 허창훈 |
| 학술이사 | 이양원 |
| 재무이사 | 김상석 |
| 교육이사 | 유박린 |
| 기획이사 | 이상훈 |
| 간행정보이사 | 김도영 |
| 홍보이사 | 원종현 |
| 대외협력이사 | 김정은 |
| 의무이사 | 박병철 |
| 무임소이사 | 김범준 |
| 무임소이사 | 서수홍 |
| 무임소이사 | 김민성 |
| 무임소이사 | 박현선 |
| 무임소이사 | 이 영 |
| 무임소이사 | 장용현 |
| 총무간사 | 최지웅 |
| 국제관계간사 | 박 진 |
| 학술간사 | 신현태 |
| 감 사 | 이동윤 |
| 감 사 | 조성빈 |
| 이 사 | 강광영, 계영철, 김규한, 김기호, 김정철, 김창덕, 김효진, 노윤우, 민복기, 박성욱, 박원석, 박진, 방철환, 서구일, 성영관, 신기식, 신정원, 오지원, 윤태영, 이세원, 이승호, 이인준, 이종록, 임이석, 장승호, 전지현, 조성환, 조항래, 최유성, 황성주 |

## 대한모발학회 소개

대한모발학회는 1998년 10월 29일 대한피부과학회 내에 모발연구분과위원회를 설립하기 위한 발기인 모임을 가진 것을 시작으로 하여 태동이 되었습니다. 이후 모발연구분과위원회의 주도로 매년 대한피부과학회 춘추계학술대회 때마다 모발심포지엄을 개최하여 왔습니다. 이후 기존의 모발연구분과위원회를 확대 개편하여 대한모발학회를 창립하기로 하고 2004년 7월 11일 제주도 샤인빌 호텔에서 창립총회를 가졌습니다. 초대회장으로 노병인 교수를 비롯한 임원진이 선출되었고, 이후 본격적인 활동을 시작하였습니다. 현재 대한모발학회는 북미모발학회, 유럽모발학회, 일본모발학회와 어깨를 겨루는 세계적인 모발학회로 성장하게 되었으며 2006년 5월 28일 제2대 회장으로 박장규 교수, 2008년 5월 25일 제3대 회장으로 임철완 교수, 2010년 6월13일 제4대 회장으로 강진수 강한피부과 원장, 2012년 6월 3일 제5대 회장으로 김도원 교수, 2014년 5월 17일 제6대 회장으로 심우영 교수, 2016년 5월 29일 제7대 회장으로 이원수 교수, 2018년 5월 27일 제8대 회장으로 강훈 교수가 선출되어 임기동안 학회를 훌륭히 이끌었습니다.

현재는 2020년 5월 30일 대한모발학회 총회에서 제9대 회장으로 최광성 교수가 선출되어 제9기 집행부를 구성하여 회무를 담당하고 있습니다.

## 학술활동 소개

### 1. 대한모발학회 학술대회

대한모발학회 학술대회는 1년에 한 번 개최되며, 해외학자 초청강연, 특강 및 교육 강연, 각종 구연 및 포스터 연제 발표 등으로 이루어지는 대한모발학회의 꽃이라고 할 수 있습니다. 제 1차 및 제 2차 심포지엄을 거쳐 2006년 제 3차 대회 때부터 정식 학술대회의 면모를 갖추게 되었습니다.

1) 제1차 대한모발학회 심포지엄
- 2004년 11월 7일 밀레니엄 힐튼 호텔
- 탈모에서 Mesotherapy 외 9 강좌

2) 제2차 대한모발학회 심포지엄
- 2005년 6월 19일 밀레니엄 힐튼 호텔
- 탈모증의 진단 외 12강좌

3) 제3차 대한모발학회 학술대회
- 2006년 5월 28일 밀레니엄 힐튼 호텔
- 원형탈모증의 임상적 특징 외 8강좌 및 일반연제

4) 제4차 대한모발학회 학술대회
- 2007년 5월 27일 밀레니엄 힐튼호텔
- 원형탈모증의 원인과 발생기전 외 10강좌 및 일반연제

5) 제5차 대한모발학회 학술대회
- 2008년 5월 25일 밀레니엄 힐튼호텔
- 모낭과 안드로겐 외 15강좌 및 일반연제

6) 제6차 대한모발학회 학술대회
- 2009년 5월 24일 밀레니엄 힐튼 호텔
- 모낭의 발생 외 12 강좌 및 일반연제

7) 제7차 대한모발학회 학술대회
- 2010년 6월 13일 밀레니엄힐튼호텔
- New insights into hair biology 외 14 강좌 및 일반연제
- 모발이식 워크샵 및 직원교육

8) 제8차 대한모발학회 학술대회
- 2011년 9월 18일 코엑스 회의실 Hall E (3층)
- Congenital atrichia and hypotrichosis 외 16 강좌 및 일반연제
- Hair clinic workshop 및 Hair research workshop

9) 제9차 대한모발학회 학술대회
- 2012년 6월 3일 백범김구기념관
- Alopecia areata: biomarkers and clinical trials, quest for a safe and effective therapy 외 10 강좌 및 일반연제
- Rumination on Diagnosis and Treatment Options

10) 제10차 대한모발학회 학술대회
- 2013년 5월 26일 백범김구기념관
- Latest news about the genetics of alopecia areata 외 18 강좌 및 일반연제
- What's new?: Hair clinic and hair research

11) 제8차 세계모발연구학회 (World Congress for Hair Research)
- 2014년 5월 14-17일 제주국제컨벤션센터
- 주최: 대한모발학회
- 대회장: 이원수
- 참가자: 871명(국내-452, 국외-265, exhibitor; 154)
- Malassezia yeast and seborrheic dermatitis 외 238 강좌 및 일반연제

12) 제11차 대한모발학회 학술대회
- 2015년 5월 31일 가톨릭대학교 서울성모병원 지하1층 대강당
- Wnt/β-catenin signaling controls proliferation but not survival of hair follicle stem cells외 15 강좌 및 일반연제

13) 제12차 대한모발학회 학술대회
- 2016년 5월 29일 가톨릭대학교 서울성모병원 지하1층 대강당

14) 제13차 대한모발학회 학술대회
- 2017년 5월 28일 연세의료원 종합관 337호, 331호

15) 제14차 대한모발학회 학술대회
- 2018년 5월 27일 연세의료원 종합관 337호, 211호

16) 제15차 대한모발학회 학술대회
- 2019년 5월 26일(일) 연세대학교 백양누리 그랜드볼룸

17) 제16차 대한모발학회 학술대회
- 2020년 8월 30일(일) 서울드래곤시티 그랜드볼룸

18) 제17차 대한모발학회 학술대회
- 2021년 5월 30일(일) 서울 삼정호텔

## 2. Hair Forum

2001년 시작하여 해마다 참석하는 인원이 늘어나고 있는 Hair Forum은 모발학회 회원들 간의 격식 없는 모임입니다. 이는 자유로운 토론과 회원 상호간의 친목도모를 위하여 마련되고 있으며, 주로 진단 및 치료가 어려운 증례에 대한 토론, 그동안 연구했던 내용 발표, 해외모발학회 참관기 소개 등 다른 회원들과의 의견공유를 위해서 밤늦은 시간까지 진행됩니다. 최근에 개최된 Hair Forum 현황은 다음과 같습니다.

2002 대한모발학회 제1차 Hair Forum
일시: 2002년 8월 23일
장소: 대전 유성 리베라 호텔
모발의 색소이상에 나타나는 모구의 변화 외 8건 발표

2003 대한모발학회 제2차 Hair Forum
일시: 2003년 8월 23일
장소: 대전 유성 리베라 호텔
원형탈모증 환자 400명의 임상적 고찰 외 8건 발표

2004 대한모발학회 제3차 Hair Forum
일시: 2004년 8월 28일
장소: 대전 유성 스파피아 호텔

모낭유래세포에서의 androgen receptor, estrogen receptor의 발현 양상 외 13건 발표

2005 대한모발학회 제4차 Hair Forum
일시: 2005년 8월 20일
장소: 대전 유성 스파피아 호텔
원형탈모증 환자 400명의 임상적 고찰 외 8건 발표

2006 대한모발학회 제5차 Hair Forum
일시: 2006년 8월 19일
장소: 대전 유성 레전드호텔
Acute diffuse alopecia areata 외 11건 발표

2007 대한모발학회 제6차 Hair Forum
일시: 2007년 8월 18일
장소: 대전 유성 리베라 호텔
모낭유래세포의 특성분석 외 13건 발표

2008 대한모발학회 제7차 Hair Forum
일시: 2008년 8월 23일
장소: 대전 유성 리베라 호텔
전두탈모증 환자에서 모반 제거후 모발재생의 치료 경험 외 18 건 발표

2009 대한모발학회 제8차 Hair Forum
일시: 2009년 8월 22일
장소: 대전 유성 리베라 호텔
원형 탈모증 환자에서 스트레스 평가에 대한 예비 연구 외 9건 발표

2010 대한모발학회 제9차 Hair Forum
일시: 2010년 8월 21일
장소: 대전 유성 리베라 호텔
Differential expression of cytokines and interferone inducible genes in alopecia areata 외 16건 발표

2011 대한모발학회 제10차 Hair Forum
일시: 2011년 8월 27일
장소: 대전 아드리아 호텔
Retinol-binding protein 4 (RBP4) and anti-RBP4 antibody are increased in alopecia areata 외 12건 발표

# 대한모발학회 연혁

2012 대한모발학회 제11차 Hair Forum
일시: 2012년 8월 18일
장소: 대전 아드리아 호텔
Effects of mycophenolic acid and rapamycin on hair growth 외 12건 발표

2013 대한모발학회 제12차 Hair Forum
일시: 2013년 8월 17일
장소: 대전 아드리아 호텔
How can we enhance follicular penetration? (In vivo preliminary study) 외 13건 발표

2014 대한모발학회 제13차 Hair Forum
일시: 2014년 7월 26일
장소: 대전 유성호텔 8층
스타볼룸털껍질(hair cuticle)이 모발색조에 미치는 영향 외 6건 발표

2015 대한모발학회 제14차 Hair Forum
일시: 2015년 8월 22일
장소: 대전 유성호텔 8층 스타볼룸
Experience of combination therapy with finasteride and low dose dutasteride in the treatment of male pattern hair loss 외 8건 발표

2016 대한모발학회 제15차 Hair Forum
일시: 2016년 8월 27일
장소: 대전 유성호텔 8층 스타볼룸

2017 대한모발학회 제16차 Hair Forum
일시: 2017년 8월 26일(토)
장소: 대전 유성호텔 8층 스타볼룸

2018 대한모발학회 제17차 Hair Forum
일시: 2018년 8월 18일(토)
장소: 대전 유성호텔 8층 스타볼룸
The effect of ceramide-based essence cream for the damaged hair shaft 외 8편 발표

2019 대한모발학회 제18차 Hair Forum
일시: 2019년 8월 17일(토)
장소: 대전 유성 호텔 8층 스타볼룸
Impact of alopecia areata on subsequent pregnancy rate: a retrospective cohort study 외 10편 발표

## 3. 대한피부과학회 학술대회 시 모발심포지엄 개최

대한모발학회는 대한피부과학회 산하의 모발연구분과위원회이기도 하므로, 1999년부터 매년 대한피부과학회의 춘추계 학술대회에서 모발심포지엄을 진행하고 있습니다. 2009년부터는 대한피부과학회 춘추계학술대회시 한 번에 한해 분과심포지엄을 개최할 수 있는 대한피부과학회의 새로운 자체 규정에 따라 추계학술대회에서 모발심포지엄을 개최해 오고 있습니다.

# 대한모발학회 학술대회 전시 및 광고회사

## 전시회사

| No. | 부스 업체 | 연락처 |
|---|---|---|
| 1 | GSK | 02-709-4114 |
| 2 | 한국오가논 | 1577-8582 |
| 3 | 갈더마 | 02-6717-2000 |
| 4 | 얀센 | 02-2094-4500 |
| 5 | 종근당 | 02-2194-0300 |
| 6 | 릴리 | 02-3459-2676 |
| 7 | 노바티스 | 02-768-9000 |
| 8 | 사노피 | 02-2136-9000 |
| 9 | 에스트라 | 080-023-3900 |
| 10 | 더유제약 | 02-2615-5724 |
| 11 | 애브비 | 02-3429-9300 |
| 12 | JW신약 | 02-2109-3300 |
| 13 | 동화약품 | 02-2021-9495 |
| 14 | 바름메디 | 02-733-2900 |
| 15 | 대웅제약 | 02-550-8800 |
| 16 | 동구바이오 | 02-2684-5421 |
| 17 | 네오팜 | 02-591-4511 |
| 18 | 정우의학 | 02-822-1361 |

## 광고회사

| No. | 회사명 | 연락처 |
|---|---|---|
| 1 | GSK | 02-709-4114 |
| 2 | 한국오가논 | 1577-8582 |
| 3 | 종근당 | 02-2194-0300 |
| 4 | 동아ST | 02-920-8286 |
| 5 | 코오롱 | 080-203-6000 |
| 6 | 부광약품 | 02-828-8114 |
| 7 | 노바티스 | 02-768-9000 |
| 8 | HPNC | 02-553-7895 |
| 9 | 원더메드 | 031-705-8841 |
| 10 | 얀센 | 02-2094-4500 |
| 11 | 한미약품 | 02-410-9114 |
| 12 | 제이알팜 | - |
| 13 | 제뉴원사이언스 | 080-601-0090 |
| 14 | 한독약품 | 02-527-5114 |
| 15 | 에피바이오텍 | 070-4209-0556 |
| 16 | 보령제약 | 080-708-8088 |
| 17 | 씨엠에스랩 | 080-447-1820 |

The Korean Hair Research Society

# 2022년 제18차
# 대한모발학회 학술대회


인 쇄 2022년 5월 19일
발 행 2022년 5월 29일
발행처 **대한모발학회**
인쇄처 **허밍아이엠씨**
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- 경구제(Itraconazole) 수준의 치료 효과[1,4]

**높은 투과성**[5]
- 사용 전 손발톱 표면 사포질 불필요

**사용 편리성 개선**
- 약물 용기+브러쉬 일체형

**안전성**
- 미국 FDA 승인
- 간대사 및 약물상호작용 낮음


**[References]** **1.** Elewski BE, *et al. J Am Acad Dermatol.* 2013;68(4):600-608. **2.** Elewski BE, *et al. J Eur Acad Dermatol Venereol.* 2013;27(3):287-294. **3.** Del Rosso JQ. *J Clin Aesthet Dermatol.* 2014;7(7):10-18. **4.** Sigurgeirsson B, *et al. Br J Dermatol.* 1999;141 Suppl 56:5-14. **5.** Sugiura K, *et al. Antimicrob Agents Chemother.* 2014;58(7):3837-3842.



JBL-21K049

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- 높은 히스타민 $H_1$ 수용체 선택성(in vitro)[3]
- IL-5 생성 억제(in vitro)[4]


[ Reference ]

1. Yokota H 外 : Phase I study of TAU-284 1997;13(5) 1137-53
2. M. tashiro, et al. : Br J Clin Pharmacol 2008;65(6):811-21
3. M.kato, et al. : Arzeimittelforschung 1997;47(10):1116-24
4. O.kaminuma, et al. : Biol Pharm Bull 1998;21(4):411-3

* 築本美喜子 외 : Internal data of MTPC Seiyaku


※ 보험 CODE : 626500960

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※ 제품문의는 소비자상담실 060-203-6000으로 전화주시기 바랍니다.

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|---|---|---|
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| 효능·효과 | 피부사상균증(족부백선 체부백선, 완선), 칸디다증, 어루러기 | Pityrosporum에 의한 비듬 |
| 용법·용량 | 1일 1~2회씩 4주간 | 일반샴푸처럼 3~5분간 적용, 매주 2회씩 2~4주간 |
| 보험코드 | 642200133 | 비급여 |
| 주요 상병코드 | 발백선(B353) 체부백선(B354) 사타구니 백선증(B356) | 두피지루(L210) |

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Product Information

졸레어주사 (오말리주맙)

졸레어프리필드시린지주75 (오말리주맙)

※ 처방하시기 전 QR코드 또는 식품의약품안전처 의약품통합정보시스템 (https//nedrug.mfds.go.kr)을 통해 상세 제품정보를 참조하시기 바랍니다.

NOVARTIS 한국노바티스주식회사 서울시 영등포구 국제금융로 10 Three IFC, 49층 07326 TEL: 02)768-9000 FAX: 02)785-1939

KR2104196687

(주)토탈헬스포인트가 “(주)에이치피앤씨”로 변경되었습니다

일반의약품
분류번호 : 325

# 확산성 탈모 및 손발톱 발육부진 치료제


KERAMIN capsule has the ideal combination of essential nutrients for hair and nails

▶ For your hair”

KERAMIN and Diffuse hair loss : KERAMIN's unique ingredients supply hair with the nutrients for your healthy hair

▶ For your nail ”

KERAMIN and Nail disorder : KERAMIN prevents nail disorder caused by malnutrition with its protein and vitamins

## Keramin caps. 케라민캡슐 탈모치료제

케라민은 손상된 모발과 손톱을 위한 필수 성분들이 이상적으로 배합된 비 호르몬성 먹는 확산성 탈모 및 손톱 발육부진 치료제입니다.

### 확산성 탈모와 케라민

건강한 모발은 모발의 성장에 필수적인 단백질, 비타민 B, 각종 아미노산 등을 원활히 공급받아 모근에서부터 성장을 시작합니다.

### 손발톱의 발육부진과 케라민

손발톱의 발육부진의 경우 케라민은 손발톱의 주요 단백질인 케라틴과 미세영양소를 혈액순환을 통해 원활히 공급하며 건강하고 탄력 있는 손발톱으로 만들어줍니다.

**효능 효과**
1. 손상된 모발, 감염성이 아닌 손발톱의 발육 부진
2. 확산성 탈모의 완화

**포장단위 :** 90캡슐(1개월분)

**용법, 용량**
성인 : 1일 3회, 1회 1캡슐 식후 복용
12세 이상 소아 : 1회 1캡슐을 1일 1~2회 식후에 복용한다.

HP&C
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SKINPEDIA®

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# ENZYME

## Powder wash & Cleansing oil


## 클렌징의 새로운 강자 - 스킨피디아®

독자적인 '효소 안정화 배합' Technology로 최적의 효소를 만들다.

(일본특허번호: 특허 제2934969호)

**딥 클렌징** — 일본 관서효소 주식회사의 독자적인 '효소 안정화 배합' Technology가 적용되어 프로테아제의 효과를 극대화하여 딥 클렌징 효과가 뛰어납니다. (일본특허번호: 특허 제2934969호)

**식물 유래 보습 성분** — 여러 식물 유래 보습 성분들이 배합되어 클렌징 후에도 피부 당김이 적고 촉촉하고 매끄러운 피부를 유지시켜 주며 스트레스에 지치거나 자극받은 피부를 진정시키는데 도움을 줍니다.

**All in one** — 거칠어진 묵은 각질, 블랙헤드 그리고 모공속 피지를 깨끗하게 분해하여 피부톤을 맑고 밝게 유지하는데 도움을 줍니다.

**저자극성** — 피부 노폐물을 부드럽고 깨끗하게 씻어내주고 자극이 적어 민감성 피부를 포함한 모든 피부타입에 사용이 가능합니다.

SKINPEDIA®는 병·의원에서만 판매되는 병원 전용 제품입니다. **제조판매업자 (주)원더메드 031.708.8801**

# REDEFINE PERFORMANCE

**PsO**

COMPLETE SKIN CLEARANCE
**PASI100**
maintain in 1 in 2 patients at 5 years*1

**PsA**

SUSTAINED JOINT EFFICACY
**ACR50**
maintain in 1 in 2 patients at 2 years†2,3

**PPP**

PROVEN EFFICACY
**PPPASI-75**
maintained 68.9% at 1.5 years‡4

**Uncover what's possible with**

Tremfya® (guselkumab)



## Now you can treat PsO, PsA, and PPP with TREMFYA® 5,6

The only approved IL-23 inhibitor for PsO, PsA, and PPP[5,6]

*8-week dose Tremfya® PsO patients in combined group (N=391) †Bio-naive 8-weekly dose Tremfya® PsA patients (N=248) ‡8-week 100 mg dose Tremfya® PPP patients (N=45)
**ACR50,** 50% improvement in the American College of Rheumatology response criteria; **PASI100,** 100% improvement in psoriasis area and severity index; **PPPASI-75,** 75% improvement in palmoplantar pustulosis area and severity index; **PsO,** psoriasis; **PsA,** psoriatic arthritis; **PPP,** palmoplantar pustulosis.

**References 1.** Reich K, et al. *Br J Dermatol.* 2021 Jun 9. doi: 10.1111/bjd.20568. **2.** McInnes IB, et al. *Arthritis Rheumatol.* 2021;73(4):604-616. **3.** McInnes IB, et al. Efficacy and Safety of Guselkumab, a Monoclonal Antibody Specific to the p19 Subunit of Interleukin-23, Through 2 Years: Results from a Phase 3, Randomized, Double-blind, Placebo-controlled Study Conducted in Biologic-naive Patients with Active Psoriatic Arthritis. Presented at the Innovations in Dermatology: Virtual Spring Conference; March 16–20, 2021 [Poster]. **4.** Okubo Y, et al. *J Dermatol.* 2021 Aug 28. doi: 10.1111/1346-8138.16132. **5.** 식품의약품안전처 의약품안전나라, 의약품통합정보시스템 avalilable at https://nedrug.mfds.go.kr/index **6.** 트렘피어®프리필드시린지주 허가사항 (최근변경일2021.09.30)



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서울특별시 용산구 한강대로 92 LS 용산타워 25층
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CP-282358 12/9/2022

Hanmi 한미약품

# 빠졌던 "자신감" 다시 심어주세요!

## 남성 탈모 전문치료제

# 피나테드정

(Finasteride 1mg)

**[성분]** 피나스테리드 **[성상]** 양면이 볼록한 팔각형 모양의 황갈색 필름코팅정제 **[효능 · 효과]** 성인남성(만18~41세)의 남성형 탈모증(안드로겐 탈모증)의 치료
**[용법 · 용량]** 일반적으로 피나스테리드로서 1일 1회 1mg을 경구투여하며, 식사와 관계없이 투여할 수 있다. 용량을 증량하면 유효성이 증대된다는 근거가 없다. 일반적으로 3개월 이상 복용해야 치료효과를 볼 수 있으며, 치료효과 유지를 위해 지속적으로 복용할 것을 권장한다. 치료 기간과 유효성을 지속적으로 평가해야 한다. 복용을 중단하면 12개월 내에 치료효과는 사라지게 된다.

실손보험
청구가능

# 메티스덤
# S.O.S스칼프 솔루션

손상된 두피,
가렵고 건조한 두피를 바로잡다.


CE 0068
Conformity European
CE 인증 획득

Islamic Halal Association
할랄 인증 획득

(주)제이알팜

제품문의 02-489-6999
본 제품은 근처 병의원에서만 처방받을 수 있습니다.

Life and Creativity L&C BIO

Pharmino Total healthcare services

하루에 한번,
안전하고 효과적인 남성 탈모 치료제

# 메가페시아정 1밀리그램

- 성분·함량 : Finasteride 1mg
- 효능·효과 : 성인남성(만 18~41세)의 남성형 탈모증의 치료

allegra® allegra-D®
Fexofenadine HCl

# Active day, peaceful night without symptoms[1,2]

# Allegra®

**빠른 효과발현**(중간값 60분) 및 **긴 반감기로** 오랫동안 항알레르기 반응 유지[3,4]

**알레르기 비염으로** 대표되는 주요 증상들에서 **유의한 TSS 및 개별 NSS 개선 효과**[5]
- 위약군 대비 reflective TSS 42%, morning instantaneous TSS 28% 및 개별 NSS 항목에서 모두 유의한 감소를 보여 Nasal symptom(Sneezing, Rhinorrhea, Nasal Congestion, Nasal Itching)을 효과적으로 개선

**30 분 내 빠른 두드러기 억제 효과**[6]

**non-sedation**이 관찰된 항히스타민제[7]

중등도-중증 알레르기 비염 환자에서 위약 대비 **직장 및 일상 활동 능력의 손상 감소 및 삶의 질 개선**[8]

**TSS,** total symptom score; **NSS,** nasal symptom score.


**References 1.** Meeves SG, Appajosyula S. *J Allergy Clin Immunol.* 2003;112(4 Suppl):S69-77. **2.** Simpson K, Jarvis B. *Drugs.* 2000;59(2):301-21. **3.** Day JH, et al. *Ann Allergy Asthma Immunol.* 1997;79(6):533-40. **4.** Allegra® FDA Prescribing information (revised 07/2007). **5.** Compalati E, et al. *Int Arch Allergy Immunol.* 2011;156(1):1-15. **6.** Dhanya NB, et al. *Indian J Dermatol Venereol Leprol.* 2008;74(4):361-3. **7.** Smith SM, Gums JG. *Expert Opin Drug Metab Toxicol.* 2009;5(7):813-22. **8.** Meltzer EO, et al. *Ann Allergy Asthma Immunol.* 1999;83(4):311-7.


**Study design[3]:** This study was of a randomized, placebo-controlled, double-blind, parallel design. One hundred forty-six ragweed-sensitive subjects were primed in the off-season with ragweed pollen in the environmental exposure unit. One hundred thirty-six subjects who adequately responded to priming entered a single-dose placebo phase. Placebo-responders were disqualified from the study, leaving 99 subjects with adequate symptoms to be randomized and given a single dose of either fexofenadine HCl 120 mg (33), 60 mg (33) or placebo (33), after 60 minutes of allergen exposure. Exposure continued over five hours and subjects recorded symptoms every 20 minutes.
**Study design[5]:** All double-blind, placebo-controlled randomized trials assessing the efficacy of fexofenadine in AR were searched for in OVID Medline, and Embase databases up to December 2007. 8 trials were included in the meta-analysis. Out of the 3,532 participants 1,833 received fexofenadine and 1,699 placebo. The primary outcome was the 12- or 24-hour reflective total symptom scores (TSS), the sum of sneezing, rhinorrhea, itchy nose/palate, and itchy/watery/red eyes, excluding nasal congestion.
**Study design[6]:** Thirty volunteers(18–50years of age) were given three single doses of levocetirizine, fexofenadine and desloratadine at weeklyintervals. A pretest was performed by using the intradermal histamine prick test. After administration of the drugs, the intradermal test was repeated at ½, 1, 2, 3, 6 and 24 h, and the sizes of the wheal were measured. The mean values were taken and were compared by using Levene's t-test.
**Study design[7]:** A literature was searched in PubMed/MEDLINE (1966 – March 2009) using the keywords fexofenadine, antihistamine, allergic rhintis and chronic urticaria. Data provided by the manufacturer in addition to reports from various governmental agencies were reviewed.
**Study design[8]:** This placebo-controlled, double-blind, randomized study included 845 patients aged 12 to 65 years with moderate-to-severe seasonal allergic rhinitis symptoms. Patients were randomized to receive 120 or 180 mg fexofenadine HCl QD or placebo QD for 2 weeks. The primary outcome measure was the change from baseline in the overall RQLQ (Rhinoconjunctivitis Quality of Life Questionnaire) score over the entire 2-week double-blind treatment period.

## Selected Prescribing Information

**알레그라 정30밀리그람** 전문의약품 **[제품명] 알레그라 정30밀리그람 [원료약품 및 분량]** 1정 중 펙소페나딘염산염 30mg **[효능·효과]** 계절알레르기비염 증상 완화, 알레르기 피부질환(만성 특발두드러기)과 관련된 증상의 완화 **[용법·용량]** 6 ~ 11세 어린이: 1회 30 mg을 1일 2회 식사전 물과 함께 경구투여 **[주요 사용상의 주의사항]** 1. 금기-이 약 및 이 약의 구성성분에 과민반응 환자 2. 신중투여 1) 신부전 소아 환자 2) 간부전 소아 환자 3) 심혈관질환 환자 또는 그 병력이 있는 환자 3. 이상반응 1) 6 ~ 11세의 계절알레르기비염을 가진 소아에게 1회 1정, 1일 2회 투여시에 2% 이상의 발현율을 나타낸 이상반응: 두통, 우발적 손상, 기침, 발열, 통증, 중이염, 상기도 감염 2) 계절알레르기비염 환자 및 만성 특발 두드러기 환자를 대상으로 한 임상시험에서 펙소페나딘 투여군과 위약(placebo)투여군 사이의 이상반응 발생비율은 비슷하였다. 펙소페나딘을 투여한 군에서 가장 빈번히 보고된 이상반응-> 3%: 두통, 1 ~ 3%: 졸음, 어지러움, 구역 **[최종개정일]** 2012-01-28 **알레그라 정120밀리그람** 일반의약품 **[제품명] 알레그라 정120밀리그람 [원료약품 및 분량]** 1정 중 펙소페나딘염산염 120mg **[효능·효과]** 알레르기비염 증상 완화 **[용법·용량]** 성인 및 12세 이상 청소년: 1일 1회 120 mg을 식사전 물과 함께 경구 투여 **[주요 사용상의 주의사항]** 1. 금기-이 약 및 이 약의 구성성분에 과민반응 환자 2. 신중투여-1)신부전 환자 2) 고령자 3) 심혈관질환 환자 또는 그 병력이 있는 환자 3. 이상반응 1) 알레르기비염 환자를 대상으로 한 임상시험에서 펙소페나딘 투여군과 위약(placebo) 투여군 사이의 이상반응 발생비율은 비슷하였다. 펙소페나딘을 투여한 군에서 가장 빈번히 보고된 이상반응 -> 3%: 두통, 1 ~ 3%: 졸음, 어지러움, 구역 **[최종개정일]** 2012-01-28 **알레그라 정180밀리그람** 전문의약품 **[제품명] 알레그라 정180밀리그람 [원료약품 및 분량]** 1정 중 펙소페나딘염산염 180mg **[효능·효과]** 알레르기 피부질환(만성 특발두드러기)과 관련된 증상의 완화 **[용법·용량]** 성인 및 12세 이상 청소년: 1일 1회 180 mg을 식사전 물과 함께 경구 투여 **[주요 사용상의 주의사항]** 1. 금기 1) 이 약 및 이 약의 구성성분에 과민반응 환자 2) 신부전 환자 2. 신중투여 1) 고령자 2) 심혈관질환 환자 또는 그 병력이 있는 환자 3. 이상반응-만성 특발두드러기 환자를 대상으로 한 임상시험에서 펙소페나딘 투여군과 위약(placebo)투여군 사이의 이상반응 발생비율은 비슷하였다. 이 약을 투여한 군에서 가장 빈번히 보고된 이상반응 -> 3%: 두통, 1 ~ 3%: 졸음, 어지러움, 구역, 상기도감염, 요통 **[최종개정일]** 2012-01-28 **알레그라 디정** 전문의약품 **[제품명] 알레그라 디정 [원료약품 및 분량]** 1정 중 펙소페나딘염산염 60mg, 수도에페드린염산염 120mg **[효능·효과]** 계절알레르기비염에 의한 다음 증상의 완화: 재채기, 콧물, 코 · 구강 · 인후의 가려움, 눈의 가려움, 눈물흘림증, 충혈, 비충혈, 이 약은 펙소페나딘염산염의 항히스타민 효과와 수도에페드린염산염의 비충혈 제거효과가 모두 요구될 때 사용할 것 **[용법·용량]** 성인 및 12세 이상의 청소년 : 1회 1정 1일 2회 (음식물과 함께 섭취하지 않는 것이 바람직하다.) **[주요 사용상의 주의사항]** 1. 경고 슈도에페드린 함유 의약품 복용시 급성 전신성 발진성 농포증(AGEP)과 같은 중증 피부 이상반응이 나타날 수 있다. 환자들을 주의 깊게 모니터링해야 한다. 발열, 홍반, 다수의 작은 농포와 같은 증상이 관찰될 경우 이 약의 복용을 중단하고 적절한 조치를 취해야 한다. 2. 금기 1) 펙소페딘, 수도에페드린 또는 이 약의 기타 성분에 과민반응을 나타내는 사람 2) 협우각 녹내장 환자 3) 요저류 환자 4) MAO 억제제를 복용중이거나 복용을 중단한지 14일 이내의 사람 5) 중증의 고혈압이나 중증의 관상동맥질환을 가진 사람 6) 아드레날린 제제 혹은 이와 유사한 화학구조를 가진약물에 과민반응이 있거나 특이체질인 사람 7) 아드레날린 제제에 대한 특이증상(불면증, 어지럼, 허약, 떨림, 부정맥)을 보이는 사람 3. 이 약을 복용하는 동안 다음의 약을 복용하지 말 것- MAO억제제 : 이 약은 MAO억제제를 복용중인 환자나 복용을 중단한지 14일 이내의환자는 복용해서는 안된다. 4. 이상반응- 계절알레르기 비염에 대한 임상시험에서 1 % 이상의 발현율을 보인 이상반응: 두통, 불면증, 구역, 구갈, 소화불량, 인후자극, 현기증, 초조, 요통, 심계항진, 신경과민, 불안, 상기도감염, 복통 **[최종개정일]** 2019-04-27

***자세한 품목허가사항은 식품의약품안전처 의약품통합정보시스템(http://nedrug.mfds.go.kr)또는 제품의 첨부문서를 확인하여 주시기 바랍니다.**

KR-FEX-21.03.03


HANDOK
**(주)한독** 서울특별시 강남구 테헤란로 132
**TEL** 02.527.5114 **FAX** 02.527.5001 I www.handok.co.kr

SANOFI
**(주)사노피** 서울시 서초구 반포대로 235
**TEL** 02.2136.9000 **FAX** 02.2136.9178

# 에피바이오텍
## 대한민국 #1 모낭 연구소

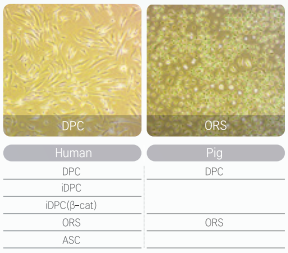
**비임상 CRO**

에피바이오텍은 15년 이상의 오랜 줄기세포, 탈모 연구 경험과 전문성을 기반으로 탈모 전문 플랫폼 기술을 보유하고 있습니다. 제약 및 바이오 산업계의 요구에 맞춘 최적의 발모 효능 검증 서비스를 제공합니다.

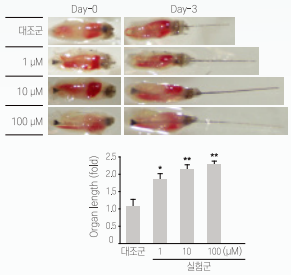
### 발모효능시험

다양한 모낭 세포를 확보하고 있으며 모발 조직 배양 및 다양한 동물 실험을 통해 제품 검토 및 개발 단계에서 기대하는 효능 검증 및 투여 용량에 대한 적절성을 검증해 드립니다.

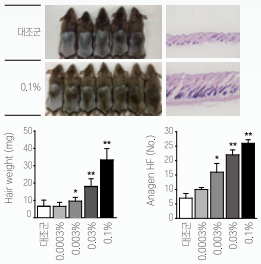
**다양한 모낭 세포 확보**
In vitro
Cell scale research
세포 수준에서의 효능 평가
보유 모낭 구성 세포주



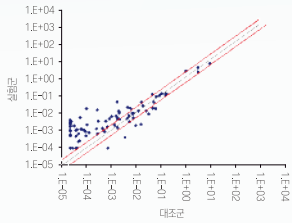

**Hair 조직배양**
Ex vivo
Organ scale research
쥐의 콧수염 모낭
돼지의 피부 모낭
쥐의 콧수염 모낭을 이용한 organ culture




**다양한 동물 실험**
In vivo
Organism scale research
① 발모 촉진 동물 모델
② 탈모 유도 동물 모델
발모촉진 실험




**발모 관련 기전 연구**
In vitro/In vivo
표적유전자 발굴
단백질 저해제 이용 연구
Paracrine 효과 평가
발모 관련 성장인자 평가
성장인자 및 주요기전 유전자 발현 평가




**CMO 서비스**

우수한 세포 분리 및 배양, 분화기술을 보유하고 있으며 임상시료 및 세포치료제 위탁 생산에 더해 품질 분석과 문서화 작업까지 동반하는 고객 맞춤형 CMO 서비스를 제공합니다.

### 차세대 세포 & 유전자 치료제 시설

**Crispr-Cas9**을 이용한 **gene knock-in** 또는 **knock-out system** 구축

차세대 유전자 가위 기반 기술 **(Base and Prime editing)** 확보

### 최신 GMP 기준 적용된 시설

외부 오염과 교차 오염에 대한 가능성 원천 차단


입구 통로


세포은행보관실


배양실1


배양실2


분리실


배양


멸균


공기조화실


epibiotech

[본사/송도연구실] 인천광역시 연수구 송도과학로 32, M동 1903호
[세포치료제 생산센터] 인천광역시 연수구 송도과학로 32, M동 15층
[판교연구실] 경기도 성남시 분당구 판교역로 240, A동 510-3호
[Tel] 070-4209-0556 [팩스] 032-209-8239
[이메일] info@epibiotech.com [홈페이지] http://epibiotech.com

보령제약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효과적인 위점막보호로 **또 한번**

Dual Action H2RA

# 스토가®

[Lafutidine 10mg]

**[ 제품명 ]** 스토가정10mg **[ 분류번호 ]** 232 (소화성궤양용제) **[ 원료약품 및 그 분량 ]** 1정 중 Lafutidine 10 mg **[ 성상 ]** 흰색의 원형 필름코팅정제 **[ 효능·효과 ]** 1. 위궤양, 십이지장 궤양 2. 급성위염 및 만성위염의 위점막병변의 개선 3. Helicobacter pylori 에 감염된 소화기 궤양 환자에 대한 항생제 병용요법 4. 마취전 투약 5. 역류성 식도염 치료 **[ 저장방법 ]** 기밀용기, 실온(1~30℃)보관 **[ 포장단위 ]** 30정, 300정

※ 기타 상세한 내용은 제품설명서를 참조하시기 바랍니다. ※ 제품에 대한 자세한 정보를 원하시면 소비자 상담실(080-708-8088)로 문의해 주시기 바랍니다. www.boryung.co.kr

의료기기

# 셀퓨전씨 엑스퍼트 배리덤 로션MD/크림MD

화상이나 건조한 피부 등 피부 장벽이 손상된 부위에
피부 보호를 위해 사용하는 점착성투명창상피복재


셀퓨전씨 엑스퍼트
**배리덤 로션 MD 300g**

셀퓨전씨 엑스퍼트
**배리덤 크림 MD 150g**

***스테로이드 43종 불검출 *알러지 유발 물질 26종 불검출**

*스테로이드 43종,알러지 유발 물질 26종 시험_시험기관 : KTR / 시험기간 : 2021.04.19 - 2021.04.27

광고심의필 : 심의번호 2021-ET1-19-0155

종근당

# Seeds of Hope, CIPOL·N® Soft Capsules

Cyclosporine microemulsion 25mg, 100mg

**[조성 • 성상]** 1. 원료약품의 분량 : 매 캡슐당 사이클로스포린(USP) 25mg, 100mg 2. 성상 : 미황색의 점조한 액이 충전된 회색의 연질캡슐 **[효능 • 효과]** 1. 건선 다른 요법이 효과가 없거나 적절하지 않은 중증의 건선 2. 신증후군 기존의 세포 증식억제제 치료에 실패한 특발성 스테로이드 의존성 또는 스테로이드 저항성 신증후군의 경우(대부분 생검에서 minimal change disease(MCD) 또는 focal segmental glomerulosclerosis(FSGS)를 보임). 단, 신기능 지수가 최소 50%는 정상이어야 함. 이들 환자에서 완화의 유도 또는 코르티코스테로이드를 포함한 다른 약으로 유도된 완화의 유지에 사용될 수 있다. 이 때 코르티코스테로이드는 중단할 수 있습니다. 3. 류마티스관절염 표준치료요법으로 효과가 없거나 적절하지 않은 중증의 류마티스 관절염 4. 재생불량성빈혈 중증 또는 중등증의 경우 **[용법 • 용량]** 1. 건선 1) 초기용량 체중 kg당 2.5mg을 1 일 2회 분할 투여하며, 4주 후에도 개선이 없는 경우 매달 체중 kg당 0.5~1mg씩 증량하여 1일 체중 kg당 5mg까지 증량할 수 있습니다. 2) 1일 체중 kg당 5mg으로 4주간 사용후에도 병변 부위의 개선이 없거나 유효량이 다음의 안전성 정보의 내용과 부합하지 않는 경우에는 투여를 중지합니다. 3) 중상의 신속한 개선이 요구되는 환자의 초기량은 1일 체중 kg당 5mg입니다. 유지용량은 1일 체중 kg당 5mg을 초과하지 않는 범위에서 최소 유효량으로서 개인에 따라 조절합니다. 4) 6개월간 증상개선이 유지된다면 비록 약물중단에 따른 재발위험성이 매우 높다 할지라도 이 약의 투여를 점차적으로 감소시켜야 합니다. 2. 신증후군 1) 완화의 유도를 위해 1일 성인의 경우 5mg/kg, 소아의 경우 6mg/kg을 1일 2회 분복하여 투여할 것이 추천됩니다. 단, 신기능이 제한치 이하인 환자에서는 초회용량이 1일 2.5mg/kg을 초과하지 않도록 합니다(혈청 크레아티닌 최고 수치 : 성인 )200umol/L, 소아 )140umol/L). 2) 이 약에 적절히 반응하지 않는 환자(주로 스테로이드 저항성)는 저용량의 경구 스테로이드와 병용하며, 3개월 후에도 개선이 나타나지 않으면 이 약의 투여를 중단합니다. 3) 안전성(주로 혈청 크레아티닌) 및 유효성(단백뇨)에 따라 용량을 개인적으로 조절합니다. 4) 그러나 1일 최대 용량을 초과하지 않도록 하며 점차 감량하여 최소 유효량을 유지용량으로 합니다. 3. 류마티스관절염 1) 치료 초기 6주 동안 권장용량은 1일 체중 kg당 3mg을 2회 분할하여 경구투여합니다. 6주 경과 후 증상의 개선이 불충분한 경우 혈청 크레아티닌치가 30% 이상 상승하지 않은 환자에 한하여 1일 체중 kg당 5mg까지 증량이 가능하며, 최대 12주까지 투여 가능합니다. 2) 1일 최대 용량으로 12주간 사용 후에도 증상의 개선이 없거나, '안전성정보'의 내용과 부합되지 않는 경우에는 투여를 중단해야 합니다. 유지용량은 최대용량을 초과하지 않는 범위에서 최소유효용량으로서 개인별로 조절되어야 합니다. 4. 재생불량성빈혈 보통 1일 체중 kg당 6mg을 2회 분할하여 투여하며 trough level의 혈중 농도를 측정하여 200ng/mL(혈청중) 이상일 때에는 1일 체중 kg당 4mg으로 감량하여 투여합니다. **[사용상의 주의사항]** 1. 다음 환자에는 투여하지 마십시오. 1) 이 약 및 이 약의 다른 성분에 과민증 및 그 병력이 있는 환자 2) 다음 환자 중 각 항의 질환을 가진 환자 ① 신장질환 환자 – 비조절성 감염증 – 악성종양 ② 간선 환자 – 신부전, 비조절성 고혈압, 비조절성 감염증, 악성종양 ③ 아토피 피부염, 다발성 류마티스관절염 환자 – 신부전, 비조절성 고혈압 – 비조절성 감염증, 악성종양 ④ 포도막염, 형성부전 골수 환자 – 신부전, 비조절성 고혈압 ⑤ 기타 – 포도막염 환자 중 악성종양이 있는 환자 3) 50% 이상의 신장애가 있는 신증 환자 4) 중증의 간질환, 요산 증가 또는 고칼륨혈증 환자 5) 18세 미만의 류마티스 관절염 환자 6) 임부 및 임신하고 있을 가능성이 있는 여성, 수유부 7) 알리스키렌, 보셉탄 또는 다비가트란을 투여 받고 있는 환자
**[이상반응]** 신장애, 진전, 다모증, 고혈압, 설사, 식욕부진, 구역, 구토와 같은 주요 이상반응이 임상시험과 사이클로스포린 투여에서 관찰되었습니다. 이상반응들은 보통 용량 의존성으로 감량에 의해 소강됩니다. **[저장방법]** 기밀용기에 넣어 실온(1~30℃)에 보관하십시오.

CPLN_20180207

**※ 상기 내용은 요약 정보이며, 보다 자세한 내용은 제품설명서 및 보건복지부 고시 제2016-223호를 참조해 주시기 바랍니다.**

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보건의료전문가용


AVODART

# 처음부터 아보다트[1]

## 한국 남성이 가장 많이 복용하는

## 2021년 5aRI 탈모 치료제 MARKET TOTAL 1위[2]

(2021 H1 IQVIA & HIRA vol. 기준)

Avodart
dutasteride

References. 1. Manabe M;The Journal of dermatology;2018;45:1031–1043. 2. 2021 H1 IQVIA & HIRA volume 기준. 3. Avodart Prescribing information

Safety information[3]

**[경고] 1) 여성에게 노출시 남자 태자에 미치는 위험성:** 이 약은 피부를 통해 흡수된다. 따라서 이 약의 흡수 가능성과 남자 태아에게 미치는 태자기형의 위험 가능성 때문에 임신했거나 임신 가능성이 있는 여성이 이 약을 취급해서는 안 된다. 또, 여성은 이 약을 취급할 때마다 주의해야 하고 누출되는 캡슐과의 접촉을 피해야 한다. **2) 소아:** 이 약은 피부를 통해 흡수되므로, 소아는 누출되는 캡슐과의 접촉을 피해야 한다. **[금기] 1) 여성 2) 18세 미만의 소아 3) 이 약이나 이 약의 다른 성분 또는 다른 5α-reductase 억제제에 과민증이 있는 환자 [신중투여] 1) 임신을 계획하고 있는 성인 남성**이 약을 남성형 탈모치료에 사용 시 생식능에 영향을 줄 수 있으므로 의사의 판단하에 신중히 투여) 2) 요잔류량이 크거나 중증 요류 감소가 나타나는 환자 이러한 환자의 경우에는 5α-reductase 억제제 투여가 바람직하지 않을 수 있고 요패를 주의 깊게 모니터링 해야 한다. **3) 간장애 환자** 이약의 약동학에 간장애가 미치는 영향은 연구된 바 없다. 이 약은 광범위하게 대사되고 반감기가 약 3~5주이므로, 간기능에 이상이 있는 환자에게는 이 약을 주의하여 투여해야 한다. **4) 강력한 CYP3A4 억제제와 병용투여** 이 약이 광범위하게 대사됨에도 불구하고 대사와 관련하여 약물상호작용에 관한 시험을 실시하지 않았으며 강력한 CYP3A4 억제제의 영향을 시험하지 않았다. 약물 상호작용의 가능성 때문에 강력한 CYP3A4 효소 억제제(예, 리토나비르)를 만성적으로 투여하는 환자에게 이 약을 투여할 때는 주의하여야 한다. **[이상반응]** 남성형 탈모 임상시험에서 두타스테리드 단독 투여 시 나타난 이상반응 중 연구자가 이 약과 관련 있는 것으로 판단한 이상반응은 (2% 이상의 빈도) 두통, 위장관 불쾌감 및 통증, 발기기능장애, 성욕감소, 성기능장애 등이었다.

Abbreviated PI Version 05

**[제품요약정보]** 아보다트 연질캡슐 0.5 mg (두타스테리드) **■원료약품 및 분량** 두타스테리드(별규) 0.5 mg **■효능·효과** 양성 전립선 비대증의 치료(양성 전립선 비대증 증상의 개선, 급성 요저류 위험성 감소, 양성 전립선 비대증과 관련된 수술 필요성 감소), 성인 남성(만 18~50세)의 남성형 탈모(androgenetic alopecia)의 치료 **■용법·용량** 1일 1회 1캡슐(0.5mg) **■사용상의 주의사항** 1. 경고 1) 여성에게 노출 시 남자 태아에 미치는 위험성: 이 약은 피부를 통해서 흡수된다. 따라서 이 약의 흡수 가능성과 남자 태아에게 미치는 태자 기형의 위험 가능성 때문에 임신했거나 임신 가능성이 있는 여성이 이 약을 취급해서는 안 된다. 또, 여성은 이 약을 취급할 때마다 주의해야 하고 누출되는 캡슐과의 접촉을 피해야 한다. 만약 캡슐이 새어 이 약과 접촉한 경우에는 접촉부위를 즉시 물과 비누로 세척해야 한다. 2) 소아: 이 약은 피부를 통해 흡수되므로, 소아는 누출되는 캡슐과의 접촉을 피해야 한다. 만약 캡슐이 새어 이 약과 접촉한 경우에는 접촉부위를 즉시 물과 비누로 세척해야 한다. 2. 다음 환자에는 투여하지 말 것. 1) 여성 2) 18세 미만의 소아 3) 이 약이나 이 약의 다른 성분 또는 다른 5α-reductase 억제제에 과민증이 있는 환자 3. 다음 환자에는 신중히 투여할 것. 1) 임신을 계획하고 있는 성인 남성(이 약을 남성형 탈모치료에 사용 시 생식능에 영향을 줄 수 있으므로 의사의 판단 하에 신중히 투여) 2) 요잔류량이 크거나 중증 요류 감소가 나타나는 환자 3) 간장애 환자 4) 강력한 CYP3A4 억제제와 병용투여 4. 이상반응 1) 대부분의 이상반응은 경증 또는 중등증의 이었고, 일반적으로 이 약 투여군과 위약 투여군 모두에서 투여하는 동안에 회복되었다. 두 투여군에서 시험약을 중단하게 한 가장 빈번한 이상반응은 생식기계와 관련 있었다. 2) 임상시험에서 나타난 이상반응 ① 양성전립선 비대증 임상시험에서 두타스테리드 단독 투여 시 나타난 이상반응 중 연구자가 이 약과 관련 있는 것으로 판단한 이상반응들(1% 이상의 빈도로 발생한 이상반응들)은 발기부전, 성욕감소, 사정장애, 여성형 유방이 있으며, 이러한 성기능 이상반응들은 두타스테리드 투여와 관련이 있다단독 투여 및 탐스로신과의 병용투여를 포함). 이 이상반응들은 투여 중단 후에도 지속될 수 있다. 이에 대한 두타스테리드의 역할은 알려지지 않았다. ② 남성형 탈모 임상시험에서 두타스테리드 단독 투여 시 나타난 이상반응 중 연구자가 이 약과 관련 있는 것으로 판단한 이상반응은(2% 이상의 빈도) 두통, 위장관 불쾌감 및 통증, 발기기능장애, 성욕감소, 성기능장애 등이었다. ③ 양성전립선 비대증 임상시험에서 두타스테리드와 탐스로신의 병용투여 시 나타난 이상반응 중 연구자가 두타스테리드와 관련 있는 것으로 판단한 이상반응들 (1% 이상의 누적 빈도로 발생한 이상반응들)은 발기부전, 성욕감소, 사정장애, 유방장애, 현기증이었다. • 심부전: 이 약 단독 또는 탐스로신과의 병용투여와 심부전과의 인과관계는 확립되어 있지 않다. 3) 창기투여 ① 생식기계 및 유방 장애: 이 약에 대한 3건의 주요 위약 대조 양성 전립선 비대증 임상시험에서, 각각 4년의 기간 동안, 투여 기간의 증가에 따른 약물 관련 성기능 이상반응/발기부전, 성욕감소, 사정장애) 또는 유방 장애의 발생 증가에 대한 증거는 없었다. 이 약의 창기 투여와 남성 유방 신생물 발생 간의 관계는 현재까지 알려지지 않았다. ② 고등급 전립선암: REDUCE 임상시험에서 위약을 투여 받은 남성(0.5%)에 비해 이 약을 투여 받은 남성(1.0%)에서 Gleason 등급 8~10의 전립선암 발생빈도가 더 높았다. 이 약을 투여 받은 전립선암 환자에서 임상적 유의성은 입증되지 않았다. 5. 일반적 주의 1) 양성 전립선 비대증의 하부 요관 증상이 전립선 암을 포함한 다른 비뇨기계 질환의 지표가 될 수 있다. 이 약 투여 전에 다른 비뇨기계 질환이 있는지 환자를 평가해야 한다. 2) 헌혈: 수혈 시에 임신부에게 이 약이 투여되는 것을 방지하기 위하여, 이 약을 복용하는 환자는 마지막으로 이 약을 복용한 후 최소 6개월이 경과할 때까지 헌혈하시는 안 된다. 3) 전립선 특이 항원(PSA)과 전립선 암 진단에 미치는 영향: 이 약 복용 중인 환자 중 전립선암 스크리닝이 필요한 환자는 이 약 투여 6개월 후에 새로운 PSA 기저치가 확립되어야 한다. 이후 정기적으로 PSA값을 모니터링하는 것이 권장된다. 이 약을 투여하는 동안 PSA가 최저치로부터 증가한 것이 확인 된 경우 전립선암의 존재(특히, 고등급암) 또는 이 약으로의 치료에 대한 불응성의 신호일 수 있으며 그러한 값들이 5α-reductase 억제제를 복용하지 않은 남성에서의 정상 범위 내에 있는 경우라 하더라도 주의깊게 평가되어야 한다. 이 약의 투여는 새로운 PSA 기저치가 확립된 후에 전립선암 진단을 위한 보조 수단으로서의 PSA의 사용을 방해하지 않는다. 4) 임상시험과 시판 후 조사 기간 동안 두타스테리드를 투여받은 남성에서 유방암의 보고되었다. 역학조사에서 5α-reductase 억제제 투여에 따른 남성 유방암 발생 위험의 증가는 관찰되지 않았다. 5) 생식능력에 미치는 영향: 환자 개개인의 생식능력인 정액의 특성에 미치는 이 약의 영향에 대한 임상적 유의성은 아직 밝혀지지 않았다. **■최종허가변경일** 2019.02.21 **■이 개정일자 이후 변경된 내용 및 제품 정보 전문은 kr.gsk.com에서 확인하실 수 있습니다.** GSK 제품 사용 중 발생한 이상사례(부작용)는 080-901-4100 또는 krmedical.drug-safety@gsk.com으로 보고해 주시기 바랍니다.



PM-KR-DUT-BROC-220002 Date of preparation Feb 2022