

Skin-Penetrating Peptide-Based Transdermal Delivery Platform for Hair Loss Treatment and Scalp/Skin Care Applications

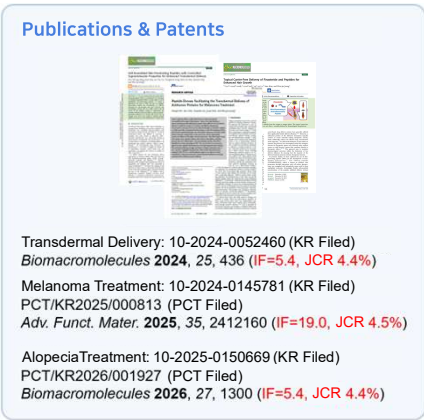
피부투과 펩타이드 기반 신개념 경피전달 플랫폼을 활용한 탈모치료제 및 두피/피부케어 화장품 기술

PTB Bio

Pierce The Barrier via Peptide-based Transdermal Booster

01 Platform Technology

Publications & Patents



Transdermal Delivery: 10-2024-0052460 (KR Filed)
Biomacromolecules 2024, 25, 436 (IF=5.4, JCR 4.4%)

Melanoma Treatment: 10-2024-0145781 (KR Filed)
PCT/KR2025/000813 (PCT Filed)
Adv. Funct. Mater. 2025, 35, 2412160 (IF=19.0, JCR 4.5%)

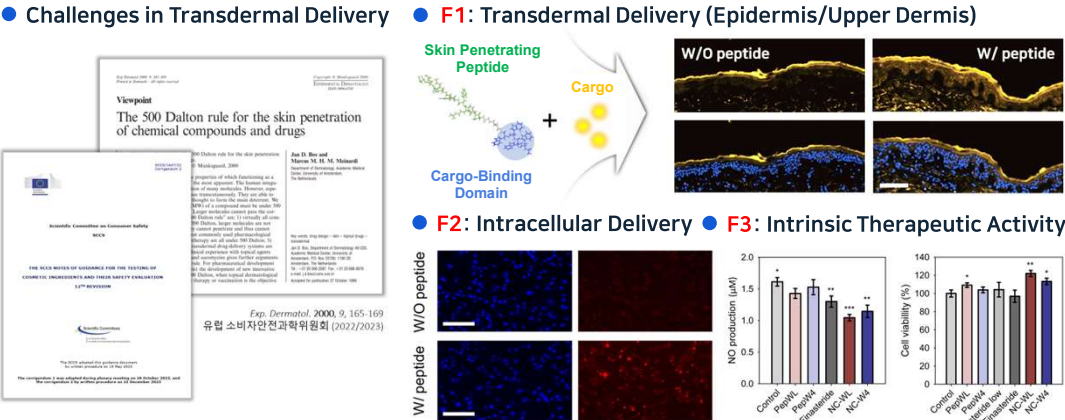
Alopecia Treatment: 10-2025-0150669 (KR Filed)
PCT/KR2026/001927 (PCT Filed)
Biomacromolecules 2026, 27, 1300 (IF=5.4, JCR 4.4%)

Challenges in Transdermal Delivery

F1: Transdermal Delivery (Epidermis/Upper Dermis)

F2: Intracellular Delivery

F3: Intrinsic Therapeutic Activity



Viewpoint: The 500 Dalton rule for the skin penetration of chemical compounds and drugs

Exp. Dermatol. 2000, 9, 165-169

유럽 소비자안전과학위원회 (2022/2023)

W/O peptide

W/ peptide

NO production (μM)

Cell viability (%)

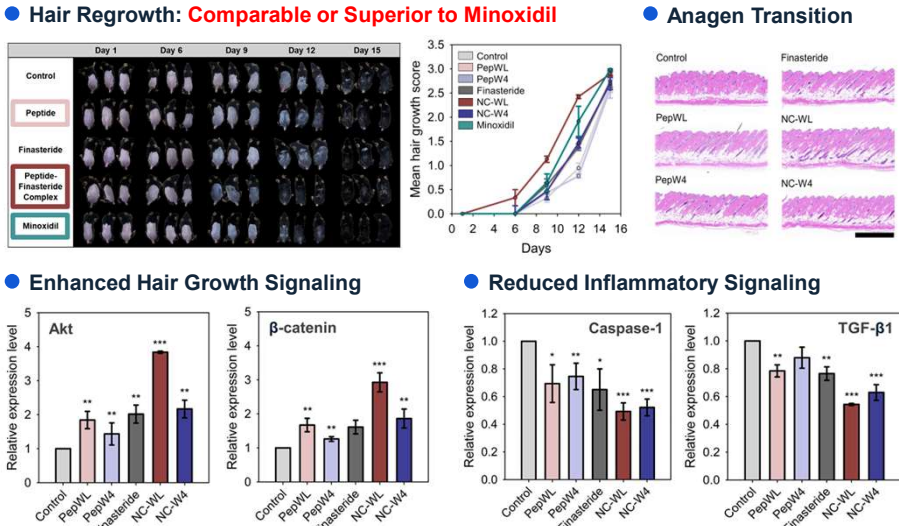
02 Therapeutic and Cosmetic Applications for Hair Loss and Scalp Care

Hair Regrowth: Comparable or Superior to Minoxidil

Anagen Transition

Enhanced Hair Growth Signaling

Reduced Inflammatory Signaling



Day 1 Day 6 Day 9 Day 12 Day 15

Control

Peptide

Finasteride

Peptide-Finasteride Complex

Minoxidil

Mean hair growth score

Days

Control

Finasteride

PepWL

NC-WL

PepW4

NC-W4

Relative expression level

Akt

β-catenin

Caspase-1

TGF-β1

Competitive Landscape

	Product M	Product P	Product A	Product F	Our Product
Active	Minoxidil	Finasteride	Dutasteride	Finasteride + Polymer	Finasteride + Peptide
Mechanism	Vasodilation	Systemic 5α-R2 Inhibition	Systemic 5α-R1/2 Inhibition	Local 5α-R2 Inhibition	Local 5α-R2 Inhibition + Anti-inflammatory
Delivery	Topical	Systemic (AE Risk)	Systemic (AE Risk)	Topical	Topical + Intracellular
Finasteride Dose	-	1 mg	-	0.11-0.46 mg	0.025 mg

Business Model

PIPELINE I

Topical Hair Loss Therapeutics

Preclinical Validation

Clinical Trials

Co-development / Licensing-Out

Development of Novel Hair Loss Therapeutics

PIPELINE II

Scalp Care Products

OEM/ODM Manufacturing

Early Revenue Generation

Sustainable Cash Flow

Development of Scalp/Skin Cosmetic Products

03 Platform Expansion Beyond Hair Loss

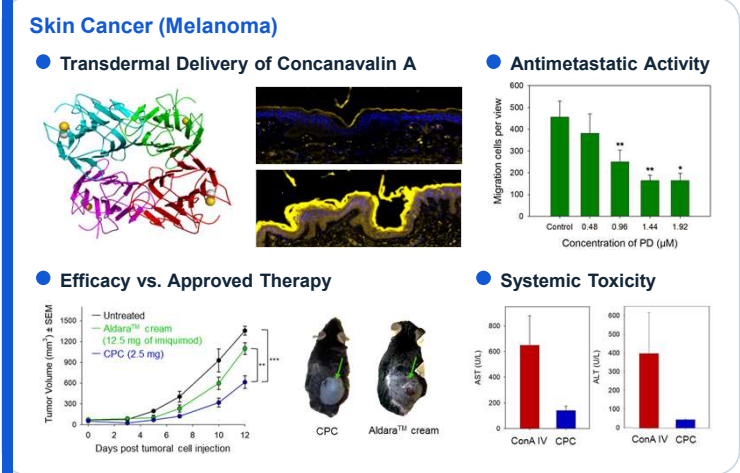
Skin Cancer (Melanoma)

Transdermal Delivery of Concanavalin A

Antimetastatic Activity

Efficacy vs. Approved Therapy

Systemic Toxicity



Migration cells per view

Concentration of PD (μM)

Control

0.48

0.96

1.44

1.92

Relative expression level

Caspase-1

TGF-β1

Relative expression level

Control

PepWL

PepW4

Finasteride

NC-WL

NC-W4

Tumor Volume (mm³) ± SEM

Days post tumoral cell injection

Untreated

Aldara™ cream (12.5 mg of imiquimod)

CPC (2.5 mg)

CPC

Aldara™ cream

AST (U/L)

ALT (U/L)

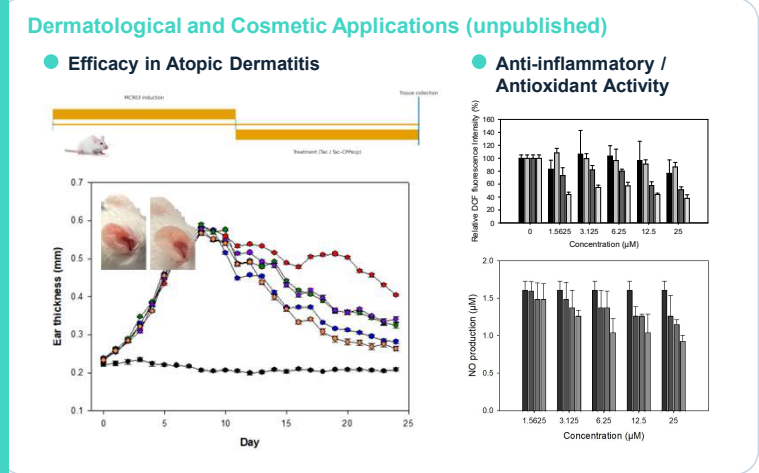
ConA IV

CPC

Dermatological and Cosmetic Applications (unpublished)

Efficacy in Atopic Dermatitis

Anti-inflammatory / Antioxidant Activity



Relative DCF fluorescence intensity (%)

Concentration (μM)

0

1.5625

3.125

6.25

12.5

25

NO production (μM)

Concentration (μM)

0

1.5625

3.125

6.25

12.5

25

Ear thickness (mm)

Day

0

5

10

15

20

25

04 Funding

- Healthcare Technology Commercialization Early Boost Program, Ministry of Health and Welfare (MOHW)
- Laboratory-Specialized Startup Leading University Program, Ministry of Science and ICT (MSIT)



PTB Bio Co., Ltd.

Pierce The Barrier via Peptide-based Transdermal Booster

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Transdermal delivery platform for next-generation dermocosmetics and therapeutics