

# KBioLab

Company  
Credentials

Improving microbial population in the human microbiota  
by **chemicals** for new drugs or functional foods

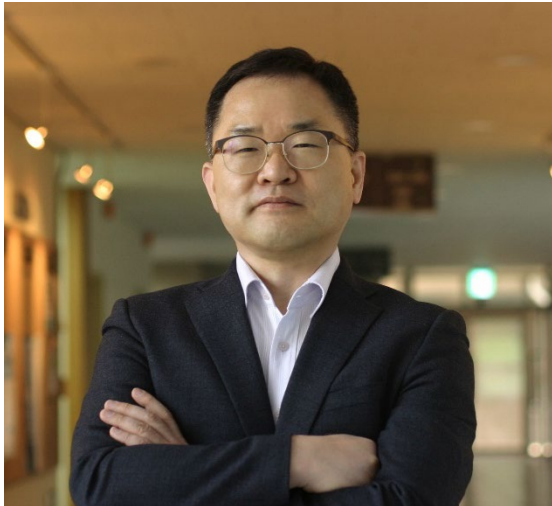


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- 공생 미생물이 영양과 면역뿐 아니라 정신 건강에도 도움이 된다는 사실이 점점 더 많이 알려지고 있습니다.
- 프로바이오틱스는 건강을 좌우하는 장내 미생물 분포를 개선하는 데 중요한 역할을 합니다.
- 하지만 건강에 유익한 프로바이오틱스를 개발해 상품화하여 성공적인 비즈니스를 달성하더라도 결국 더 좋은 균주를 지속적으로 개발하고 상품화하는 데에는 한계가 있을 수밖에 없습니다.
- (주)케이바이오랩은 귀사의 프로바이오틱스 성장 속도만을 선택적으로 촉진하는 (천연)화합물을 발굴하고 제공하여 장내에서 귀사의 프로바이오틱스의 점유율을 높여 건강 증진 효과를 배가할 수 있는 제품개발을 협력하는 플랫폼을 보유하고 있습니다.
- (주)케이바이오랩은 협업을 통해 6개월 이내에 귀사의 프로바이오틱스 성장 속도를 선택적으로 촉진하는 (천연)화합물을 제시하고, 추가 공동 연구를 통해 활성 화합물의 동정 및 생물학적 작용 기전을 제시합니다.
- 귀사는 저희가 제안한 (천연)화합물을 활용하여 프로바이오틱스의 효과를 높이는 새로운 제품(건강기능식품 개별인정원료)을 개발하여 추가로 등록할 수 있습니다.
- 아래에 제시하는 내용은 동일한 플랫폼을 피부에 적용하여 아토피 증상을 개선하는 제품을 개발한 예를 제시하고 있습니다.

- Microbes are symbionts that live alongside us and are the most important determinant of our health after our own bodies themselves.
- It is increasingly recognized that our symbiotic microbiota provides us with more than just nutritional and immune benefits, but also mental health.
- Probiotics play an important role in improving the distribution of gut microbiota, which determines our health.
- However, even if you develop and commercialize probiotics for health benefits and achieve a successful business, there will be limits to continuously developing and commercializing better strains **eventually**.
- KBioLab has **a platform** to discover and provide (natural) compounds that **accelerate the growth rate of your probiotics**, allowing them to occupy a higher share of the gut microbiota and thus multiply their health-promoting effects.
- Through collaboration with your company, KBioLab will present (natural) compounds that selectively accelerates the growth rate of your probiotics within 6 months, and through further collaborative research, we will present the identification of the active chemicals and its biological mechanism of action.
- By utilizing our proposed (natural) compounds, **your company can develop a new product that boosts the effectiveness of your probiotics**.

# Dr. Tae-Jong Kim, C.E.O.

Functional chemical development expert with over 30 years of microbial research experience



## Education

- **Ph.D.**, Department of Food Science and Technology, Major in Food Microbiology, University of California, Davis, CA, USA
- **Master**, Department of Biological Science, Korea Advanced Institute of Science and Technology
- **Bachelor**, Department of Food Technology, Korea University

## Careers

- **CEO**, KBioLab ('16~)
- **Professor**, Department of Forest Products and Biotechnology, Kookmin University ('09~)
- **Research Professor**, Institute of Natural Sciences, Myongji University ('07~'09)
- **Researcher**, Samyang Genex Research Center ('92~'97)

## Research

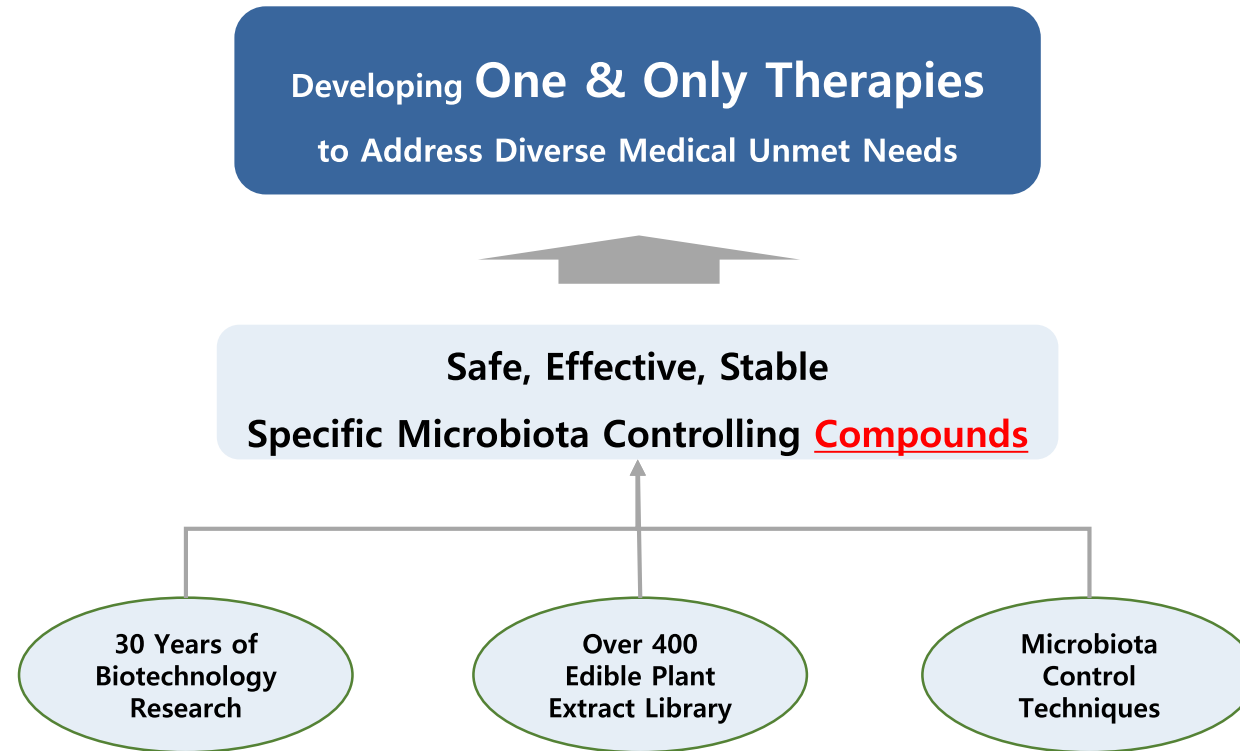
- 66 publications, 158 conference proceedings
- 91 patent applications, 82 patent registrations,
- 23 technology transfers

## Activities

- Member, American Society for Microbiology, 2001~
- Member, Institute of Food Technologists, 2001~
- Board member, Korean Society for Microbiology and Biotechnology, 2004
- Member, Korean Society of Food Science and Technology, 2007~
- Executive Director, Korean Society of Wood Science and Technology, 2010~
- Chairperson, Kookmin University Institutional Biosafety Committee 2014~
- Member of Laboratory Safety Committee in Kookmin University, 2021~

# Key Technologies

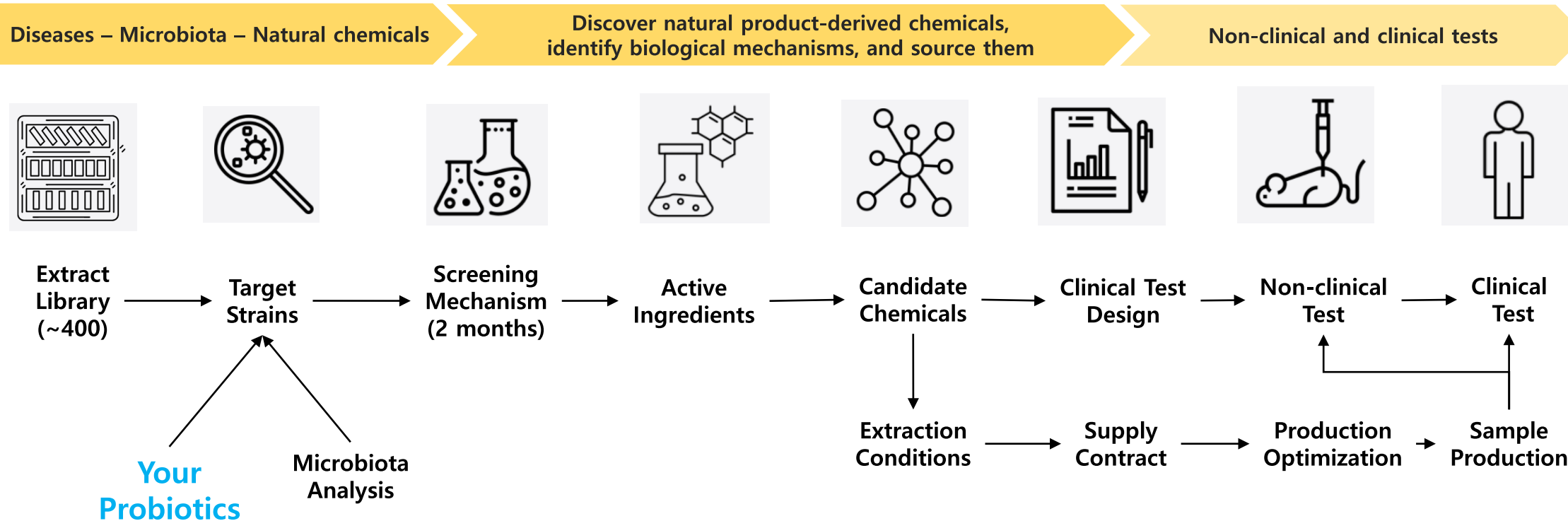
Developing the next generation chemical drugs of bio-microbiota therapeutics  
for a healthy coexistence between humans and nature



Maintaining human health & sustainable preservation of the nature  
by target specific fine-tuning on the human microbiota by compounds

# Microbiota therapeutic chemical discovery platform

Natural product-based selective and effective control and treatment of disease-causing strains  
(Next-generation microbiota therapeutic chemical discovery system)



# Business with KBioLab technology

## Specialized in "Microbiota Improvement" bio-health chemical

### R&D ONE-STOP PLATFORM

Identify and modulate the physiologies of microorganisms to develop safe, stable, and effective functional chemicals that overcome the challenges of conventional microbiome techniques.

#### Safety

##### Microbiota modulators with proven human safety

- Edible plants recognized by the FDA with pharmacological efficacy in the history
- Bacterial physiology modulation, reduces the risk of side effects and resistance, allowing for long-term sustainable use

#### Stable

##### Develop and produce chemicals with stable supply

- Stable supply of raw materials
- Multiple extraction technologies
- Existing extract manufacturing facilities
- Stable manufacturing and commercialization
- Convenient distribution/storage conditions

#### Effective

##### Research & Development Step-by-step efficacy validation

- New chemicals and validating their efficacy
- Chemical discovery, product development
  - In-vitro efficacy Test
  - In-vivo(clinical) efficacy Test
  - Consumer testimonials



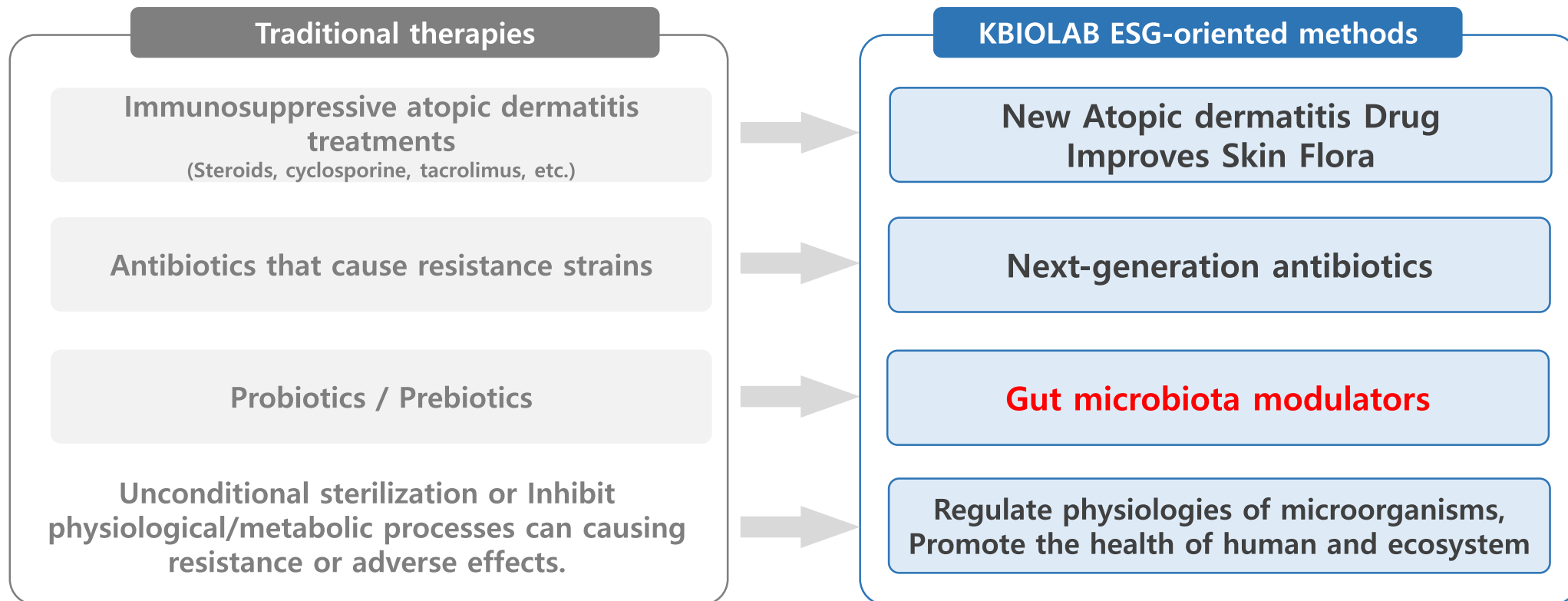
#### Traditional Therapeutics / Microbiome Methods

Insufficient human safety data or adverse effects, Artificial chemicals, Artificially improved/developed strains

Unstable production, distribution, and storage of live bacteria, cultures, or ferments

Raw material characteristics, patent/paper level efficacy, Efficacy is not expected until use

## Microbiota Control for Human Health and Sustainable Conservation of Nature EGS BUSINESS-oriented Microbiota Controlling Development

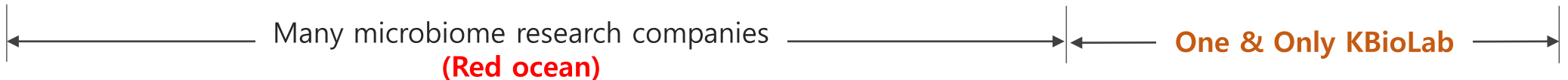




# Developing the next generation of microbiota therapeutics

**KBioLab's advanced development of next-generation microbiota modulators that go beyond the efficacy and safety limits of traditional methods in the field of microbiome, which is being recognized as the second genome.**

	Probiotics	Prebiotics	Postbiotics	Microbiota modulators
Materials	Living bacteria	Chemicals	Chemicals, culture	Natural product-derived chemicals
MOA	culture of beneficial bacteria for human consumption	Nutrient for beneficial bacteria	Functional active metabolites produced by beneficial bacteria	Chemicals regulate the growth of beneficial and pathogenic bacteria
Advantages	Increased number of beneficial bacteria	Promote the growth of beneficial bacteria	The benefits of microbial symbiosis benefits	Personal microbiota, safety, and stability. No side effects and resistance
Downsides	<ul style="list-style-type: none"> <li>• Safety and efficacy</li> <li>• Distribution/storage stability</li> </ul>	Strain target specificity	Microbial culture and purification, No effect on microbiota	
Products	GEN-501(Genome & Company), KBL693(Kobiolabs) PP-P8(Cellbiotech), Dietary supplements, etc.			VSP complex (KBioLab)



# KBioLab's advanced microbiota technology

## Strain-selective growth rate control by chemicals to modulate microbiota

- Microbiome research and individualized microbiota diagnosis
- Suggestions for improvement of skin and intestinal microbiota  
(pathogenic bacteria to be eliminated and beneficial bacteria to be increased)
- Manufacturing customized natural compound complexes
- Application to improve human microbiota
- Therapeutic effects  
(digestive system diseases, autoimmune diseases, obesity, cancer, infectious diseases, central nervous system, respiratory diseases, mental diseases and more)

This example demonstrates the application of KBioLab's platform technology to skin microbiota to improve the distribution of skin microbiota, and the result is that the commercial product used by actual consumers shows improved therapeutic effects for atopic dermatitis.

Example of products developed  
with KBioLab technology

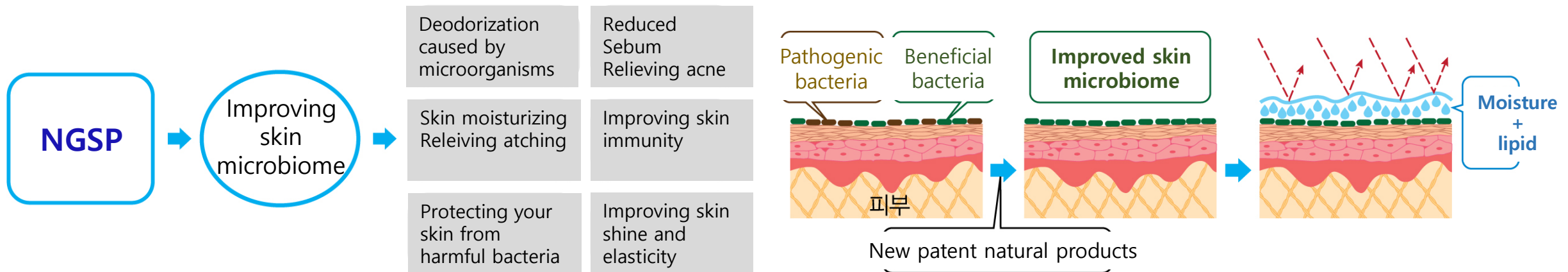
(Skin microbiota modulator for atopic dermatitis)

# Studies and developing technology for the skin

In general, people said that all microbes should be sterilized with the negative impression that “microbes are bad”. However, there are good beneficial microorganisms and harmful pathogenic microorganisms together. Based on the concept that “Beneficial bacteria create a good microbial ecosystem to increase human skin immunity.”, we have developed a technology that promotes the growth rate of beneficial bacteria and suppresses the growth of pathogenic bacteria to create a healthy skin microbiota.

We defined this concept as **the Next Generation Skin Prebiotics (NGSP)**.

Professor Tae-Jong Kim in Department of Forest Products and Biotechnology, Kookmin University has developed a natural plant extracts for skin care using the concept of Skin Prebiotics.



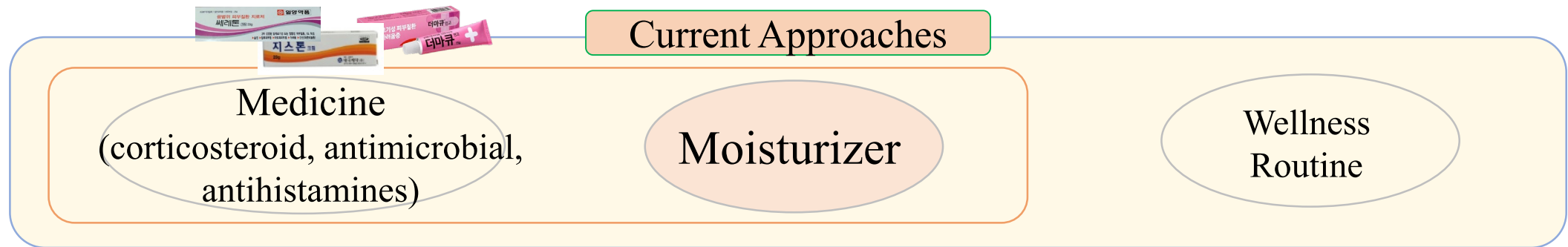
# Innovative patented technology, VSP Complex™

VSP Complex™, the world's first **NGSP**, improves the microbiota in human skin with natural plant extracts. It is a stabilized complex from natural edible plant extracts, so it is generally safe regardless of skin type. VSP Complex™ has little skin irritation, especially keeping sensitive skin calm. We do not use the foreign microorganisms for improving skin microbiota. Don't protect your skin with someone else's microorganisms. We are concerning about how to tame your own microorganisms in the skin. KBioLab proposes natural skincare products based on VSP Complex™ that can tame your microbiota on the skin' that can help your vibrant life.

Composition for improving skin microbiome, comprising herbal extracts as active ingredients  
– Korean Patents 2001236, 2001238, 2001237, 2001240, 2001241, and 2001244

# Problems to be addressed: Atopic dermatitis

Problem: Even with a lot of effort and products, atopic dermatitis cannot be cured.



- Serious side effects
- emergence of resistant strains
- Unable to use continuously
- Not good for infants and toddlers

- Effect is temporary
- Recurrent and persistent symptoms

- Shine
- Acne
- Damaged oil/moisture balance

There is an important thing missing from the current treatment methods for atopic dermatitis.

# Dermatologists around the world are waiting for KBioLab products

“Novel therapeutic options with potential for restoring natural microbiome composition ... may enter clinical practice in the future.”

Postepy Dermatol Alergol 2019 36:11-17

“Microbiome-based immunotherapy, whose mechanism of action completely differs from that of typical steroid ointments, are expected to be developed in the future.”

Allergology International 2019 68:309-315

“Given the importance of *S. aureus* colonization and microbiome in AD, anti-bacterial treatments have been considered for managing AD.”

Ann Allergy Asthma Immunol 2017 119:435-440

**KBioLab products do provide **the exactly the solution dermatologists want.****

# *Staphylococcus aureus* is a causative bacteria for atopic symptoms (the target strain to remove)

## What cause atopic symptoms?

1. Genetics
2. Environmental factors

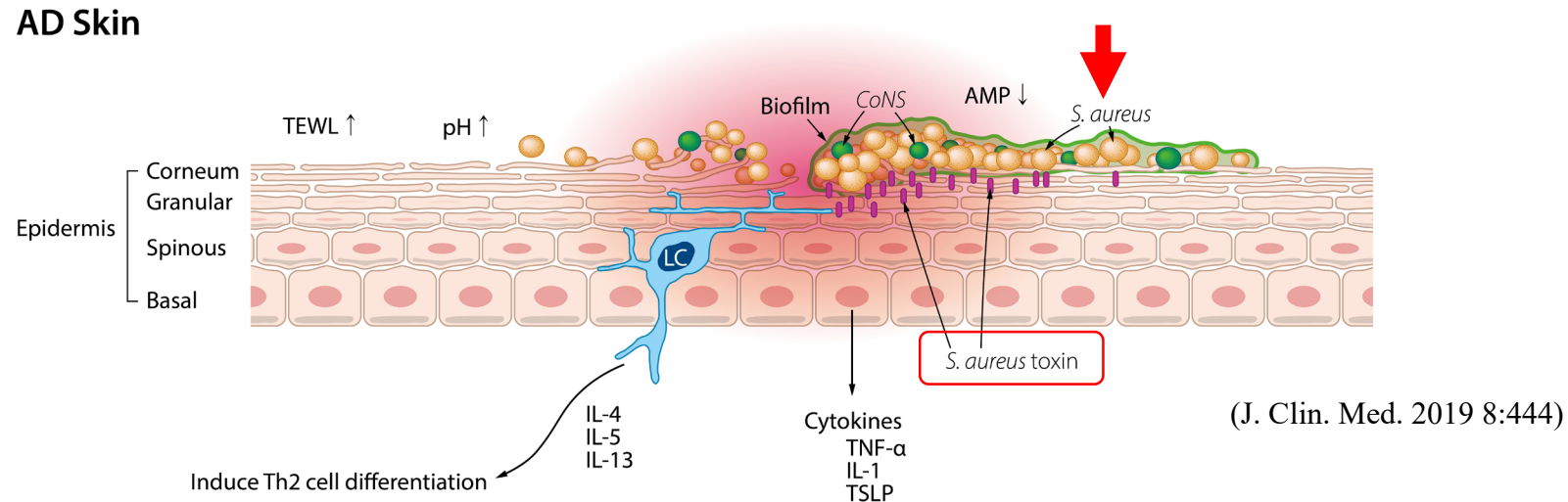
- *Staphylococcus aureus*
- Reducing the diversity of microbiota on the skin

**Eliminate  
*S. aureus*  
on AD sites**

**Antibiotics**

**Bleach bath**  
(American Academy of Dermatology Association)

**UV exposure**  
(Phototherapy - Michigan Medicine)



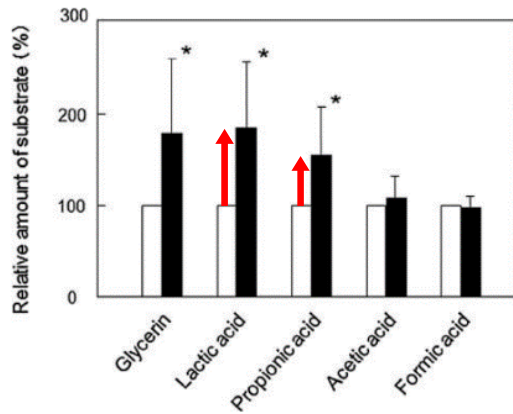


# *Staphylococcus epidermidis* is a beneficial bacteria for the skin. (the target strain to accelerate the growth rate)

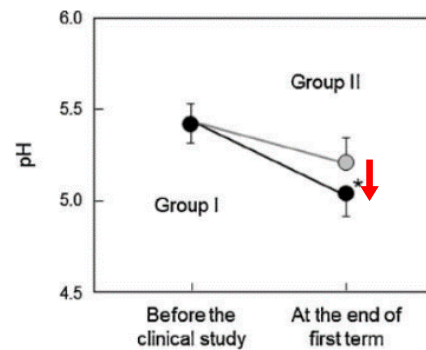
**KBioLab has developed the world's only compound that selectively accelerates the growth rate of beneficial bacteria.**

Restore the skin barrier with *S. epidermidis*

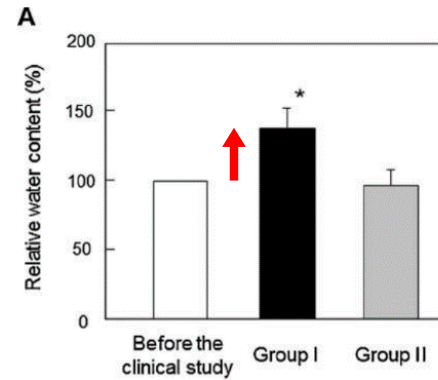
Improved skin health by isolating *S. epidermidis* from test subjects' skin, culturing it, and reapplying it to the skin.



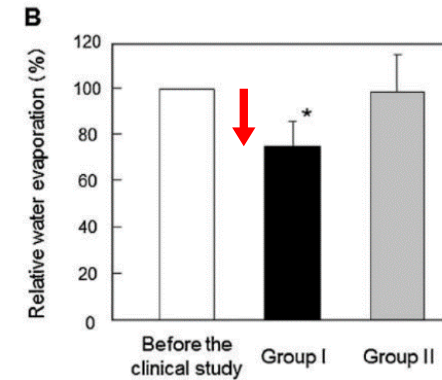
**Increased skin organic acids**



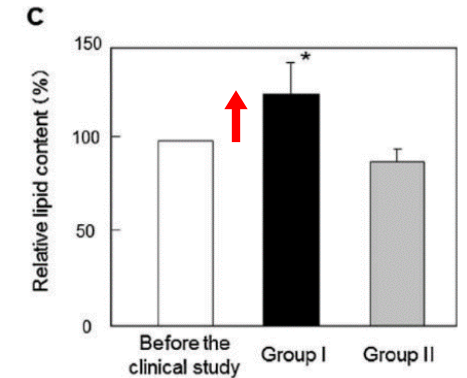
**Adjusting the skin pH**



**Increased moisture content**



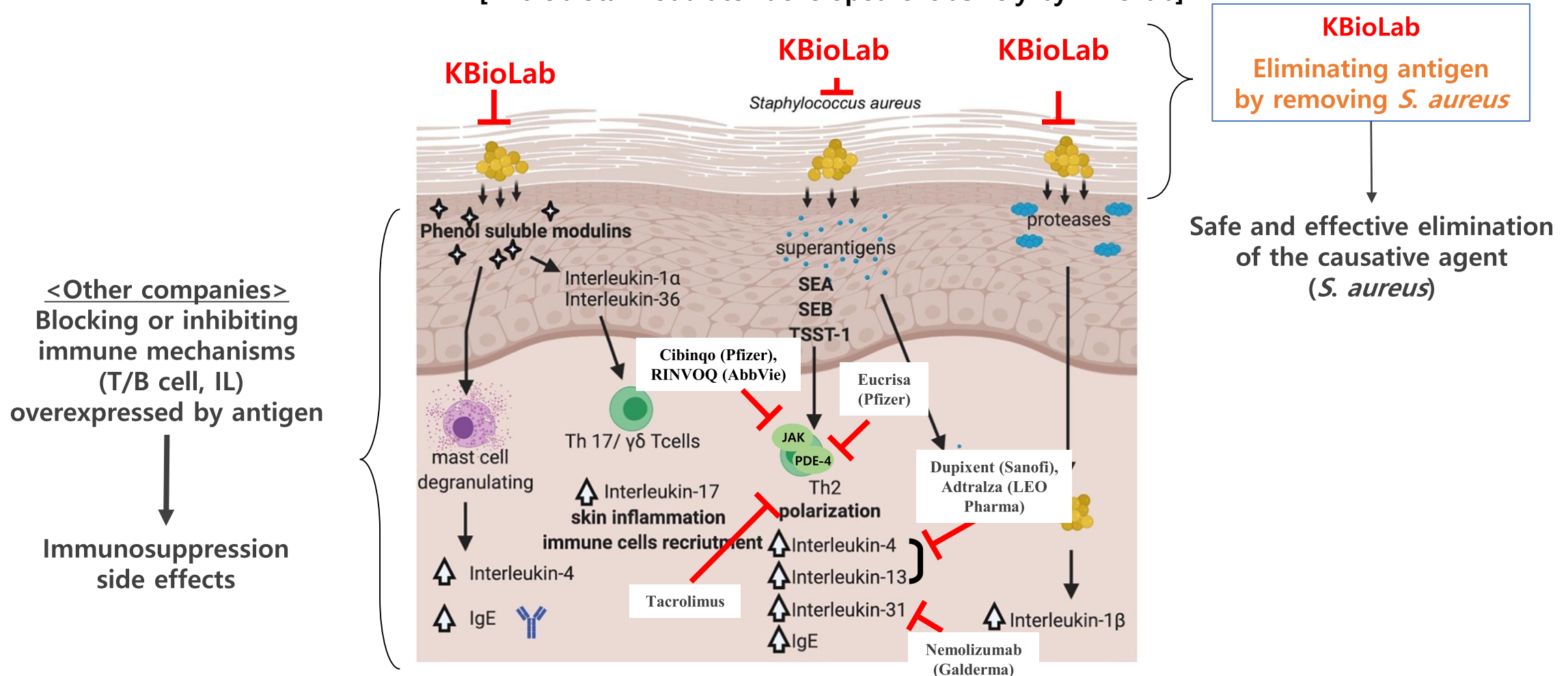
**Reduced evaporation of moisture**



**Increased lipid content**

# Other companies' strategies for developing new drugs for atopic dermatitis

KBioLab has developed commercial products and validated the link between microbiota and atopic dermatitis.  
**[Microbiota modulator developed exclusively by KBioLab]**



# Plant extract complex for improving skin flora that inhibits *S. aureus*

## VSP complex to improve skin microbiota (Plant Extract Complex)

- Existing skin care only cares about the skin.
- Prior to KBioLab, the only way to control the skin microbiota was cleaning and disinfection..

### VSP complex, a true microbiota modulator

VSP complex is a plant extract formula

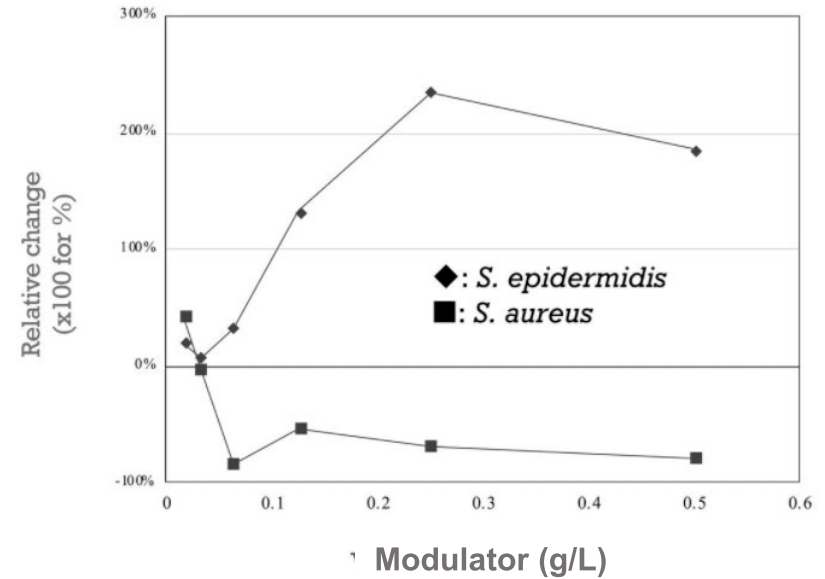
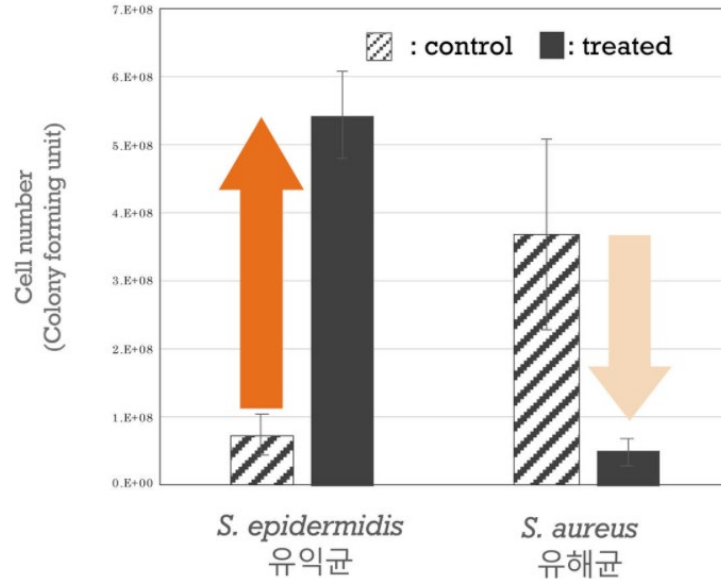
that improves skin microflora while eliminating *S. aureus*.

- There is a limit to the use of living beneficial bacteria for skin health.
- Extracts of beneficial bacteria may not change the skin microbiota and are only the ingredients that are good for the skin.

# Finding a skin microbiota modulator

Discovery of a skin microbiota modulator  
through screening from a library of 400 edible plant extracts

KBioLab skin microbiota modulator promotes the growth rate of beneficial bacteria (*S. epidermidis*)  
and inhibits the growth rate of harmful bacteria (*S. aureus*)



# KBioLab products using the skin microbiota modulator

# vikkot

[www.vikkot.com](http://www.vikkot.com)



PURE:FLORA



care:flora

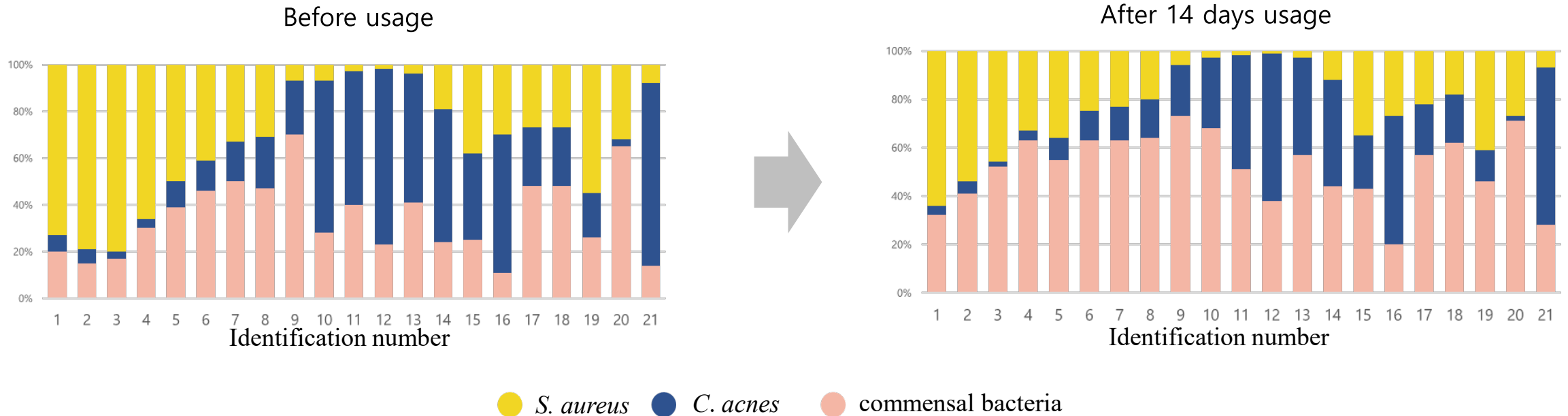


HANEE

VSP Complex™ is a skin prebiotic containing five patented plant extracts.

# KBioLab products with the skin microbiota modulator improved the skin microbiota population .

After two weeks of use of KBioLab cream, a decrease in the proportion of pathogenic bacteria (*S. aureus*, *C. acnes*) in the microbiota and an increase in the proportion of commensal bacteria, including beneficial bacteria.



[Agency] Korea Dermatology Research Institute  
[Period] 2019.03.28~2019.04.11, Different trial period for each test  
[Number of people] 21 adult men and women aged 24 to 54  
[Tested products] VI:KKOT HANEE CREAM with VSP Complex™

# VSP complex removes *S. aureus* and improves the skin microbiota

Improvement of skin microbiota by commercial products from KBioLab  
(Result of the world's first and only skin microbiota improvement by clinical trial)

Features and proven effects of the patented ingredient VSP Complex™

Atopic dermatitis causative bacteria

*Staphylococcus aureus*

Average  
**29%**

Bacteria that worsen atopic skin  
Reduced 29% in average and 57% at the maximum



Acne-causing bacteria

*Cutibacterium acnes*

Average  
**23%**

Bacteria that cause acne  
Reduced 23% in average and 55% at the maximum



\* Tested with vikkot Hanee cream with patent ingredient VSP Complex™ as a main active ingredient.

[Agency] Korea Dermatology Research Institute  
[Period] 2019.03.28~2019.04.11, Different trial period for each test  
[Number of people] 21 adult men and women aged 24 to 54  
[Tested products] VI:KKOT HANEE CREAM with VSP Complex™

# VSP complex makes the skin healthy.

- Inhibiting *S. aureus* by 29%
- Inhibiting *C. acnes* by 23% that causes acne

[Test agency] Korea Dermatology Research Institute  
[Test Period] 2019.03.28~2019.04.11, Different trial period for each test  
[Number of people] 21 adult men and women aged 24 to 54  
[Tested products] VI:KKOT HANEE CREAM with VSP Complex™

Moisture content \*  
**372% improved**

Relieves pruritus\*  
caused by drying

Preventing fine dust  
Adsorption

Skin texture **45%**  
Skin density **229%**  
improved \*

Daily sebum secretion  
**501% improved\***

Soothing skin  
Transepidermal water \*  
loss 183% improved  
Reddish 31% improved

Non-comedogenic  
Suitable for  
acne skin use

All ingredients are  
**EWG 1~2 grade**

Cosmetic safety  
test completed

In addition to improving skin microbiota,  
there were various skin health promotion effects.

[Test agency] Korea Dermatology Research Institute  
[Test Period] 2019.03.25~2019.04.25, Different trial period for each test  
[Number of people] 21 adult men and women aged 24 to 54  
If you would like to check the detailed test result, please request.  
\*Compared results with cosmetics without VSP Complex™

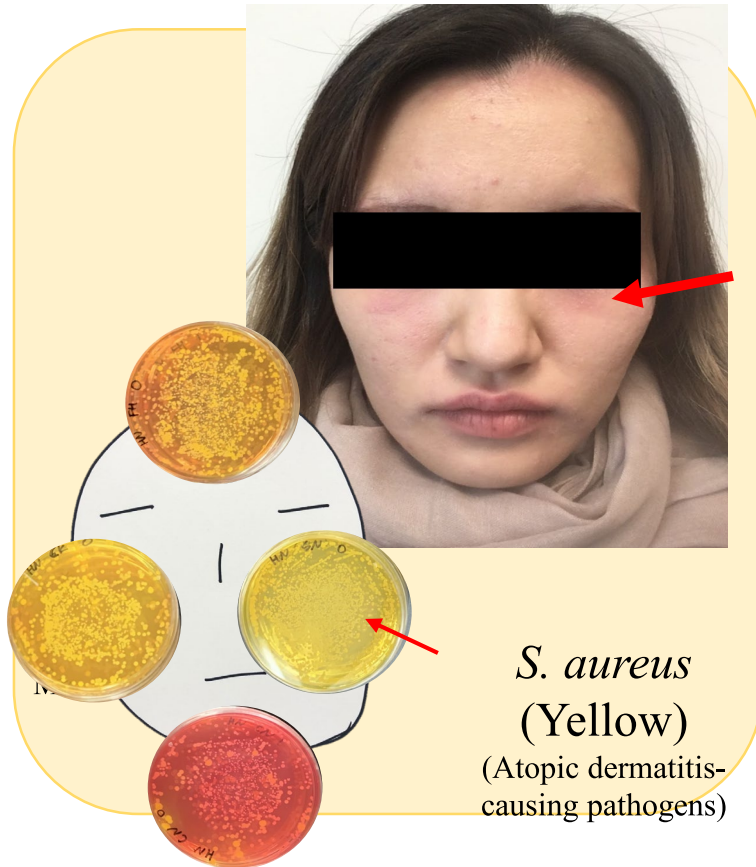


# Improving the atopic dermatitis symptoms by the VSP complex #1

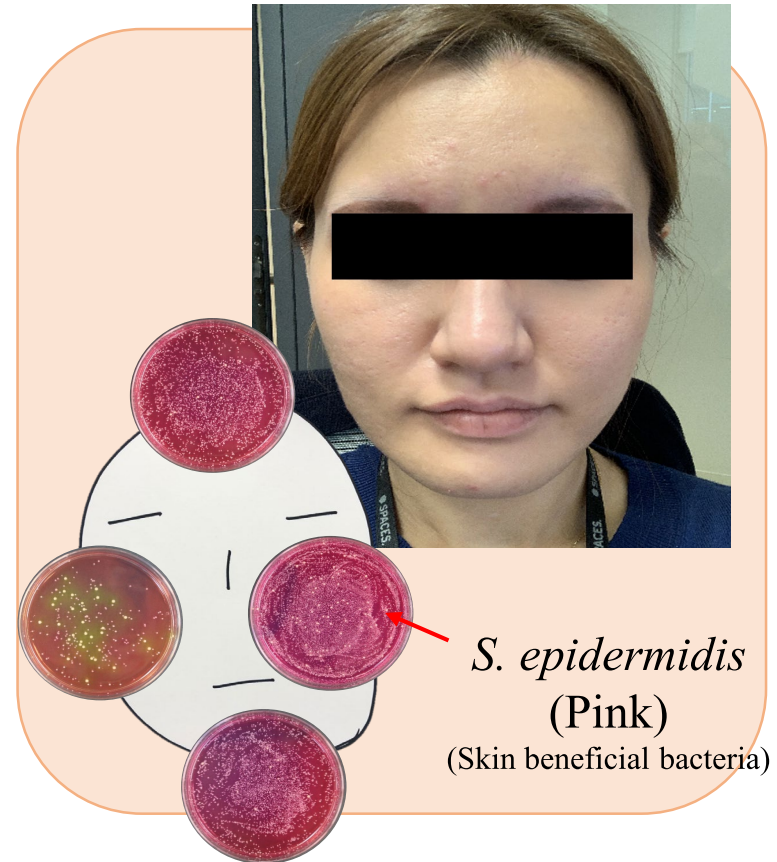
## Before & After using VSP Complex™

(Atopic dermatitis customer, long-term using)

Before



After 1 year



After one year of use, atopic dermatitis was cured, *S. aureus* was decreased, and beneficial bacteria *S. epidermidis* was increased.

# Improving the atopic dermatitis symptoms by the VSP complex #2

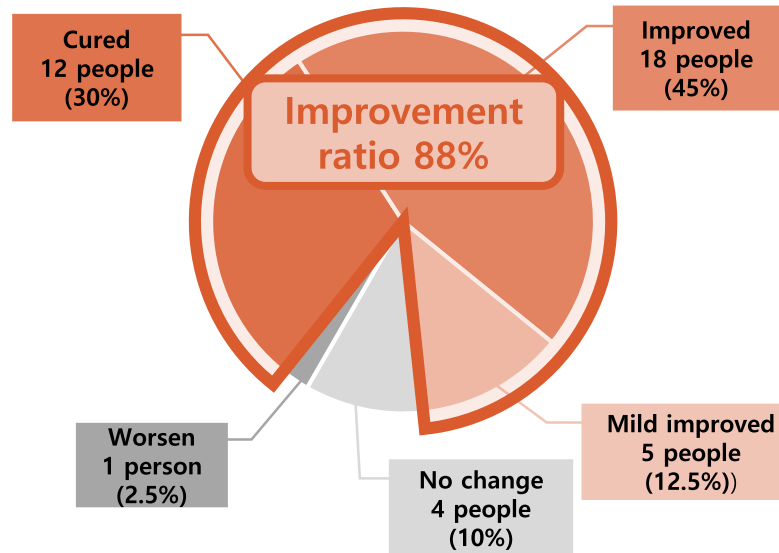
While infants and toddlers are usually excluded from the age requirements for atopic dermatitis medications, KBioLab's new skin microbiota modulator is prescribed as a lotion.

**KBioLab's modulator has demonstrated long-term safety and efficacy in atopic dermatitis patients of all ages, from infants as young as 6 months to adults.**

Short-term (2 months) results in 40 patients with atopic dermatitis

Total 40 subjects	
Infant (Under 2 years)	29
Child (Age 2 ~10 years)	8
Adult (20 years of age or older)	3
Sample: VSP complex lotion	
Duration of use: 8 weeks	
(1 <sup>st</sup> : '21.02~'21.04 / 2 <sup>nd</sup> : '21.03~'21.05)	

Judgment Criteria	
*Based on lesion photos and subjective reviews	
Cured	No more symptoms
Improved	Reduced symptom intensity or area
Mild improved	Decreased in the frequency and intensity of exacerbations
No change	Neither better nor worse
Worsen	Worsening



# Significance and achievements of the skin microbiota modulator

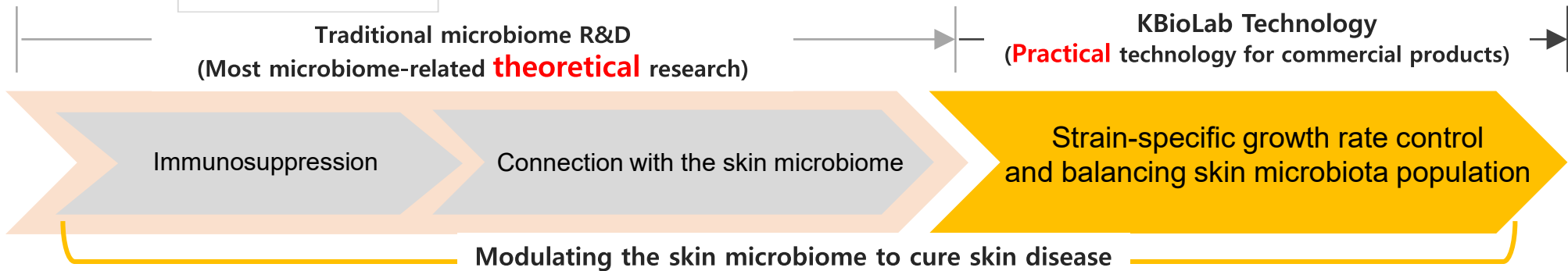
KBioLab's skin microbiota modulator brought a previously theoretical microbiome-skin disease treatment into the real world, creating a new drug for atopic dermatitis through microbiota improvement.



J Allergy Clin Immunol 105:9-19  
 J Allergy Clin Immunol 125:1254-60.e5  
 J Invest Dermatol 2007;127:564-7  
 J Allergy Clin Immunol 118:214-9,  
 Nat Genet 38:441-6  
 Nat Med 15:1377-1382  
 J Am Acad Dermatol. 2013 **69**:143  
 Nature 1988 **333**:276  
 J Dermatol Sci 2015 79:119  
 Dermatology 1985 **170**:35  
 Brit J Dermatol 1998, **139**S53:13  
 J Allergy Clin Immunol 2000 **105**:814  
 Pediatrics 2009 **123**:e808

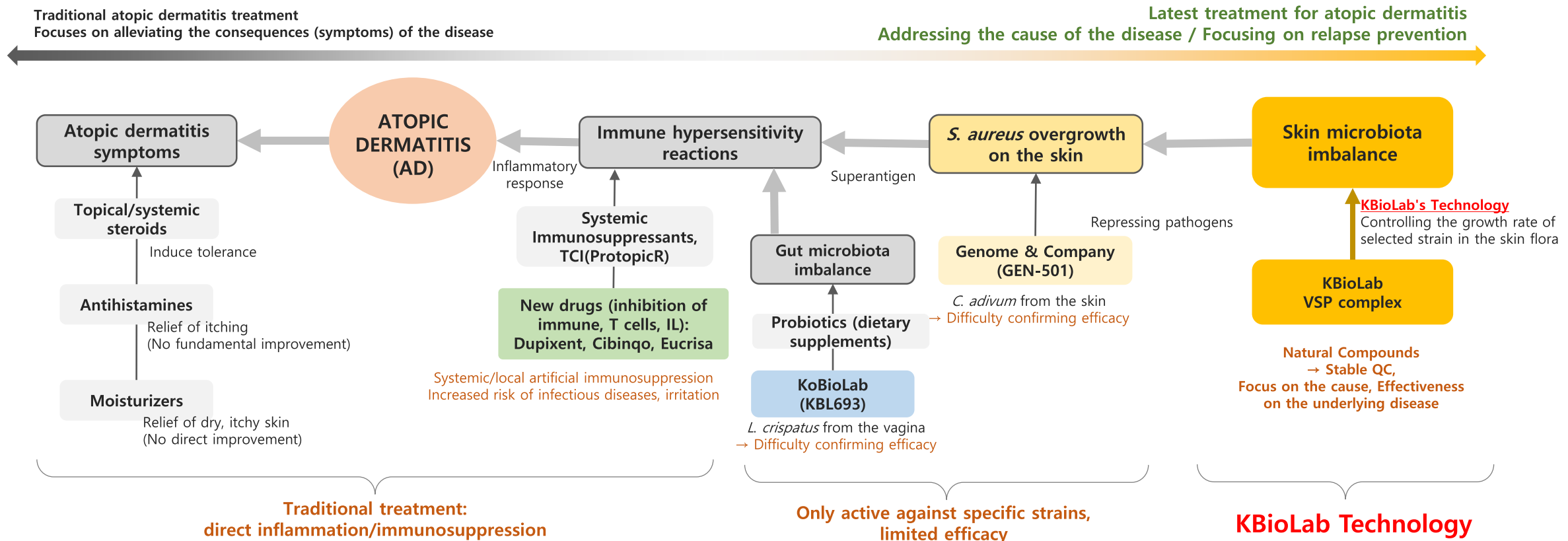


**Technologies and compounds of KBioLab**

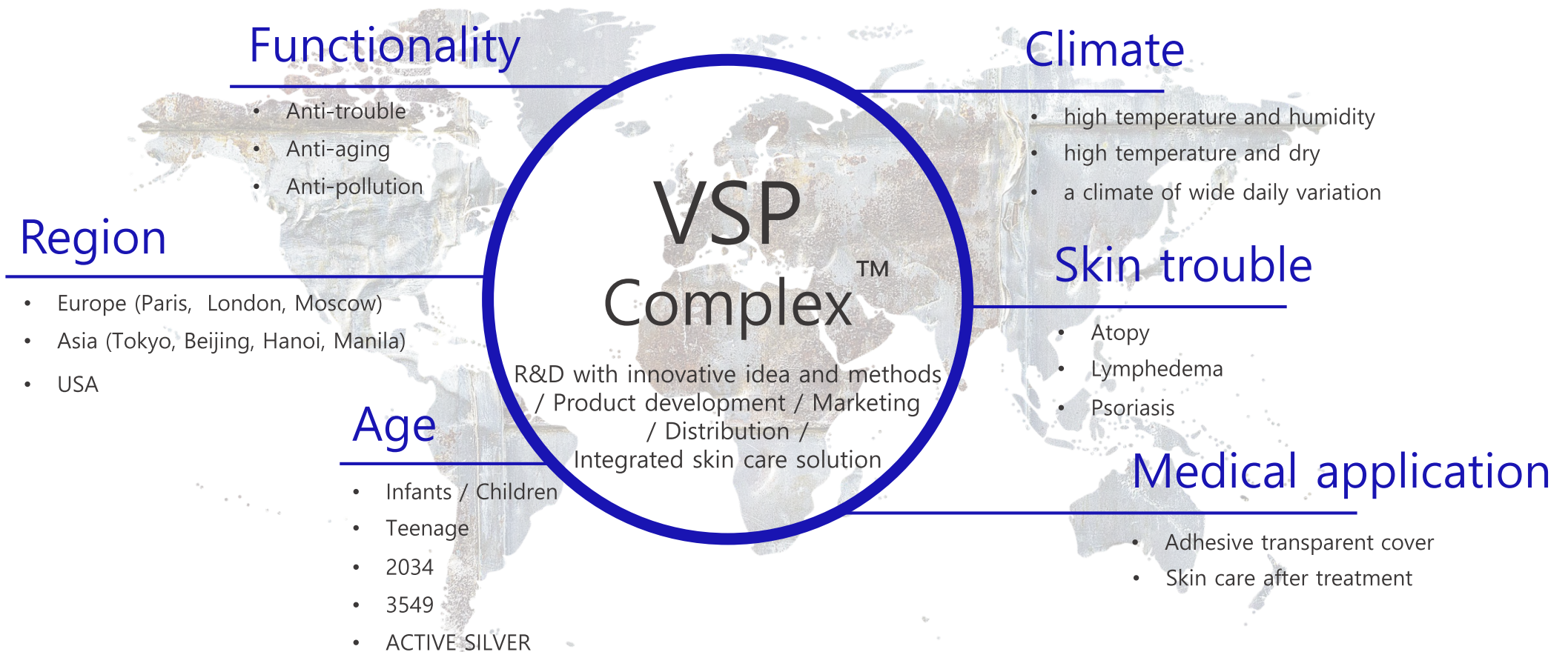


# KBioLab's technology to treat atopic dermatitis

By focusing on the causes of atopic dermatitis, KBioLab's new technology is expected to enable prevention, early treatment, and long-term management.



# Products with VSP complex™, KBioLab's innovative patented technology



# Activating beauty project

KBioLab doesn't simply talk about how to be beautiful skin.

We want to share how you can tame your skin microbiota for you to complete a healthy and confident lifestyle in the various moments.

The poor quality of life due to environmental pollution is not only an issue in Korea.

Especially in large cities such as Seoul, Tokyo, Shanghai, Beijing, Bangkok, Moscow, London, Paris, and New York

where more than 10 million people live, this environmental pollution is a causative agent of skin problems or diseases.

KBioLab wants to study how climate and living conditions

in your life affect your skin and suggests effective solutions.

We operate **VSP (VIBRANT, SENSITIVE, PROFESSIONAL) COMMUNITY**

to quantitatively and qualitatively analyze the skin sensitivity

according to the climate, living environment and lifestyle around the world.

VSP COMMUNITY is a global consumer group that is always open

to trends and has a physical sense of life. It is a business network and our leading consumer.



# VIKKOT: The first skincare brand with VSP Complex™



# vikkot

ACTIVATING BEAUTY

It is a skin care product that helps to maintain your skin health and to prevent the skin troubles by taming your own skin microorganisms, while responding actively to the changes of the critical skin external environment.

It is an activate skin care product that helps to increase skin vitality.

VIKKOT, the first skincare brand with VSP Complex™

# vikkot for ACTIVATING BEAUTY

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Origin

CLASSIC  
ORIGIN

Purity

SKIN  
BORN

Improvement

ACTIVE  
CARE ACTION

Rhythm

BIO  
BALANCE



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Seoul, 02707, Korea

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Fax: 02-910-5250

Email: [info.kbiolab@gmail.com](mailto:info.kbiolab@gmail.com)

Homepage: <http://www.kbiolab.co.kr>

<http://www.vikkot.com>

