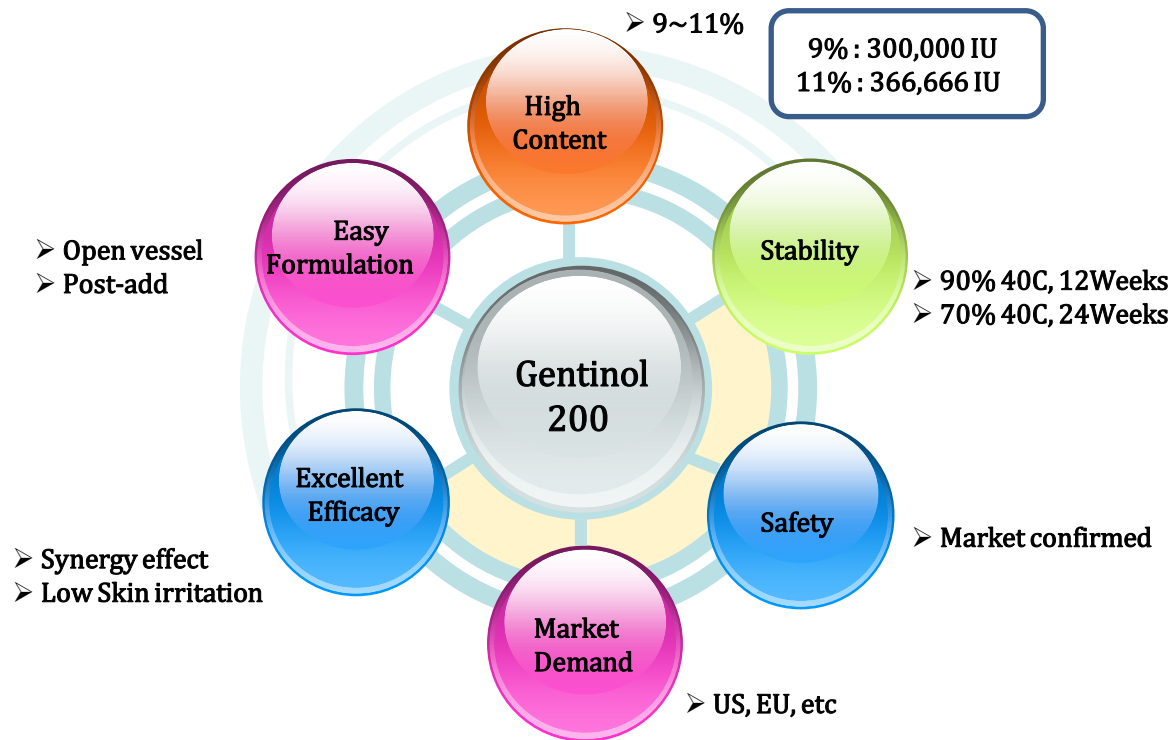


Selling
Points

BioGenic Gentinol-200

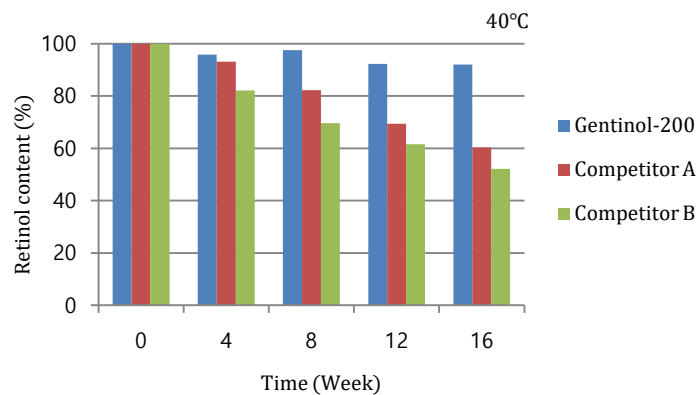
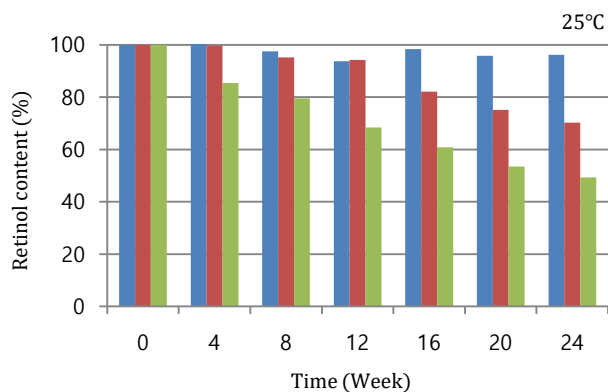
BioGenic Gentinol-200



BioGenic Gentinol-200 provides **high content (9~11%)** and **high thermal stability**. Moreover, it has **skin friendly property** by green tea catechin with **mild skin irritation, and excellent anti-wrinkle and whitening boost effect**. Also, BioGenic Gentinol-200 provides **easy formulation** by post-add mixing

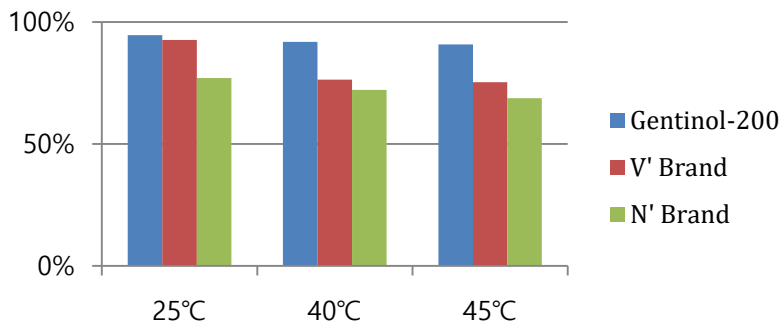
Higher Stability than others

I . Stability compare to commercial product



BioGenic Gentinol-200 and two commercial retinol capsules were tested in same condition at 25°C for 24 weeks and at 40°C for 16 weeks. All samples added to O/W cream as 0.11% (3600 IU)retinol contents in formulation. The results showed that BioGenic Gentinol-200 has great stability compared to commercialized retinol products.

II . Compare to Finished Products in US market

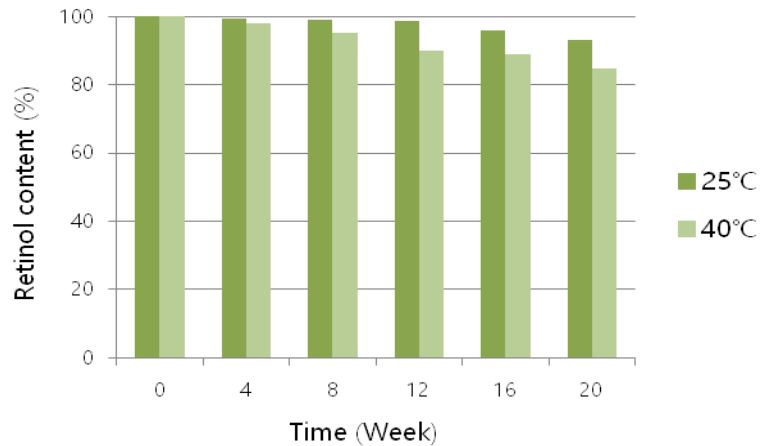


Test Condition	
Product Information	- Gentinol-200 containing O/W cream : 0.0985% (3,283 IU) - V Brand : 0.1970% (6,566 IU) - N Brand : 0.036% (1,200 IU)
Temperature	25°C, 40°C, 45°C
Period	4 weeks
Package	Sealed vial with foil (*not airless package)
Analysis	HPLC

BioGenic Gentinol-200 and two commercial retinol products were tested in same condition at 25°C, 40°C, 45°C for 4 weeks. The results showed that BioGenic Gentinol-200 has excellent stability compared to two finished retinol products. (By HPLC analysis)

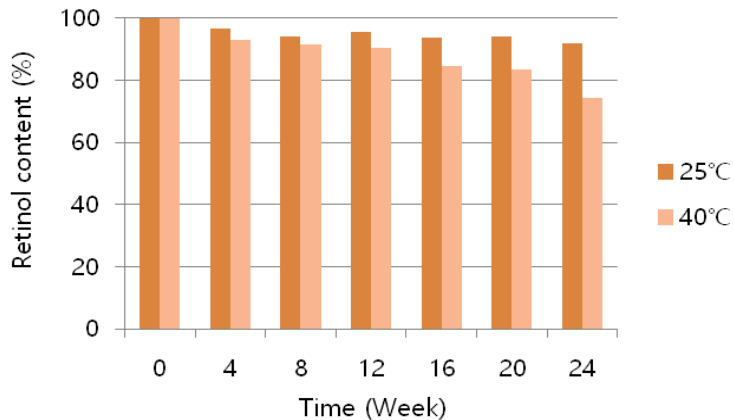
Excellent Stability

III. BioGenic Gentinol-200 as a capsule



BioGenic Gentinol-200 was tested at different temperature maintained at 25°C and 40°C for 20 weeks. The results showed more than 93% of retinol retention in BioGenic Gentinol-200 at 25°C for 20 weeks.

IV. Stability compare to commercial product



1.1% of BioGenic Gentinol-200 (0.11% Retinol as an active, 3,666 IU) was added to O/W cream by post-adding and stored at different temperature 25°C and 40°C for 24 weeks.. The results showed more than 91.8% and 74.2% of retinol was presented at each 25°C and 40°C for 24 weeks.

Safety

• Global Regulatory Status

Components	REACH# (EU)	USA (TSCA)	CANADA (DSL)	China (IECSC)	Japan (ENCS)	Korea (KECI)
Water	05-2116704617-45-0000	Listed	Listed	Listed	Listed	KE-35400
Poloxamer 235	17-2119443954-31-0000 17-2119427770-41-0000	Listed	Listed	Listed	(7)-1246	KE-24574
Retinol	17-2120076108-56-0000	Listed	Listed	Listed	(9)-1029	KE-11884
Polysorbate 20	17-2120076109-54-0000	Listed	Listed	Listed	(8)-55	KE-31681
Epigallocatechin Gallate	05-2116847884-28-0000	Listed	Listed	Listed	Listed	Listed.
Sodium Ascorbate	17-2120092393-53-0000	Listed	Listed	Listed	Listed	KE-01950
BHT	17-2120076110-71-0000	Listed	Listed	Listed	(9)-1805	KE-03079
EDTA-2Na	17-2119430179-40-0000	Listed	Listed	Listed	(2)-1265	KE-13651
BHA	17-2120076111-69-0000	Listed	Listed	Listed	(9)-1532	KE-11392
Phenoxyethanol	05-2116375098-36-0000	Listed	Listed	Listed	(9)-1277	KE-28257

Products in Market



Easy formulation

Guide Formulation (O/W Cream)

Ingredients				Weight(%)
No.	Product Name	INCI Name		
[A]	01	CETOS KD	CetearylAlcohol	1.50
	02	GMS 105	Glyceryl Stearate	1.50
	03	Arlacel #165	Glyceryl Stearate/PEG-100	1.50
	04	Tween #60	Polysorbate 60	1.00
	05	Arl #83	SorbitanSesquioleate	0.50
	06	1,2-Hexanediol	1,2-Hexanediol	2.00
	07	Phytosqualane	Phytosqualane	3.00
	08	Puresyn 4	Hydrogenated Polydecene	3.00
	09	DC200, 100cs	Dimethicone	0.50
[B]	10	DI-Water	Water	To 100.00
	11	1,3-BG	Butylene Glycol	5.00
	12	Sepiplus #400	Polyacrylate-13 (and) Polyisobutene (and) Polysorbate 20	0.50
[C]	13	Gentinol-200	Water (and) Poloxamer 235 (and) Retinol (and) Polysorbate 20 (and) Epigallocatechin Gallate (and) Sodium Ascorbate (and) BHT (and) Disodium EDTA (and) Phenoxyethanol (and) BHA	1.10
Net. wt(%). 100.00				

• Formulation Instructions

1. Mix all components of Part A at 75°C.
2. Mix all components of Part B at 75°C in other container.
3. Add the mixture of Part A to Part B with good agitation.
(Homomixer, 3,000~3,500 rpm, 5min)
4. Cool down the resulting mixture to 45°C.
5. Add Part C with good agitation.
(Agi-mixer, 1,000 rpm, 10 min)

• **Precaution : Post-add mixing of Gentinol-200 is strongly recommended.**

• **Recommended pH : < 5.5**

Low Skin Irritation

Skin Irritation Assessment of Gentinol-200

KDRI-S-150930-0648-1

Summary of Test Result				
TITLE	Human skin compatibility Evaluation Test of "Gentinol-200"			
INSTITUTE	KDRI Co., Ltd.	PERIOD	Sep. 30. 2015 ~ Nov. 06. 2015	
TEST METHOD	Sample	1. Cream formulation 2. Gentinol-200 in cream (2,500 IU of retinol) 3. Gentinol-200 in cream (5,000 IU of retinol)		
	Test Period	Oct. 27. 2015 ~ Oct. 30. 2015	Number of Test Personnel	32
	Treatment	24 Hours occlusive patch		
	Detail on Test Method	1. Subject Selection : 32 subjects who met the selection criteria and not included in exemption criteria were selected 2. Application Method : Single application 24hr occluded patch test 3. Evaluation Method : Skin reactions were classified according to International Contact Dermatitis Research Group (ICDRG) and Personal Care Products Council (PCPC) guideline.		
TEST RESULT	The irritation index of "Gentinol-200" was "0". The tested sample may be considered to have no irritancy to human skin.			

Green tea catechin (EGCG) is a key ingredient in Gentinol-200 system and helps decreasing skin irritation and boosts anti-wrinkle efficacy.

EGCG (Epigallocatechin Gallate)

- Most effective catechin in Green Tea
- Powerful anti-oxidant
- Skin Photoprotection Effect
- Anti-wrinkle efficacy
- Skin Whitening efficacy

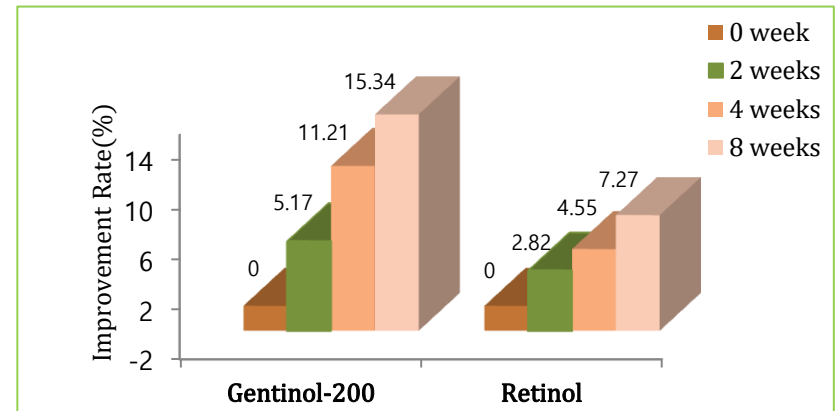
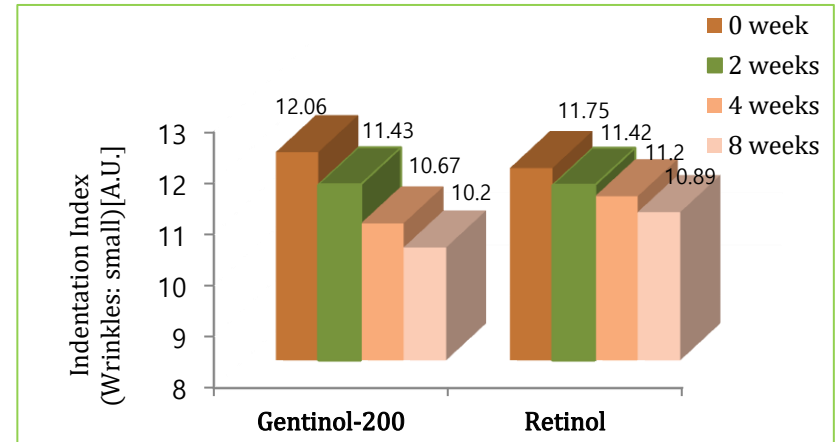
Excellent Efficacy

In-vivo Assessment Anti-Wrinkle Effect

KDRI-2020-086

Summary of Test Result				
TITLE	Assessment Anti-Wrinkle Effect of "Gentinol-200" vs "Retinol"			
INSTITUTE	KDRI Co., Ltd.	PERIOD	Jan. 15. 2020 ~ Apr. 01. 2020	
TEST METHOD	Sample	1. Gentinol-200 1% in cream (3333 IU of retinol, 0.1%) 2. Retinol 0.1% in cream (3333 IU of retinol, 0.1%)		
	Test Period	Jan. 23. 2020 ~ Mar. 19. 2020	Number of Test Personnel	19
	Treatment	Once a day(at night) for 8weeks		
	Detail on Test Method	1. Subject Selection : 19 subjects (30~60years old women) who met the selection criteria and not included in exemption criteria were selected. 2. Application Method : BioGenic Gentinol-200 and Retinol emulsion were applied once a day(at night) for 8weeks by subjects. 3. Evaluation Method : Measure wrinkle depth using Antera 3D equipment (0, 2, 4, 8weeks). A p value <0.05 was considered significant.		
TEST RESULT	BioGenic Gentinol-200 showed significant anti-wrinkle efficacy compared to the Retinol emulsion in Korean female subjects after 8 weeks' treatment.			

Gentinol-200 has 200% improvement of anti-wrinkle efficacy compared to Pure Retinol



Comparison with Competitor

Manufacture	Product Name	Description	Composition	Active %	Remark
Biogenics, Inc.	BioGenic Gentinol-200	BioGenic Gentinol-200 provides high content (9~11%) and thermal stability. Moreover, it has skin friendly property by green tea catechin with mild skin irritation, and anti-wrinkle and whitening boost effect. Also, BioGenic Gentinol-200 provides Easy formulation by post-add mixing.	Water (and) Poloxamer 235 (and) Retinol (and) Polysorbate 20 (and) Sodium Ascorbate (and) Epigallocatechin Gallate (and) BHT (and) Disodium EDTA (and) Phenoxyethanol (and) BHA	10% Retinol	BioGenic Gentinol-200 showed more than twice the anti-wrinkle efficacy compared to the pure Retinol
Salvona	MultiSal™ Retinol	Time-Release Technology for Skin-friendly, Stable and Potent Retinol	Silica (and) PPG-3 Benzyl Ether Myristate (and) Retinol (and) Polysorbate 20 (and) Polyethylenimine (and) BHT (and) BHA (and) Lauryl Laurate (and) Zea Mays (Corn) Starch (and) Hydrolyzed Corn Starch (and) Hydrolyzed Corn Starch Octenylsuccinate	10% retinol	It is necessary to compare the stability between this product and our Gentinol-200.
Lipotec	RETINOL molecular film fluid	Stable and Potent Retinol	Retinol, Dimethylmethoxy Chromanol, Tocopherol	0.3% retinol	It is meaningless to talk about the efficacy with this small concentration.
EVONIK	InuMax Advanced Retinol	InuMax Advanced Retinol enables formulators to benefit from a high-load of stabilized retinol appropriate for making retinol use-level label claims in their products, while providing consumers with notably lower irritation and better efficacy than free retinol. It uses the InuMax delivery technology to enhance the bioavailability of retinol to the skin.	Water (and) Caprylic/Capric Triglyceride (and) Glycerin (and) Polysorbate 20 (and) Retinol (and) Inulin Lauryl Carbamate (and) Behentrimonium Chloride (and) Sucrose Laurate (and) Disodium EDTA	8% retinol encapsulated in a Inulin-based delivery system (InuMax technology)	It is more focus on skin penetration than stability.
DSM	RETINOL GS 50	Retinol GS 50 is an easy to handle solution of the active ingredient Retinol in Polysorbate stabilized with antioxidants BHA and BHT.	Retinol (and) Polysorbate 20 (and) BHA (and) BHT	Retinol >= 30 - < 50	Pure Retinol Raw Material
DKSH	CAVAMAX® W8/Retinol Complex	CAVAMAX W8 from Wacker Biosolution is an innovative solution of Improving the bioavailability of retinol. With the help of Cyclodextrin embedding technology, Cyclodextrin can effectively protects the activity of retinol, which makes anti-aging effects of retinol more efficient, long-term sustained releases and reduces irritation to the skin as well. Available in select countries. Please inquire for more details.	Cyclodextrin (and) Retinol	Retinol min. 6%	Unstable product
Sethic	-	It is encapsulated by NanoXome™ which are pH and temperature stable nano-size carriers	-	Rethynl Retionate 15%	It is Retinol derivatives that is incomparable to stabilized products

Comparison with Competitor

Manufacture	Product Name	Description	Composition	Active % Pure Retinol	Stability Efficacy
Biogenics, Inc.	BioGenic Gentinol-200	Stabilized Pure Retinol with Green tea catechin. High content of Retinol (9~11%) High Thermal stability Mild skin irritation, Excellent anti-wrinkle efficacy Potential whitening efficacy	Water (and) Poloxamer 235 (and) Retinol (and) Polysorbate 20 (and) Sodium Ascorbate (and) Epigallocatechin Gallate (and) BHT (and) Disodium EDTA (and) Phenoxyethanol (and) BHA	10%	Stability : 6months >90% (25C), >70%(40C) Efficacy : 200% improvement for anti-wrinkle efficacy than Pure Retinol
SALVONA	MultiSal™ Retinol	Time-Release Technology for Skin-friendly, Stable and Potent Retinol	Silica (and) PPG-3 Benzyl Ether Myristate (and) Retinol (and) Polysorbate 20 (and) Polyethylenimine (and) BHT (and) BHA (and) Lauryl Laurate (and) Zea Mays (Corn) Starch (and) Hydrolyzed Corn Starch (and) Hydrolyzed Corn Starch Octenylsuccinate	10%	Partially stabilized Pure Retinol Stability was not proved
LIPOTEC	RETINOL molecular film fluid	Stable and Potent Retinol	Retinol, Dimethylmethoxy Chromanol, Tocopherol	0.3%	Low retinol content.
EVONIK	InuMax Advanced Retinol	High content of Retinol (10%) Lower irritation Better efficacy than free Retinol High bioavailability of retinol to the skin.	Water (and) Caprylic/Capric Triglyceride (and) Glycerin (and) Polysorbate 20 (and) Retinol (and) Inulin Lauryl Carbamate (and) Behentrimonium Chloride (and) Sucrose Laurate (and) Disodium EDTA	8%	More focused on skin delivery. Stability was not proved
DSM	RETINOL GS 50	Pure Retinol in Polysorbate 20.	Retinol (and) Polysorbate 20 (and) BHA (and) BHT	50%	Not stabilized Pure Retinol
DKSH	CAVAMAX® W8/Retinol Complex	Improving the bioavailability of retinol. Long-term sustained releases Reduces skin irritation	Cyclodextrin (and) Retinol	6%	Partially stabilized Pure Retinol Stability will be very low
SETHIC	-	Encapsulated Retinol derivative by NanoXome™ pH and temperature stable nano-size carriers	Retinyl Retinoate, etc	As Retinol derivative 15%	It is Retinol derivative but not Pure retinol

BIOGENICS

Beyond the Limit!

Thank you!